

University of
Sheffield

A. Afferri

Inclusion and Implementation of Fertility
Care in the Gambian Health System

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Inclusion and Implementation of Fertility Care in the Gambian Health System

Anna Afferri

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Abstract

Infertility is a neglected reproductive health issue. In the global health agenda, and particularly in countries of the Global South, there is a need to develop policies and practices addressing fertility care. However, fertility care policy creation and implementation are challenging due to a number of factors influencing both local and international stakeholders. This research explores factors inhibiting and enabling fertility care policy creation, and challenges and opportunities to implement infertility services in The Gambia, West Africa. Starting from a qualitative systematic review of the literature in Africa, the thesis then narrows down to the case of The Gambia, and investigates how Gambian public and private health actors have prioritised infertility in their health system. Following the review of the literature, a mapping exercise was carried out to establish the availability of infertility services in The Gambia. Subsequently, the perspectives and views of relevant stakeholders were collected and analysed. The review confirmed the scarcity of the literature addressing the inclusion of fertility care in African reproductive health policies and served as the framework for the creation of data collection tools for this research. The Gambia case study evidenced that despite the prevention and management of infertility being addressed in national health policies, the implementation is daunting, with the majority of infertility services provided by the private sector and mainly accessed by women. Stakeholders' perspectives showed a lack of fertility care guidelines, data collection tools, and specialised training for healthcare providers. Lastly, in The Gambia, a fertility care *momentum* was recorded in the last three years and factors that have enabled this

were considered, in order to create a range of recommendations for Gambian policy actors and to scale up the Gambian experience to similar settings.

Further research examining the involvement of men in fertility care, the creation of national registries to collect data on infertility, and the role of traditional medicine in managing infertility are needed.

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Declaration

Hereby, I (Anna Afferri) affirm that this thesis is the result of my own work and includes no collaborative work except as specified in the text.

This thesis or part of it is not similar as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Sheffield or any other University, and similar institution.

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Anna Afferri

Registration number: 190195124



Statement of Authorship

Chapters 3, 6, and 7 feature manuscripts that have been published or are currently under review. Chapter 3 was published in *Human Reproduction Update*; Chapter 6 was published in *BMC Health Services Research*, and Chapter 7 is under peer review in *BMC Reproductive Health*. Further publications issued from this research but not included in this thesis, consist of an invited article presenting the Fertility Care in the Global South Network at the International Federation of Fertility Societies (IFFS) World Conference 2022, in publication on *Global Reproductive Health*, and a manuscript summarising the recommendations issued in Chapter 8, in submission to *Frontiers in Public Health*.

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ACRONYMS

ANARA	African Network and Registry for Assisted Reproductive Technologies
ART	Assisted Reproductive Technologies
CBC	Community Birth Companion
CHW	Community Health Worker
DHS	Demographic Health Survey
ESHRE	European Society for Human Reproduction and Embryology
FGM	Female Genital Mutilation
FIGO	International Federation of Obstetrics and Gynaecologists
FP	Family Planning
GDP	Gross Domestic Product
HF	Health Facility
HIV	Human Immuno-deficiency Virus
HPSR	Health Policy and System Research
ICMART	International Committee for Monitoring Assisted Reproductive Technologies
ICPD	International Conference on Population Development
ICSI	Intracytoplasmic Sperm Injection
IFFS	International Federation of Fertility Societies
IUI	Intrauterine Insemination
IVF	<i>In vitro</i> Fertilisation
LMIC	Low- and Middle-Income Countries
MMR	Mixed Methods Research
MOH	Ministry of Health
MRC	Medical Research Council
NCD	Non-Communicable Diseases
NHIS	National Health Insurance Scheme
OOP	Out-of-Pocket
PHC	Primary Health Care
PPP	Public-Private Partnership
QES	Qualitative Evidence Synthesis
RCT	Randomised Control Trials

RH	Reproductive Health
RMNCAH	Reproductive Maternal Newborn Child Adolescent Health
SDG	Sustainable Development Goal
SRH	Sexual Reproductive Health
SRHR	Sexual and Reproductive Health Rights
SSA	Sub-Saharan Africa
STI	Sexual Transmitted Infections
UNFPA	United Nations Population Fund
TFI	Tubal Factor Infertility
TFR	Total Fertility Rate
UHC	Universal Health Coverage
WRA	Women in Reproductive Age
WHO	World Health Organisation

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PART I

Preface

My interest on infertility developed as a chance resulting of the “collision” between my professional and personal life. Professionally, I spent many years working on implementing and evaluating reproductive and maternal health programmes in low and middle-income countries (LMIC), particularly in Africa. There, I had the opportunity to learn about and understand reproductive health in a multi-faceted way. Yet, I also became aware of the vast amounts of resources that are lost in implementing reproductive health programmes which are not context-adapted nor finalised to create real impact in the health systems within which they are situated. This realisation profoundly changed my vision of international development and I began to center my work on what was really needed – mainly from the participant’ perspectives – rather than to solely comply with funders’ requests. From that moment on, my approach to reproductive health became increasingly practice-oriented and impact driven.

However, throughout this time, and similarly to other reproductive health conditions still neglected in public health systems in LMIC, I rarely encountered infertility as a problem for African couples. First, infertility was barely mentioned or reported during my clinical practice; second, my unconscious bias was that in context of poverty, infertility did not really impact the life of people. Ultimately, during my years in Africa, infertility was not a reproductive matter I was concerned about. From a personal perspective, however, it happened that I underwent infertility treatment and IVF, and I thus began to reflect on infertility within my professional life through a public health lens; I was particularly concerned about the

notable absence of interventions addressing fertility care in sub-Saharan African (SSA) health policies and systems. From that moment on, my interest in infertility has grown exponentially and it has guided me to the University of Sheffield, where in 2019, I began my PhD journey. This doctoral dissertation reports on that journey, and it is the evidence of how much is needed to be done to recognise infertility as an issue, and improve fertility care for African women and men.

1. Chapter: Introduction

The involuntary inability to attain a live birth, also known as infertility, is not a new concept in research (Sharman, 1945; Walker, 1945; Jackson, 1947). Research on infertility in parts of the world commonly referred to the Global South¹ dates back 40 years (Frank, 1983; Cates, Farley and Rowe, 1984; Ebomoyi and Adetoro, 1990; Serour, El Ghar and Mansour, 1991), yet in sub-Saharan Africa (SSA), infertility begun gaining international attention over the last three decades (UNFPA, 1994). Although infertility rates globally, and in most countries, are unclear and often underreported due to multiple definitions used in epidemiology (Marchbanks *et al.*, 1989; Larsen, 2005; Jacobson *et al.*, 2018), researchers have estimated that approximately 15% of the world's population lives with infertility (Gerrits *et al.*, 2017) and a recent study from the WHO reported that approximately one out of every six people experience infertility in their lifetime (WHO, 2023). Almost 25 million infertile couples reside in the Global South, specifically in SSA and in South Asia (Mascarenhas *et al.*, 2012). In some countries of the Global South, where fertility rates are high, the prevalence of infertility could also be high (Nachtigall, 2006a). Particularly, for Central African nations, this concept is frequently referred to as "*barrenness amongst plenty*" (van Balen and Gerrits, 2001, p.216).

In SSA, infertility can be caused by a variety of health issues, including a high rate of sexually transmitted infections (STI), leading mainly to secondary infertility, as well as unsafe abortions and poor childbirth practices (Sharma, Mittal and Aggarwal, 2009; Panti and Sununu, 2014; Inhorn and Patrizio, 2015; Tsevat *et al.*, 2017;

¹ The nations of the world which are regarded as having a relatively low level of economic and industrial development, and are typically located to the south of more industrialized nations (Oxford dictionary)

Abebe, Afework and Abaynew, 2020). Yet, non-infectious causes of infertility, such as ovarian failure, hormonal problems, endometriosis and polycystic ovary syndrome among others, remains unpreventable (Guo and Segars, 2012; Hanson *et al.*, 2017; Collée *et al.*, 2021). Infectious and non-infectious causes, in addition to social stigma, financial hardship and psychological consequences contribute to the low quality of life of people living with infertility (Boivin, Takefman and Braverman, 2011; Koert, Takefman and Boivin, 2021; Thoma *et al.*, 2021).

Some have contended that while countries with high fecundity have a range of reproductive health interventions that help to lower fertility levels, for example contraceptives programmes integrated in reproductive health services, countries where infertility rates are high should have equally appropriate interventions (Ombelet, 2011). These interventions should receive the same attention as, and cannot be dissociated from, services that aim to reduce fertility. Infertility could be a one-time life event or a chronic condition. In environments where raising children is a priority in order to achieve both social and economic goals (e.g., for old-age security and labour), infertility can have overwhelming consequences, with a wide array of economic, social and family impacts (Chachamovich *et al.*, 2010; Rouchou, 2013; Iwelumor *et al.*, 2020; Kiani *et al.*, 2021; Wang *et al.*, 2022). Having children is still what is commonly expected from most heterosexual couples soon after their union despite some differences arising in societies and cultures. For instance, in the United States, it is argued that achieving personal fulfilment and pleasure is of utmost significance, even more so than raising children and maintaining peaceful connections with the family (Weisfeld and Weisfeld, 2002). This position stands opposite in SSA, where family and communities place significant reproductive

expectations on couples, and especially on the bride (Fledderjohann, 2012). To this effect, studies have shown that women who are unable to have children, either because of their inability or that of their partner, could be neglected by their husbands, rejected by their communities or isolated from the extended family. Also, an increased risk of being subjected to marital violence and divorce was demonstrated (Okonofua *et al.*, 1997; Fledderjohann, 2012; Rouchou, 2013; Tabong and Adongo, 2013a; Stellar *et al.*, 2016; Wang *et al.*, 2022). For women who are victims of this physical and emotional violence, infertility represents 'social death' (Serour *et al.*, 2019). To this extent, involuntary childlessness in SSA carries serious sociocultural and emotional distress, that appears to be significantly greater than that in the Global North (van Balen and Bos, 2009; Iwelumor *et al.*, 2020). In certain African societies, often in rural areas, females are defined as women (as opposed to girls) once they attain motherhood, and becoming a mother is the only social ranking achievable in these settings. Being a mother enables a woman to protect her personal well-being, express her devotion to her husband, and honour the household that arranged for her marriage (Sundby, 1997). In more urban areas, on the contrary, childbearing is linked to class ranking rather than motherhood itself. In summary, becoming a mother elevates women in the social ladder (Bledsoe, 2002). Independently of social ranking or motherhood status, the incapacity to produce progeny, even if the fertility issue lies with the man, brands women as not worthy of their gender because of the high *cultural premium* placed in their ability to bear a child (Okonofua and Datta, 2002). Although the social dimension of infertility distresses both women and men in many African settings, lower social status, reduced inheritance rights, physical and psychological abuse are situations ascribed

more often to infertile women than infertile men (Dyer *et al.*, 2002; Richards, 2002; Hollos and Larsen, 2008; Dhont *et al.*, 2011; Sully *et al.*, 2020). Additional studies have revealed that infertility is linked to depression and risky sexual behaviours (Rouchou, 2013; Alhassan, Ziblim and Muntaka, 2014; Kiani *et al.*, 2021; Bagade *et al.*, 2022), as well as economic deprivation (Dyer and Patel, 2012).

Despite international consensus on the importance of preventing and treating infertility in the 1990s (UNFPA, 1994), the lack of appropriate policies for fertility care draws attention to the place that reproductive rights occupy in the ecology of health systems. This lack also plays a fundamental role in the identification of public health priorities, health equality, and reproductive justice. In particular for reproductive justice, this entails moving away from the simple notion of reproductive choice and it is based on the personal agency of raising a child in a secure environment (Pennings, 2008; Pennings *et al.*, 2009; Zegers-Hochschild *et al.*, 2014; Panitch, 2015; Ross, 2017; Hall and Hanekom, 2019).

Reproductive rights are defined as human rights (United Nations, 1948; UNFPA, 1994). Realising sexual and reproductive health rights (SRHR) - which are founded on the human rights of all people - is a prerequisite for achieving sexual and reproductive health (SRH). These rights include the freedom to define own sexuality, including sexual orientation and gender identity and expression, to determine whether or not to engage in sexual activity, and to select the individuals with whom to have sexual relations (Guttmacher-Lancet Commission, 2022). Implicitly, reproductive rights also include the right to found a family. Parenthood could be claimed both as a liberty or a welfare right (Boivin and Pennings, 2005). Liberty rights are 'negative' rights restraining the acts of other people or

government towards or against the right bearer. In the case of parenthood, this entails that no one can limit a person's choice to have or not to have offspring (Robertson, 1994). Welfare rights are labelled as a 'positive' right. Positive rights, by contrast, allow the bearer to make a claim for a service or treatment. Access to assisted reproductive technologies (ART), in this sense, are recognised as a positive right in those societies where provision of these technologies is accepted and included in basic health services (Bradley, 2010). In order to exercise the right to procreate and create a family, both negative and positive rights must be present. The positive right to access ART is more contentious than the negative right to natural procreation, and it necessitates that the government and other organisations exercise restraint by erecting barriers to equal access. Many of these obstacles, including the availability of ART to unmarried couples or the access to surrogacy, are moral in nature and prevent people from using assisted reproduction services (Chan and Ho, 2006).

Policies on SRHR often omit to take into account some of these rights (such as the case for fertility care for couples that need help to achieve a pregnancy) or they are partially accounted for (such is the case of access to contraceptives to space pregnancies). Due to this policy limitation, protection of the individual reproductive freedom to make informed decisions about their bodies (Boivin and Pennings, 2005; Barot *et al.*, 2015; Starrs *et al.*, 2018) is often compromised and the principles of *non-interference* – or having the freedom and autonomy to make decisions concerning reproductive practises, *non-domination* – or “*a state of being where women, especially if marginalised, are freely and equally able to participate in influencing social and institutional arrangements which would eventually influence*

their agency" (Hall and Hanekom, 2019; Bhakuni, 2021, p. 5) and *reproductive fairness*², are simply overlooked. In the contest of this thesis, SRHR concept is used as the overarching theory.

1.1 Fertility Care in the Global South

Fertility care understood as *"Interventions that include fertility awareness, support and management with an intention to assist individuals and couples to realize their desires associated with reproduction and/or to build a family"* (Zegers-Hochschild *et al.*, 2017, p. 1793) is a largely ignored reproductive health intervention. In SSA, high fertility rates, coupled with the fear of overpopulation that were instilled by years of demographic and population-control strategies, and the high cost of ART, weigh enormously on the decision of whether or not to include fertility care in national health policies (Ombelet *et al.*, 2008). Often, fertility care is overlooked in health policies and by international development donors, with local governments preferring to concentrate their resources on reducing fertility rates instead of fighting involuntary infertility (Ombelet and Goossens, 2017) although there are some notable exceptions.

In a majority of these settings, when available, fertility care is mostly provided by the private sector (Surveillance IFFS, 2022) where safety, quality control or specific public health directives, and ethical guidelines are overlooked (Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015), and where the public health institutions have little to mandate. In this regard, some of the Global South public health systems have little knowledge about which activities are carried out by

² Reproductive fairness: access to reproductive health services not influenced by social, economic, or demographic factors (UNFPA, 1994)

private fertility clinics, with routine data on infertility treatments systematically missing from national statistics (Adamson *et al.*, 2018).

When fertility care is not provided, many couples living with infertility must passively accept a life without children with a high risk of being publicly stigmatised. For others, the privileged who can afford private treatments and are willing to pay, crossing borders into neighbouring countries to seek care is the only choice available (Sundby, 2002; Aboulghar, Serour and Mansour, 2007). In these private settings, the costs for investigations and treatments are very high compared to the public sector (Whittaker, Inhorn and Shenfield, 2019; Moll *et al.*, 2022) and these costs are usually borne out-of-pocket.

There are strong public health reasons for addressing infertility with sound policies and practice, not least, supporting sexual and reproductive rights. However, from a health system perspective, there are also gaps in research and knowledge regarding how healthcare sectors manage fertility care, including its policies and practice.

The study of health policy and systems (HPSR)³ aims to comprehend and advance how societies function to achieve common health objectives and how players interact throughout the development and execution of health policies (Shroff, Marten and Hanson, 2022). Its nature is based on the interdisciplinarity of diverse fields that broadly embrace economics, sociology, political science, public health, and epidemiology. HPSR aims to provide the most complete frame in which health systems operate and adapt to health policies, but also as well as how health policies can influence and be influenced by health systems (WHO, 2012). Health

³ [https://ahpsr.who.int/what-we-do/what-is-health-policy-and-systems-research-\(hpsr\)](https://ahpsr.who.int/what-we-do/what-is-health-policy-and-systems-research-(hpsr))

systems research focuses on issues like the World Health Organisation (WHO) building blocks⁴ (Manyazewal, 2017) and health policy research primarily examining how various actors interact in policy development and execution (Walt *et al.*, 2008; Haq *et al.*, 2017). However, while initially appearing to be distinct, they have numerous interactions, including strengthening the capacities of policy stakeholders in assessing and understanding policy implementation, the formulation of policies based on research outcomes, and considering how researchers can influence policymakers and practitioners through knowledge mobilisation (Cairney and Oliver, 2017; Oliver and Cairney, 2019; Oliver *et al.*, 2022). The ultimate goal of this knowledge mobilisation is promoting the coverage, quality, efficiency, and equity of health system in the provision of care.

This research, as explained in the next sections and chapters, aims to fill the gaps in policy and practice concerning fertility care in The Gambia, and will provide lessons for those countries in the Global South where fertility care policy and implementation is emerging.

1.2 Relevance of the Research

This thesis aims to provide an empirical analysis of the availability of infertility services in a West African country, The Gambia. Added to this, a theoretical interpretation of the experiences of the actors involved in fertility care policymaking and practice is also offered. Empirical and theoretical processes have been used to construct a snapshot of fertility care implementation and, by consequence, to identify opportunities to strengthen the Gambian health system. Specifically, this thesis reports relevant information from stakeholders in The Gambia and aims to

⁴ Leadership and governance, health financing, health workforce, medical products and technologies, service delivery, and health information management.

stimulate discussions and highlight opportunities that would eventually lead to a fairer and more homogeneous availability, provision and access to fertility care in the public and private health sectors. In The Gambia, particularly, this picture is missing and fertility care has been given little priority by previous health leadership. This research is novel in the Gambian health policy panorama and it is the first of its kind to investigate how the Gambian health system is managing fertility care. For completeness, this thesis refers to women and men as reproductive entities. However, this does not fully reflect the personal beliefs of the author whose view it is that fertility care should be provided to a broader public that encompasses, among others, the LGBTIQ+ communities (Campo-Engelstein and Quinn, 2021).

1.3 Study Rationale

A detailed description of The Gambia society and health system is mentioned in *Chapter 4*. Here, factors that have motivated the selection of The Gambia as the case study for this research are explained. Specifically: (i) previous anthropologic research on infertility exists but no studies have explored fertility care from a health system perspective; (ii) a relatively organised health system, currently in transition and decentralised in regions, where a strong interdisciplinary partnership was created in past years with the Medical Research Council Unit The Gambia at the London School of Hygiene and Tropical Medicine (LSHTM), the Gambian Government and with a national infertility NGO named Safe Haven Foundation; (iii) interest in addressing involuntary infertility expressed in multiple national health policies but without a concrete action plan or a dedicated budget; and (iv) a medium to high estimated prevalence of infertility.

From findings of previous research in the country, it was assumed that the inclusion of fertility care is still missing a strategic plan and budget, the implementation of activities addressing infertility is not yet fully supported by the health system, and the provision of infertility services is fragmented and mainly delivered by the private sector. Relevant information about the availability of infertility care is lacking, and the referral pathways between care levels are unclear.

1.4 Aims and Objectives of the Research

Reviewing the state of the art pertaining to this study, several research gaps outlined above have been identified with concern to the inclusion of fertility care into health systems in the Global South. Particularly, as noted in previous ethnographic and quantitative research on infertility in The Gambia (Sundby, 1997, 2014; Sundby, Mboge and Sonko, 1998; Dierickx *et al.*, 2018; Dierickx *et al.*, 2019; Dierickx *et al.*, 2019; Dierickx *et al.*, 2021).

In response to these gaps, this research aims to: (i) better understand the current availability of infertility services in The Gambia; and (ii) examine the factors successfully predicting how the Gambian health system has set policy priorities concerning fertility care implementation.

This is the first research looking at fertility care from the perspective of the health system in The Gambia and to the best of knowledge in SSA. Findings from this study could help to develop policymakers' priorities for addressing infertility and could support the health system through the provision of a more comprehensive SRH package. Exploring the existing availability of infertility services and collecting the perceptions of the actors involved in both policy creation and implementation, will give the opportunity to better understand the capacity of the Gambian health

system to manage and monitor fertility care. Moreover, it highlights challenges and opportunities to support a fair and equitable access to fertility care, and recognise how fertility care for all can be delivered in similar settings.

The overarching research question of this PhD explores how fertility care can be included and implemented in existing health systems in resource-poor settings and specifically:

- a. What factors enable or inhibit the inclusion of fertility care in reproductive health policies in Africa?
- b. What infertility services are available in the public and private health facilities in The Gambia and how data on infertility are collected and shared within the Gambian health system?
- c. How do current health policies assist the implementation of fertility care and aligns with the requirements of the health system?

To help answer the above research questions, this research has the following objectives:

1. Uncover factors that inhibit and enable the inclusion of fertility care in African reproductive health policies;
2. Map infertility services⁵ in the public and private health facilities in The Gambia and examine the collection and transmission of infertility data throughout the health system;
3. Explore and assess whether the perceptions of Gambian stakeholders on fertility care implementation align with the current health policy and system.

⁵ This will include but not limited to treatments for infertility such as intrauterine insemination (IUI), ovulation induction, selected ART, and infertility counselling, screening and diagnosis

1.5 Outline of the Dissertation

This thesis is organised in three parts. Part I contains *Chapters 1-5* and provides the introduction and background of the research, a qualitative evidence synthesis of the literature, an overview of the case study - The Gambia, and the methodological approach behind the research. Part II contains *Chapters 6 and 7* or the results of the primary research. The chapters are outlined as manuscripts either published or submitted for publication. Finally, Part III or *Chapter 8* consists of a general discussion, recommendations and conclusion. Specifically, Chapter 2 provides an in-depth overview of how infertility is positioned within sexual and reproductive health and rights, touching on concepts such as the historical framework that has facilitated the emergence of fertility care in the sexual and reproductive health discourse. It also highlights challenges and opportunities that arose from the International Conference for Population Development in 1994. This is important because illustrates how involuntary infertility is still a neglected global reproductive health concern for many governments, notably in the Global South. *Chapter 3* includes a Qualitative Evidence Synthesis (QES) of the existing literature, edited as a manuscript and published in December 2021 (Afferri *et al.*, 2021). The QES identified factors inhibiting and enabling the development of fertility care policymaking in Africa, and the review led to the creation of a conceptual framework. This framework can be used by policymakers as a model informing what influences the inclusion of infertility in public health policies, for example infertility awareness, data collection, training for service providers, and clinical guidelines. *Chapter 4* describes, The Gambia, West Africa, which is the case study of this research, providing the context within how both the health system and fertility care

operate. *Chapter 5* outlines the theories and methods that have guided the data collection and analysis. Further, it provides an argument for the research philosophy and illustrates how the positionality of the researcher has facilitated, and in some instances hindered, the collection and analysis of the data. *Chapter 6* reports on the availability of infertility services in public and private health facilities in The Gambia via a countrywide cross-sectional survey. This chapter is edited as a manuscript and was published in September 2022 (Afferri *et al.*, 2022). *Chapter 7* describes the findings of qualitative research in which a sample of Gambian stakeholders were interviewed and have shared their perspectives about the implementation of fertility care. This chapter is also written in a manuscript form and was still under peer review at the time of submission of this thesis (Afferri *et al.*, under review). Finally, *Chapter 8* triangulates quantitative and qualitative findings of this research, gives interpretation of these findings, suggests how The Gambia could overcome future challenges to sustain the current drive toward addressing infertility, and concludes the thesis with ideas to be explored in future research. A summary of the thesis structure is provided in Table 1.1.

1.5.1 Formatting

In this thesis, an alternative format known as *publication-format thesis*, was used. Some of the chapter forms a separate paper both published (*Chapters 3 and 6*) or under review (*Chapter 7*). At the end of each chapter, a reference list is included in accordance with the thesis format.

The font chosen for the thesis is Avenir LT Std 45 Book. Avenir is the official font used by the Fertility Care Network in the Global South of which the author is a member. Using Avenir is the way the author wish to honour the contribution of the

network addressing fertility care in The Gambia. As required, the research was undertaken while supervised by the University of Sheffield and Vrije Universiteit Brussel's supervisors.

Table 1.1: Thesis Structure

Chapter	Research Objectives	Research Questions	Aim
Chapter 3: Barriers and facilitators for the inclusion of fertility care into reproductive health policies in Africa: a qualitative evidence synthesis	Uncover factors that inhibit and enable the inclusion of fertility care in African reproductive health policies	What factors enable or inhibit the inclusion of fertility care in reproductive health policies in Africa?	
Chapter 6: Availability of services for the diagnosis and treatment of infertility in The Gambia's public and private health facilities: a cross-sectional survey	<p>Map infertility services in the public and private health facilities in the Gambia</p> <p>Examine the collection and transmission of infertility data throughout the health system</p>	What infertility services are available in the public and private health facilities in The Gambia and how data on infertility are collected and shared within the Gambian health system?	Explore the existing availability of fertility care and infertility services in the health facilities and investigate factors predicting the successful implementation of fertility care in the Gambian health system
Chapter 7: <i>"It's about time"</i> : policymakers' and health practitioners' perspectives on implementing fertility care in The Gambian health system	Explore and assess whether the perceptions of Gambian stakeholders on fertility care implementation align with the current health policy and system	How do the current health policies assist the implementation of fertility care and align with the requirements of the health system?	

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2. Chapter: Background

“The different needs in reproductive health are simultaneous and consecutive related needs. People cannot be healthy if they have one element of the reproductive health package but miss others”

(Fathalla, 2017, p. 486)

This chapter provides an overview of how infertility is positioned within SRHR.

Starting by retracing the historical developments that have facilitated the emergent recognition of fertility care as a reproductive right, it also highlights challenges in including fertility care and infertility services into health policies and practice in low-resource settings. The chapter illustrates how and why involuntary infertility is still a neglected global reproductive health topic for many health systems around the world, especially for countries in the Global South, but it also provides examples where fertility care policymaking became an opportunity to include infertility in the national health legislation.

2.1 SRHR and Universal Health Coverage

SRH encompasses all interventions of both the sexual and reproductive sphere, and was proclaimed during the International Conference on Population Development (ICPD) in 1994 to be *“a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capacity to reproduce and the freedom to decide if, when and how often to do so”* (Selassie, 1995, page 9). During the same conference, another concept was developed, that of SRHR, and the ICPD is considered the turning point of SRHR, having established and recognised sexual and reproductive health as a

universal human right. The SRHR concept is based on international human rights law and denotes the rights to have information, services and autonomy for SRH (Starrs *et al.*, 2018).

Figure 2.1, that is a reduced size copy of page 9 of the background document for the Nairobi summit on ICPD25 (Butler *et al.*, 2019) argues that SRHR require a *life-course* approach, where all the identified interventions are provided, continuity and quality of care are ensured, and access to and the provision of health services are equal and appropriate to the varying requirements of men, women, and adolescents throughout their lives (van Look, 2015). The *life-course* approach provides a framework to guarantee that all interventions to improve SRH are identified and eventually available within the health system. It also emphasises the need for a comprehensive and holistic attitude where interventions are maintained throughout the entire life span, to create a healthy sexual and reproductive life. Moreover, it highlights the importance of establishing solid foundations in childhood as these could have an impact in adult life reproductive outcomes (Mishra, Cooper and Kuh, 2010; van Look, 2015; Boydell *et al.*, 2019).

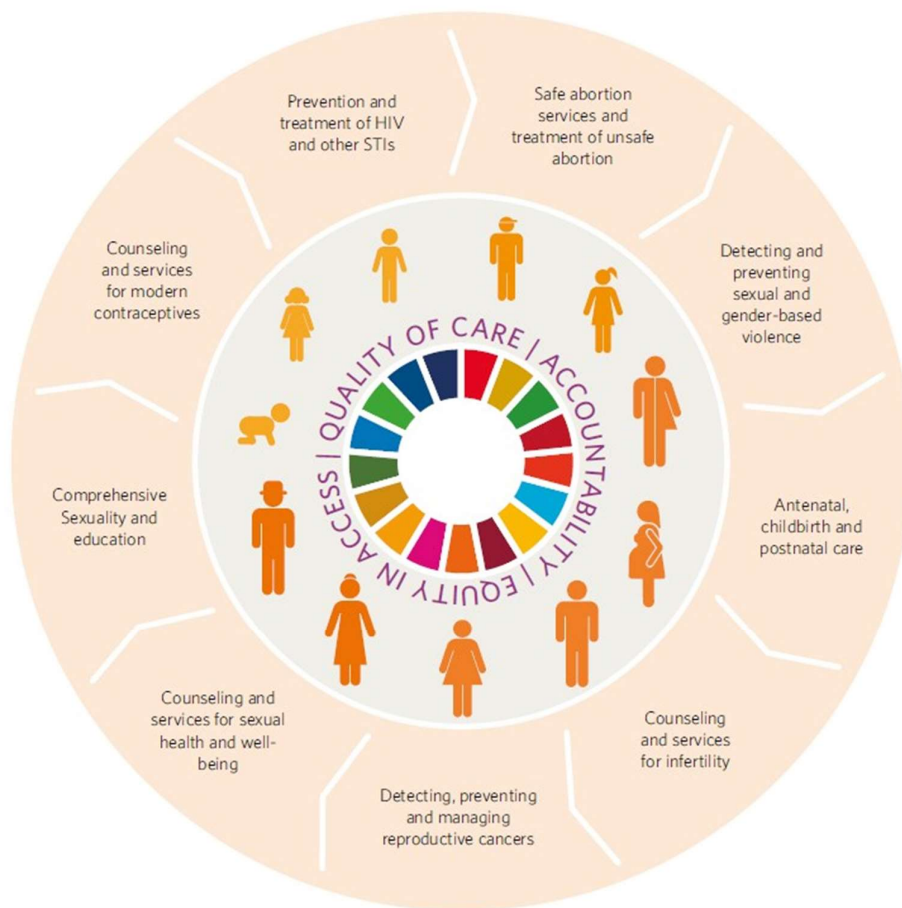


Figure 2.1: Essential Package of Sexual and Reproductive Health and Rights Interventions

In the Global South, many SRH interventions have focused on maternal and child health outcomes in order to reduce morbidity and mortality related to pregnancy and childbearing (Lassi *et al.*, 2013) rather than allowing a fair distribution of services to help to conceive or decide if a pregnancy should be carried to term (Johnston and Zacharias, 2017). But interventions that focus on SRH before conception, after the end of the reproductive age, and in case of fertility concerns, are equally

important and are part of what is called reproductive autonomy⁶ (Berro Pizzarossa, 2018; Aagaard-Hansen *et al.*, 2019).

SRHR should not be considered a luxury but a part of the basic healthcare services that health systems must offer to their citizens (Starrs *et al.*, 2018).

Although, some of these public health systems are able to offer all the interventions included in the SRHR package, political, economic, cultural, and social barriers still exist to universal access to SRH in the Global South, particularly for interventions such as infertility and abortion (Akazili *et al.*, 2020). To better understand why, an historical overview of SRHR is provided in the paragraphs below.

Prior to 1994, SRH was rarely considered as a right and for more than 20 years was subjugated by so-called 'demographic control', in which population policies, and reproductive health interventions were designed to control the growth of the World population (Bracke, 2021). This demographic perspective has completely masked the 'rights' in SRHR for years, and has resulted in controversial interventions such as forced abortions and mass sterilisations (Lawrence, 2000). Some of these practices are, immorally and unethically, still used to control the fertility of women (Holt, 2012; Li, 2012; Bagcchi, 2014; Bakare and Gentz, 2020). Because human rights issues were also unfamiliar to most health policies in the 1980s and 1990s, they systematically excluded vulnerable groups such as adolescents and minorities. Similarly, gender inequalities in making decisions on sexual and reproductive life were disregarded (Sen and Govender, 2015).

During the first International Human Rights Conference in Tehran in 1968, an initial attempt to recognise SRH as a human right was proposed. Tehran is

⁶ The power to make and action decisions about reproduction. Enabling people to fulfil their reproductive needs.

noteworthy because it served as the initial point for an international agreement for women to exercise their right to reproduce in autonomy. From that moment on, the emphasis on SRH rights started to gain importance and in 1974, at the World Population Conference in Bucharest, the paradigm shifted from the domain of demographers to the reproductive rights era: this was perhaps the turning point for the reproductive health of women and girls that has resulted, 20 years later, in the ICPD statements and action plan (UNFPA, 1994), and has created the foundations for the development of the essential package of SRHR interventions, and both the Millennium and Sustainable Development Goals (Figure 2.2).

Historical Development of SRHR

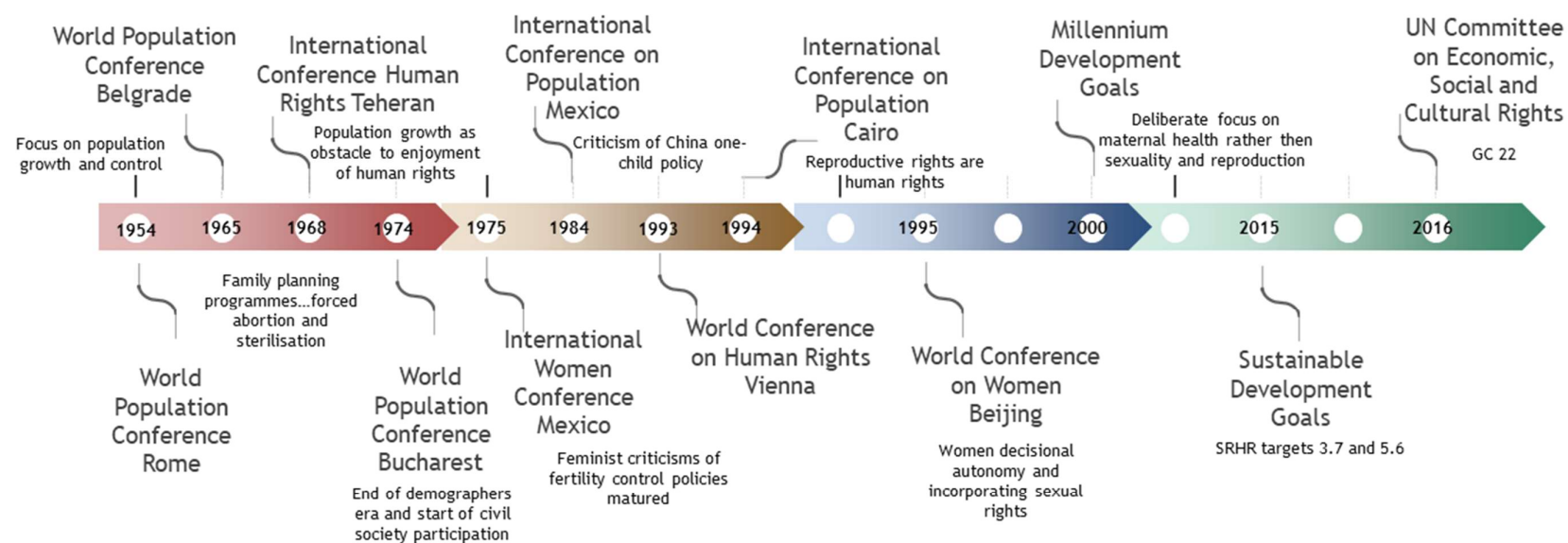


Figure 2.2: Historical Development of Sexual and Reproductive Health and Rights ⁷

⁷ Figure created by the author from Berro Pizzarossa (2018). Here to stay: the evolution of sexual and reproductive health and rights in international human rights law. *Laws*, 7(3), p. 29

Despite a unilateral consensus about the importance of SRHR in the global and international development health agendas, researchers agree that in the countries of SSA, resources dedicated to SRHR are still inadequate and the commitment of politicians remains limited (Glasier *et al.*, 2006; Undie *et al.*, 2010).

Oronje *et al.* (2021) pointed out, for instance, that the lack of an agreed definition for SRH and SRHR is one of the reasons why these are diversely represented in policies. This disagreement, at an international level is one of the constraints that impede the implementation of national policies and the realisation of SRH rights (Oronje *et al.*, 2011). If SRH is often defined as a package of interventions encompassing the ability to achieve both a safe sex life and reproductive choices, then the definition of SRHR means the protection of a variety of rights, including those of autonomous decision, and the right to receive appropriate information and services. This includes the rights of people of all ages, gender identities, sexual orientations, as well as those who living with HIV (Standing *et al.*, 2011). In societies where these rights are currently neglected, the full inclusion and implementation of SRHR in health policies is challenging.

The global burden of SRH morbidities other than those occurring during pregnancy and childbirth, has a significant impact, particularly financial, on the lives of men and women (Santhya and Jejeebhoy, 2015; Temmerman *et al.*, 2015; Kassa *et al.*, 2018). To care for their own sexual and reproductive health, women may incur exorbitant medical costs, and this can lead to a significant loss in productivity and household incomes. Preventing catastrophic expenditures for health is one of the aims of the Universal Health Coverage (UHC) which seeks to ensure no person or community is denied access to necessary healthcare due to lack of funds. Within the

UHC concept, which SRHR is an integral part and major component, a whole range of specialised healthcare services are provided, ranging from health promotion to prevention and treatment (Kutzin, 2013).

To avoid financial hardship for patients accessing SRH services, funds for the expansion and improvement of SRH care must come from a number of sources, including national governments, international agencies, non-governmental organisations, patients, and their families (Sully *et al.*, 2020). In countries where health burdens are high and national budgets are overstretched, such as the case of many SSA nations, partnerships with external financial donors may be required in order to improve access to SRH care (Akazili *et al.*, 2020).

Needless to say, different countries may use different financing mechanisms, but the goal of achieving UHC – a concept commonly embedded in the current discourse on health systems strengthening remains the same, and aims to ensure that all the people in need receive care without facing financial ruin (Hepburn *et al.*, 2021). This is also very true for services related to SRH despite arguments pointing out that the progress towards UHC may not necessarily be enough to achieve universal access to SRH services if the determinants of health and other barriers to care such as cultural norms, restrictive laws and policies, weaknesses of the health system are not addressed (Kowalski, 2014; Sundari Ravindran and Govender, 2020). However, countries in the Global South such as Thailand, succeeded in increasing countrywide access of almost all SRH services with an extensive policy reform, the introduction of an expanded financial protection scheme, with the increase of the primary health care (PHC) network, and with a considerable improvement in healthcare equity (Tangcharoensathien, Chaturachinda and Im-em, 2015).

In 2019, both the UN high-level meeting on UHC and the 25th anniversary of the ICPD occurred. These two events have stimulated the drive of politicians to further strengthen the links between UHC and SRHR, and have highlighted the importance of adopting an inclusive view for the SRHR (Butler *et al.*, 2019; United Nations, 2019). However, universal access to SRH and delivery of a broader UHC benefits package are not simple processes and require a sound health system and, among others, well-designed and a sustainable health financing mechanisms, where both public and private health sectors are properly integrated (Sundari Ravindran and Govender, 2020). For SSA countries, progress to UHC involves an increase in the national health expenditure and the need for prepayment and combined mechanisms in the financing of health care (Ara *et al.*, 2022). Yet, as mentioned previously, if barriers and determinants are not taken into account, even the best-established health insurance scheme may not automatically increase access to services, and challenges may arise for patients and providers.

2.2 SRHR and Health Systems: Challenges in sub-Saharan Africa

The recognition, protection, and fulfilment of women's and girls' rights determines how well the health system fulfils the demands of SRH (Sen and Govender, 2015). The rhetoric around universal SRHR has been discussed in many ways during the last 30 years, and despite some progress, the available literature provides evidence that only a few interventions within the SRHR essential package have been prioritised such as maternal, newborn and adolescent care, contraceptive services and HIV/AIDS prevention and treatment, among others (UNFPA, 2010; Gilby *et al.*, 2021). This disparity is further exacerbated in countries of the Global South where, similar to the USA and some European countries, abortion, comprehensive sexual

education, menstrual hygiene, emergency contraception, and fertility care are often contested, including their close association to sexuality and intimacy, restrictive laws, and particularly for fertility care, high-cost treatments. For these reasons, and many more that may be beyond the scope of this research, many of these interventions are often neglected or overlooked in policies and practices (Boydell *et al.*, 2019). In view of their social and cultural environment, some African governments, as well as governments in high-income settings, either avoiding to engage with these issues or they have adopted discriminatory approaches for policymaking and regulation of SRHR (Oronje *et al.*, 2011). This is somewhat contradictory because regulations and frameworks for SRHR in SSA exist, and were broadly recognised by African governments.

In fact, in 2005, the African Union approved the Continental Policy Framework on SRHR, and the following year, adopted the Maputo Plan of Action (MPOA) for the Operationalisation of the SRHR Policy Framework, with the intention to achieve universal rights for SRH in Africa. The plan was a "*short term plan for the period up to 2010 built on nine action areas: integration of sexual and reproductive health (SRH) services in primary health care (PHC), repositioning family planning, youth-friendly services, unsafe abortion, quality safe motherhood, resource mobilization, commodity security, and monitoring and evaluation*" (The African Union Commission, 2016, page 2). Another crucial element of the MPOA was to support South-South cooperation, for the attainment of both the ICPD programme of action and the Millennium Development Goals (MDG). In July 2016, the African Union renewed the MPOA for the period 2016 – 2030. This new plan emphasises the universal access to comprehensive SRH services in Africa, and strengthens the

foundations of the Sustainable Development Goals (SDG), particularly Goals 3 and 5 (Barot *et al.*, 2015). In both versions of the MPOA (2006 and 2016), prevention and management of infertility is included.

Despite the availability of a sound framework for African SRHR, Hepburn *et al.*, (2021) recently investigated the inclusion of SRHR interventions in the health systems, noting that the great majority of low and middle-income countries (LMIC) do not offer the entire set of essential SRHR interventions, with infertility management and comprehensive sexual education being the least commonly available interventions, contraposed with services for maternal and neonatal health, contraception, and HIV/AIDS. Unsurprisingly, these views are consistent with the current - and past - trends of priorities within the field of SRHR (Hepburn *et al.*, 2021) but they are still missing the other domains of the SRHR such as reproductive freedom for minorities and LGBTIQ+ community.

Furthermore, Kaiser *et al.*, (2021) noted that progress to deliver the highest standard of SRHR is still extremely slow, with low standards in SRH that continue to be detrimental to the poor, particularly those in the Global South (Kaiser *et al.*, 2021). Moreover, policymakers around the globe have to make crucial decisions on which services should be first prioritised and expanded, and which criteria to use for classifying interventions. According to the WHO, health systems should prioritise cost-effective interventions as a practical approach to rank health services (Jamison *et al.*, 2006). However, in applying this recommendation, some SRHR interventions, for example infertility care, could by default be excluded from policymaking processes, due to the low priority and high cost for treatments (Pennings, 2008).

Another challenge for SSA health systems is given by the operationalisation of SRHR interventions. Studies have reported that despite having policies covering SRHR, health systems often fail to deliver during the implementation phase (Goicolea, Sebastián and Wulff, 2008; Germain *et al.*, 2015), and this is particularly true in countries where SRH prohibitive laws are in place (e.g., anti-abortion regulations, contraceptives only available for married women, etc.) and where governments are hesitant to enact rights-based legislation in the field of SRH (van Look, 2015). Furthermore, the primary constraints for implementing the SRHR package include the absence of political engagement, will and leadership, lack of funding dedicated to SRHR programmes, and an adverse societal framework of women's RH issues that is often controlled by men (Oronje *et al.*, 2011).

Setting the agenda for SRHR is, furthermore, a difficult commitment for some countries. In her study, Gilby *et al.* (2021) identified how in recent years, opposition to SRHR has increased in international forums, in addition to the escalation of religious and extreme right-wing politics, and the progressive disappearance of the wording SRHR in favour of the use of words such as motherhood and parenthood. This has the potential to impact greatly on international and national policymaking, and practice for SRHR, and to shift the international attention toward "*traditional family-base language*" instead of women's health, SRH rights, and gender equality (Gilby *et al.*, 2021). The recent ruling of the US Supreme Court to reverse *Roe v. Wade* is another clear sign of how little liberty women have to choose freely their reproductive rights (Coen-Sanchez *et al.*, 2022). The disappearance of SRHR from the global health vocabulary reverses more than 50 years of advocacy by the feminist movement and civil society, and could be responsible for the harm (and

death) of many more women if comprehensive sexual education, abortion, access to modern contraceptives, and fertility care are no longer discussed, defended or included in the essential SRHR package (Moore, 2022). Nevertheless, strategies could be put in place to overcome some of these challenges. In applying SRHR as a *life-course* approach, policymakers may be able to develop national health policies addressing SRH needs and rights, strengthening their health systems, and re-positioning the SRH needs of women and young people at the centre of the health agenda.

Despite health systems are complicated and complex ecosystems, as a result of changes in epidemiological and demographic trends, policy landscapes and shifting priorities (Savigny and Adam, 2009; Mounier-Jack *et al.*, 2014; Sen and Govender, 2015), also ranking and prioritisation of SRH interventions have changed. In case of fertility care, however, despite the increased demand in services, many health systems in LMIC were not able to adapt, and addressing infertility remains a challenge in these settings.

2.3 Fertility Transition

To better contextualise infertility in the SSA landscape, an explanation of the current fertility rates is necessary.

Levels of fertility vary by country, and are affected by the economic, social and health environment, as well as by variables such as women's age (Nargund, 2009; Vollset *et al.*, 2020). However, a vast body of literature has emphasised the importance of education and fertility, particularly for women, stating that *"educational attainment is not just one of many socio-economic factors that matter...[it] is the single most important source of empirically observable population*

heterogeneity..." (Lutz and Skirbekk, 2014, p. 1). It was suggested that several mechanisms impact the relation between women's education and their fertility, including an increased autonomy in making decisions for themselves and their families, knowledge about reproduction and contraception, prospects of income, and increasing childbirth opportunity costs (Kravdal, 2002).

Further available evidence suggests that countries that are economically more stable, where women have access to higher education, participate in the workforce and where contraception intake is higher, have lower fertility rates than countries confronted with economic challenges and lower female empowerment and literacy (Götmark and Andersson, 2020; Kebede, Striessnig and Goujon, 2022).

Prosperity has heavily influenced fecundity rates in the last 50 years (Bongaarts, Frank and Lesthaeghe, 1984; Bongaarts and Hodgson, 2022). Giving women access to property rights, for example, was significant for empowering them to make choices concerning their fertility, not because women change their views on how many children they want, but because *"it makes her views count more"* (Duflo and Banerjee, 2011, p.124).

Over the last 200 years, the events described above have been experienced by the so-called industrialised countries. The same process has also been observed in regions of the Global South since 1950. It is termed *demographic transition* which theorises and describes *"a shift from high birth rates and high infant death rates in societies with minimal technology to low birth rates and low death rates in societies with advanced technology, education and economic development"* (Notestein, 1945, p. 41).

In SSA, levels of fertility started to decrease approximately 30 years ago. Although this decrease has been relatively slow compared to other regions of the world (Figure 2.3), in the last ten years, seven of the ten countries with the highest recorded reduction in fertility prevalence were located in SSA (United Nations - DESA, 2020). The reasons for which SSA has not yet ended its fertility transition are multiple and must be analysed historically.

First, in the post-colonial era, due to the low population density, African nations did not view high fertility and population expansion as harmful, which was also supported by the availability of land – and as a by-product – availability of food (Bongaarts, 1996). Second, there was optimism that in the post-colonial era, independence would allow economic development. In fact, many governments in SSA saw in larger populations the potential wealth of their countries (Watkins and Hodgson, 2019). Finally, competition for political power, strongly supported by ethnic groups, saw that with larger families rather than smaller ones, there was a more favourable terrain to attain top positions in government (Eifert, Miguel and Posner, 2010).

Although the fertility change in SSA is not yet completed, the transition is evident in that the total fertility in the 1950s of more than six children per woman reached 4.6 children per woman in 2020 (The World Bank, 2022). This figure is projected to fall further, to 2.16 by 2100, slightly above the replacement level⁸. Despite the projections by the United Nations estimating that the total population in SSA will grow to more than 3.5 billion people by 2100, the fertility rate of African

⁸ Replacement level: the average number of children born per woman—at which a population exactly replaces itself from one generation to the next, without migration.

women has already begun its descent, and the majority of countries are expected to reduce their total fertility rate and complete their fertility transition by the end of the century.

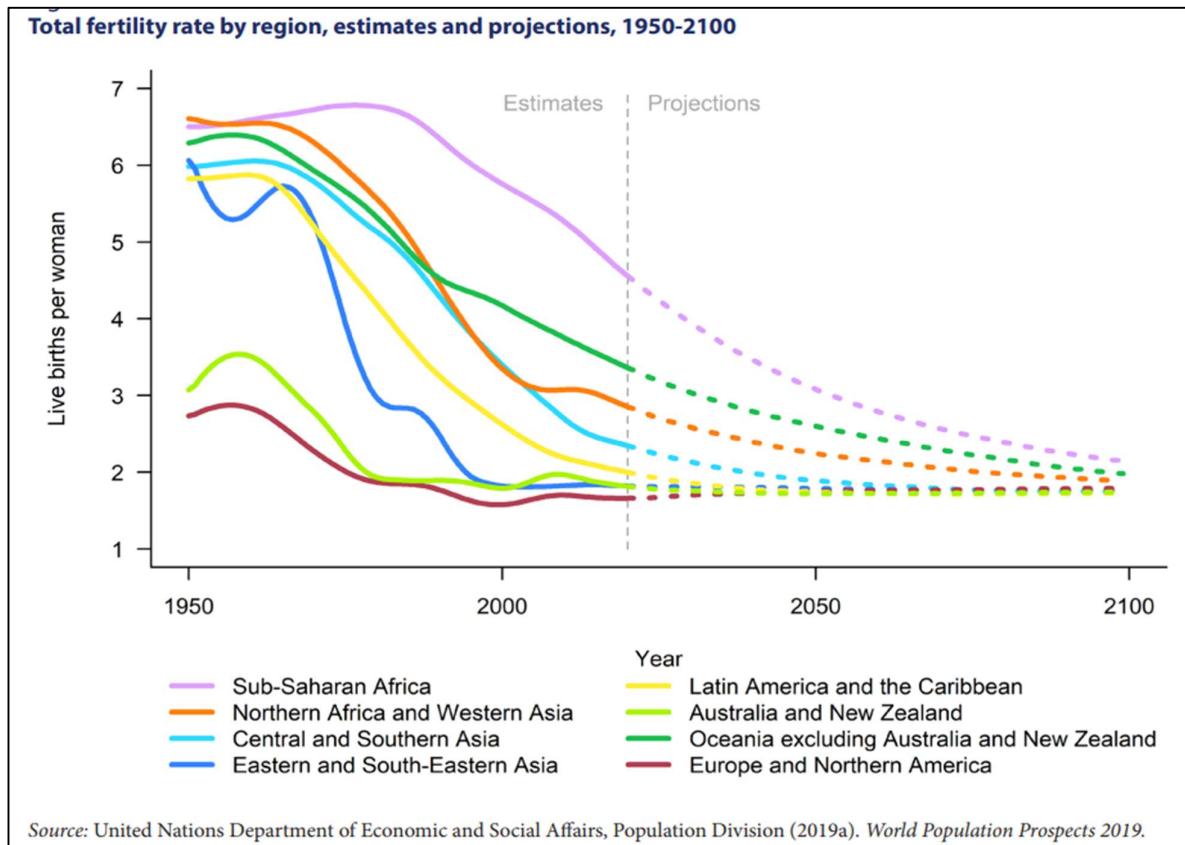


Figure 2.3: Probabilistic Projections of Total Fertility using Fertility Estimates by Region

(United Nations - DESA, 2020)⁹

In this context, and considering the transition from high to low rates of total fertility, living with infertility assumes a new undertone for women and men in SSA. In fact for these couples, it will be even more important to become parents considering

⁹ World Fertility and Family Planning (2020), UNDESA. Copyright © United Nations 2020. Figure reproduced with permission under a Creative Commons license (CC BY 3.0 IGO) <http://creativecommons.org/licenses/by/3.0/igo/>

their widespread desire for large families (Amos, 2013; Bongaarts and Hodgson, 2022).

2.3.1 Definition(s) of Infertility

Based upon the latest international classifications, infertility is defined by the WHO as "*a disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner. It generates disability as an impairment of function*" (Zegers-Hochschild *et al.*, 2017, p. 1795). Infertility is commonly associated with multiple terms that, in literature and in the media, are often used interchangeably, including subfertility, childlessness and sterility. The former is a term now rendered obsolete with the agreement that subfertility "*does not define a different or less severe fertility status than infertility, nor is subfertility a condition that exists before infertility is diagnosed*" (Zegers-Hochschild *et al.*, 2017, p. 1788). Childlessness has been defined as a condition in which an individual, voluntarily or involuntarily, is not a legal or societally-recognised parent to a child, or has had all children die, and sterility denotes a permanent state of infertility (Zegers-Hochschild *et al.*, 2017, p. 1791).

Many scholars, included Larsen (2005), Gurunath *et al.* (2011), Mascarenhas *et al.* (2012), and most recently Polis *et al.* (2017), emphasised that the lack of consistency in the definitions of infertility is one of the main reasons for non-comparable data between studies. While different definitions may be suitable for different research goals (clinical vs. demographic vs. epidemiological), this variability is a contributor to the extensive range of estimates currently available (Jacobson *et al.*, 2018). One of the largest differences lies among the definitions of infertility that

are clinically-focused and those that are demographically-focused. Clinical definitions aim to identify early fertility-related problems at an individual level, in order to start treatment as soon as possible, but include little or none of the demographic aspects which are important for monitoring purposes at a population level. Conversely, the demographic definitions are used to estimate infertility at a population-level, through the measure of its magnitude, distribution, and underlying causes, and relying on data usually collected through household surveys rather than from clinical practice. Both definitions are, however, important and necessary for creating and delivering policies and services that serve infertile individuals and couples in the best way possible (Table 2.1) (Larsen, 2005; Gurunath *et al.*, 2011; Mascarenhas *et al.*, 2012; Polis *et al.*, 2017).

Table 2.1: Definitions of Infertility¹⁰

Clinical	Demographic	Epidemiological
<ul style="list-style-type: none"> - Infertility is a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse¹¹ - A disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse or due to an impairment of a person's capacity to reproduce either as an individual or with his/her partner. Infertility is a disease, which generates disability as an impairment of function (Zegers-Hochschild <i>et al.</i>, 2017) 	<ul style="list-style-type: none"> - An inability of those of reproductive age (15-49 years) to become or remain pregnant within five years of exposure to pregnancy (DHS survey) - An inability to become pregnant with a live birth, within five years of exposure based upon a consistent union status, lack of contraceptive use, non-lactating and maintaining a desire for a child (Mascarenhas <i>et al.</i>, 2012) 	<ul style="list-style-type: none"> - (for monitoring and surveillance) Women of reproductive age (15–49 years) at risk of becoming pregnant (not pregnant, sexually active, not using contraception and not lactating) who report trying unsuccessfully for a pregnancy for two years or more¹²

¹⁰ WHO <https://www.who.int/reproductivehealth/topics/infertility/definitions/en/>

¹¹ World Health Organization (WHO). International Classification of Diseases, 11th Revision (ICD-11) Geneva: WHO 2022

¹² World Health Organization (WHO) Reproductive health indicators for global monitoring: guidelines for their generation, interpretation and analysis for global monitoring. Geneva: World Health Organization 2006

The difference between clinical and demographic definitions, and by consequence the true statistical representation of infertility, is challenging. First, the lack of agreement between academics and clinicians leads to how the results indicating reproductive “success” are presented (e.g., clinical pregnancy *vs.* live birth). Further, the prevalence of infertility is usually estimated indexed on women, but fertility is impacted by the health of two people. For this reason, some women may be classified as infertile due to the infertility of their partner rather than their own, and this is further exacerbated in contexts where men do not request services for fertility care (Mehta *et al.*, 2016; Dierickx, Oruko, *et al.*, 2021). Some definitions are therefore better suited than others, depending on the aims of the research. For example, definitions based on visiting a doctor to seek medical care may not be appropriate in studies estimating ART cycles (Gurunath *et al.*, 2011; Mascarenhas *et al.*, 2012; Polis *et al.*, 2017).

Further classifications of the types of infertility includes primary and secondary childlessness. Specifically, **primary** infertility is defined as “*the inability to have any pregnancy*”, while **secondary** infertility is “*the inability to have a pregnancy after previously successful conception*”¹³. These additional definitions must be considered in estimating the prevalence of infertility because they have a differential impact in the life of couples – despite having essentially the same treatment protocols.

Due to the above mentioned and for clarity, the definitions in Table 2.1 will be used throughout the context of this research. The WHO adopted this terminology after consultation within different international actors and the

¹³ World Health Organization. International Classification of Diseases, 11th Revision (ICD-11) Geneva: WHO 2022

agreement to expand, standardise and harmonise a set of definitions for the sake of a consistent understanding of infertility (Zegers-Hochschild *et al.*, 2017). The definition of fertility care does not commonly include fertility interventions such as family planning or specific preconception care. In the context of this thesis, fertility care is a package of interventions aimed at helping and supporting people living with infertility that also include, but are not limited to, infertility services with a specific reference to biomedical treatment (Zegers-Hochschild, G Adamson, *et al.*, 2017).

Table 2.2: Definitions Applied to the Research

(Zegers-Hochschild, Adamson, Dyer, Racowsky, de Mouzon, *et al.*, 2017)

<i>Fertility care:</i> Interventions that include fertility awareness, support and fertility management with an intention to assist individuals and couples to realize their desires associated with reproduction and/or to build a family
<i>Infertility services:</i> services provided by a health facility including infertility diagnosis, management and treatment
<i>Fertility awareness:</i> The understanding of reproduction, fecundity, fecundability, and related individual risk factors (e.g. advanced age, sexual health factors such as sexually transmitted infections, and life style factors such as smoking, obesity) and non-individual risk factors (e.g. environmental and work place factors); including the awareness of societal and cultural factors affecting options to meet reproductive family planning, as well as family building needs
<i>Primary female/male infertility:</i> A woman who has never been diagnosed with a clinical pregnancy and meets the criteria of being classified as having infertility. A man who has never initiated a clinical pregnancy and meets the criteria of being classified as infertile
<i>Secondary female/male infertility:</i> A woman unable to establish a clinical pregnancy but who has previously been diagnosed with a clinical pregnancy. A man who is unable to initiate a clinical pregnancy, but who had previously initiated a clinical pregnancy

In summary, the lack of a clear definition can lead to variable estimates of infertility prevalence between and within populations, and may have an impact on policies and practice (Polis *et al.*, 2017). A deeper knowledge of the prevalence, incidence and causes of infertility enables data-driven policy creation, policy changes, monitoring, and interventions that could effectively contribute to the reduction of the burden of infertility.

2.3.2 Prevalence of Infertility

As seen above, measuring the prevalence of infertility is challenging due to a lack of agreement concerning its definition. However, in order to create evidence-based policies, it is essential to comprehend the scope and distribution of infertility (Mascarenhas *et al.*, 2012). Measuring infertility is a significant challenge for health systems. Comparability of estimations across research is restricted by various factors and variance in how infertility is defined and assessed. The difficulty exists firstly in the collection of data, but also in the analysis and use of data pertaining to infertility. While clinical studies, which focus on the causes of infertility and access to treatments, are the main source of infertility statistics, population-based surveys can be used to gauge the social burden and the possible demand for treatment¹⁴. For the purpose of fertility care policymaking and implementation, it is important to capture disaggregated national levels of infertility, because infertility management need to be centred following national trends, not international levels (Boivin *et al.*, 2007). In their 2010 study, Mascarenhas *et al.* undertaken a systematic analysis of 277 Demographic and Reproductive Health Surveys (DRHS), and showed that

¹⁴ https://www.measureevaluation.org/prh/rh_indicators/family-planning/fertility/percent-of-rh-service-site-users-counseled

approximately 49 million couples suffered from infertility around the globe in 2010. Half of them lived in SSA and Southeast Asia. Particularly, the study concluded that globally, 1.9% of women exposed to the risk of pregnancy suffered from primary infertility while exposure to secondary infertility was 10.5% (Figure 2.4 and Figure 2.5) (Mascarenhas *et al.*, 2012). Within SSA, a high concentration of infertility is present in the Central Africa region, the so-called *infertility belt* (Cui, 2010). Further analysis showed that over a 20-year period (1990-2010), the number of couples worldwide living with infertility had increased from 42.0 million to 48.5 million, mainly due to the growth of the population overall.

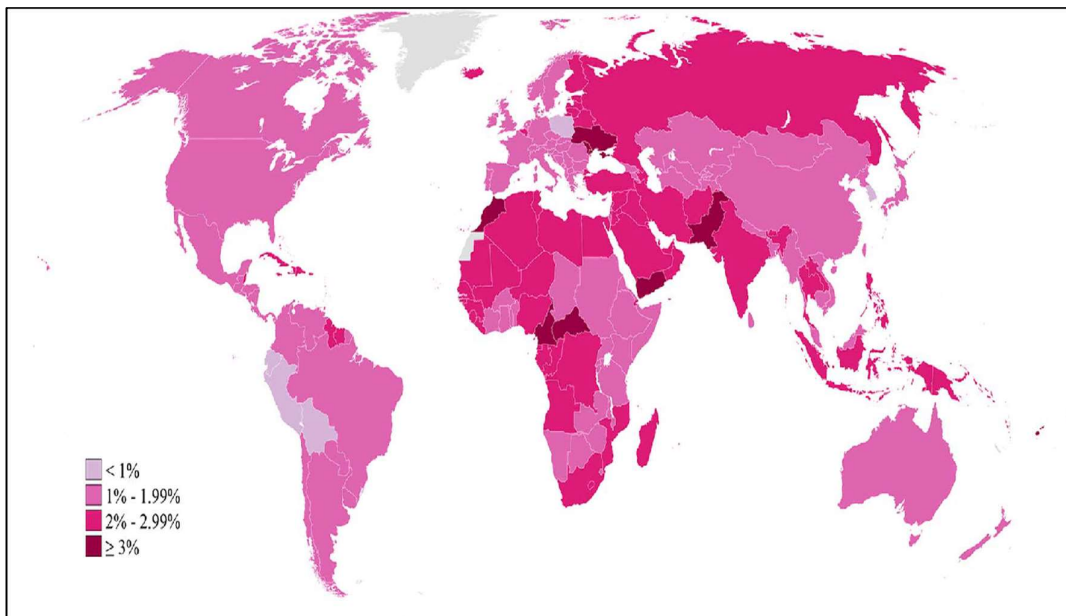


Figure 2.4: Prevalence of Primary Infertility Among Women Who Seek a Child in 2010¹⁵

¹⁵ Infertility prevalence is indexed on the female partner; age-standardized prevalence among women aged 20–44 years is shown

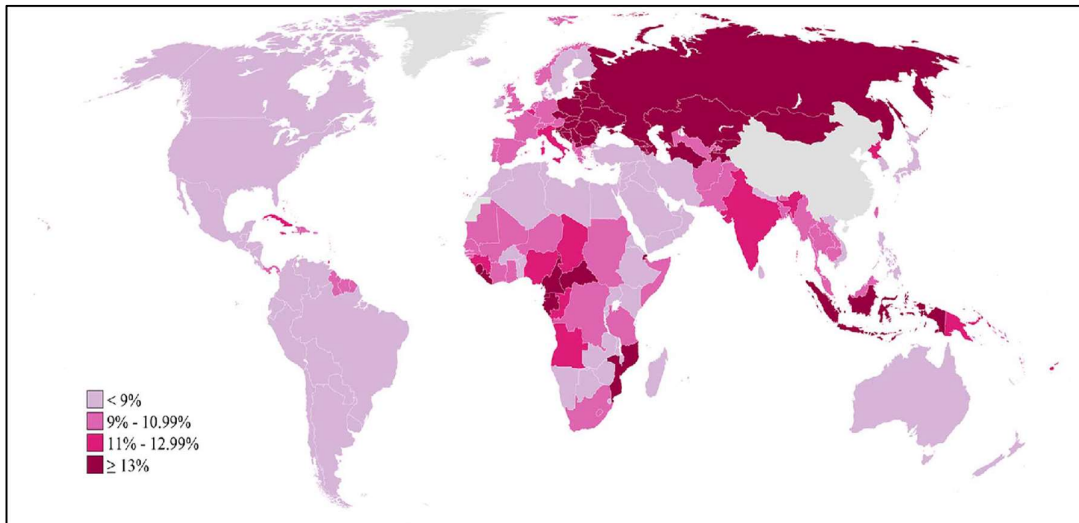


Figure 2.5: Prevalence of Secondary Infertility Among Women Who Seek a Child in 2010¹⁶

Prior to Mascarenhas' study, other scholars attempt to estimate the prevalence of infertility. Boivin et al. (2007) in their systematic review of 28 population surveys (worldwide data from 1977 to 2005) found that the 12-month prevalence of infertility fluctuated from approximately 7% to 9.3% in low income countries but these ranges were even higher in countries with better economies (3.5-16.7%). Lastly, a very recent systematic review and meta-analysis by Cox et al. (2022) of 133 studies revealed pooled 12-month infertility estimates¹⁷ of lifetime¹⁸ and period¹⁹ prevalence at 17.5% and 12.6%, respectively. This shows that one out of every six people experienced infertility in their lifetime (WHO, 2023).

Despite the figures above, some scholars have argued that the questions used to collect data in the demographic health surveys have some limitations. For

¹⁶ National, Regional, and Global Trends in Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys © 2012 Mascarenhas et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

¹⁷ Pooled estimate: An estimate obtained by combining information from two or more independent studies taken from populations believed to have the same prevalence.

¹⁸ The proportion of a population that, at some point in their life, has experienced a particular health event, risk factor or disease.

¹⁹ The number of individuals identified as cases during a specified period of time, divided by the total number of people in that population

example, to define infertility, the DHS uses behavioural indicators, such as the lack of a live birth in sexually active men and women who are not taking any form of contraception (Rutstein and Shah, 2004; Larsen, 2005). These criteria frequently rely on intervals longer than a year (e.g., two or five years) during which couples have not attained a live birth. Not using a homogeneous definition in term of duration, may have an effect on determining and treating clinical requirements. Moreover, because they are no longer sexually active as a result of divorce or abandonment brought on by infertility, women who suffered infertility for more than 12 months, may have been excluded in these definitions (Cox *et al.*, 2022).

Gurunath et al. (2011) have found that the participant characteristics gathered, including the age of the participants, the technique of data collection, and the outcomes examined, made it difficult to summarise infertility data across studies. Moreover, data on miscarriages and stillbirths are difficult to collect within population-based surveys, but they also account for infertility, since they do not produce a live birth (Larsen, 2005). Finally, scholars have debated whether the way in which these demographic surveys are designed might accentuate the gap between fertile and infertile and, inadvertently, exclude the latter from statistics. They described these individuals as "*the invisible infertile*" arguing that their omission from the statistics had consequently marginalised them from health systems (Fledderjohann and Barnes, 2018, p. 34). The use of indicators that focus solely on collecting infertility data in women can contribute further to their stigmatisation while also continuing to perpetrate the myth that only women are infertile. This may conceal real rates of infertility in the general population, specifically in males (WHO, 2006) and may further exacerbate gender inequalities

through perpetuating the idea that women are both to blame for infertility and responsible for 'fixing' the issue.

From a public health and health policy perspective, understanding the prevalence of a disease and estimating its impact on the health of the population could provide the background to re-allocate resources, and produce stronger health economic arguments (Barratt *et al.*, 2017). In the case of infertility, estimating its prevalence, and the associated risk factors, is crucial for capturing government interest in the matter and stimulate policy creation; additionally, it may be useful to encourage the international community to pay more attention to this neglected issue (Polis *et al.*, 2017). Studies have shown that grounded data can drive policymaking and policy engagement if backed up by subject experts and scientifically validated results (Brdarić *et al.*, 2020; Moutselos and Maglogiannis, 2020).

2.3.3 Aetiology of Infertility

Both female and male factors can contribute to infertility. Sometimes these factors compound together making the cause of infertility difficult to elucidate (Sharlip *et al.*, 2002; Isaksson and Tiitinen, 2004). **Female-factor** infertility can be attributed to a number of reasons, usually classified as related to endocrine factors (hormonal or immunological), factors related to the reproductive organs (vaginal, cervical, uterine, and tubal), and factors related to the age of the woman (Hanson *et al.*, 2017; Collée *et al.*, 2021). Women's age and endocrine factors are mostly associated with ovulation problems, with uterine fibroids accounting for reproductive organ-related factors. Many of these factors are often the cause of primary infertility (Guo and Segars, 2012). Tubal-factor infertility (TFI) is believed to be, by far, the most

common in women in SSA, and one of the main causes of secondary infertility (Abebe, Afework and Abaynew, 2020). The most likely source of tubal infection is STI, particularly those caused by bacteria such as *Neisseria Gonorrhoeae* or *Chlamydia trachomatis*, usually referred to as gonorrhoea or chlamydia infections respectively (Tsevat *et al.*, 2017). Both bacteria are treatable with antibiotics and preventable with protected sexual intercourse. In a systematic review, meta-analysis and meta-regression conducted on the WHO regional databases estimating the prevalence of gonorrhoea in a total of 147 studies, it was projected that infection was at 5.0% (95% CI 1.9% to 9.3%) in African settings. The mean prevalence was higher for populations with TFI (3.6%, 95% CI 0.9%–7.7%) and unexplained infertility (3.6%, 95% CI 0.0% to 11.6%) (Chemaitelly *et al.*, 2021). TFI is most commonly caused by salpingitis, an inflammation of the Fallopian tubes, linked to untreated and persistent infections. However, since most STI patients have minimal or no symptoms, they seldom visit a health facility for treatment, while others self-medicate or resort to indigenous treatments, and this accounts for the poor awareness and limited healthcare-seeking behaviour to treat the infections (Shewarega *et al.*, 2022). Moreover, if only one member of the couple is treated (e.g., the female but not the male) then the STI can be re-introduced post treatment.

Agarwal *et al.* (2015) in their systematic reviews, meta-analyses, and population-based studies paper, found that globally infertility due to **male-factor** ranged from 20% to 70% and the percentage of infertile men fluctuated from 2.5% to 12%. In SSA male-factor infertility ranged between 20% and 40% (Agarwal *et al.*, 2015),

mostly due to factors related to a poor-quality semen or blockages that prevent the delivery of sperm (Kumar and Singh, 2015).

Congenital or acquired abnormalities, usually identified in low sperm count, motility and shape (morphology) play an important role in semen quality. In addition, infections and cancer also account for the impairment of male fertility (Jequier, 2000). Aran et al. (1999) discussed that men with low sperm count ($<2\text{mil/ml}$)²⁰ or no sperm in the ejaculate (*azoospermia*²¹) show an increase in DNA damage and chromosomal abnormalities. This damage has higher risk of transmitting genetic aberrations to the progeny and potentially influence the embryo survival rate (Aran *et al.*, 1999). In an review paper, Barbăroșie and colleagues cited that approximately 40% of couples have a male element contributing to their infertility (Barbăroșie, Agarwal and Henkel, 2021). The root causes of male infertility are multifaceted, with idiopathic factors accounting for 20% of cases. Idiopathic male infertility affects roughly 37 million men due to male oxidative stress (Agarwal *et al.*, 2019, 2021). Idiopathic male infertility is thought to have potential pathogenic causes, including endocrine disorders as a result of genetic anomalies, pollution and DNA damage (Busch *et al.*, 2015; Agarwal *et al.*, 2019). In contrast, unexplained male infertility is defined as infertility of unidentified causes with normal semen parameters (Sabanegh and Agarwal, 2012).

In 2021, the WHO updated the 6th edition of its laboratory semen analysis manual that included geographical differences in sperm parameters. In order to studied these geographic variations in semen parameters, Feferkorn and colleagues

²⁰ WHO laboratory manual for the examination and processing of human semen, sixth edition. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO

²¹ *Ibid*

have retrospectively analysed the dataset collated to support the WHO semen analysis manual. Data from 11 studies, including 3,484 participants across 5 continents, shown that semen samples from Africa had much lower semen volume and concentration than samples from other continents. The overall number of motile sperm showed also a similar trend (Feferkorn *et al.*, 2022). This highlights, once more, how male-factor infertility contributes substantially to the total infertility rate in African couples, but remains an overlooked research topic in these settings.

In some instances, involuntary childlessness is a couple's issue, in that it is due to factors in both the female and male. Research on **mixed-factor** infertility has focused on factors that represent potential causes of childlessness. Almost 40% of all couples living with infertility show a combination of factors (male and female), though roughly 15% of couples with infertility may not show any difference in their fertility (Brugo-Olmedo, Chillik and Kopelman, 2001). Finally, 30% of couples who cannot conceive without a recognisable cause are diagnosed with unexplained infertility (Ray *et al.*, 2012). The current unavailability of agreed international guidelines to investigate and diagnose female and mixed infertility is noted. In this regard, the most recent clinical guideline for the management of the infertile couple was created in 1993 and since then, never updated (Rowe *et al.*, 1993). The WHO is currently developing new guidelines on the diagnosis and management of mixed infertility.

As mentioned above, in women and men, the role of STI in the development of secondary infertility is significant (Bayu *et al.*, 2020). In SSA particularly, their contribution to the permanent damage to the reproductive tract is well-known (Dhont *et al.*, 2011; Mbah *et al.*, 2022). The prevention of STI-related infertility, a

highly cost-effective intervention (Mayaud and Mabey, 2004; Otu *et al.*, 2021) requires public health actions and approaches addressing risk behaviours with information, communication and education (IEC) programmes that start in school and address, among others, age of first sexual intercourse in young people, risk of multiple sexual partners, adolescent pregnancy, skilled birth attendance and post-abortion care (Nash *et al.*, 2019; Yakubu *et al.*, 2019; Wilkins *et al.*, 2022). A meta-analysis of 2,166 randomized controlled trials (RCT) conducted in 2016 and published by the Cochrane Database of Systematic Reviews, revealed that there is little evidence suggesting sex education programmes alone can effectively reduce the incidence of STI. Yet, interventions focusing on keeping girls at school through incentives (e.g., free school uniform or small cash payments) may delay the age of first sexual encounter and potentially reduce STI, unintended pregnancy, and theoretically infertility (Mason-Jones *et al.*, 2016).

In the past, some scholars have additionally pointed out how resource-poor countries should give sole precedence to the prevention of infertility, for example managing STI, rather than allocating resources toward the treatment of infertility, often a highly sophisticated and expensive approach (Okonofua, 2003). Though the preventative approach of STI and the management of abortion and post-partum infections is paramount to potentially prevent infertility (Akande, 2008), consideration for those individuals who are already infertile or are living with non-infectious infertility must occur. Using as a comparison the example of HIV/AIDS, in the past years, health systems and the international community have rightfully prioritised antiretroviral therapy to prevent the transmission of the HIV virus, and have allocated great amount of resources to stop the HIV pandemic (Schneider *et*

al., 2016). Efforts were made to address the fight against HIV in its totality, from the prevention and the treatment fronts. If only preventative services had been provided, the spread of HIV and its progression into AIDS, would have very likely continued unabated. Infertility is not as deadly as AIDS but in the context of SSA, some scholars have reported similar social, emotional and psychological significance, and both conditions carry a high level of stigma (van der Spuy, 2009; Upton and Dolan, 2011; Pratt *et al.*, 2021). Moreover, by reducing fertility, consuming public health resources, and posing challenges to accessing fertility treatment, the HIV/AIDS pandemic has further aggravated the issue of infertility, particularly in SSA (Dyer, 2008). Further, the stigmatisation of these two condition can cause great suffering and socio-economic hardship, especially among women but also among men. Additionally, infertility is a risk factor for the acquisition of HIV and vice-versa. Often, when infertility is suspected, both sexes feel compelled to 'test' or prove their fertility through extramarital affairs; this increases the risk of STI and exacerbates the issue of infertility (Fledderjohann, 2012; Tabong and Adongo, 2013).

Finally, to resolve tubal-factor and male-factor infertility, advances in medicine have enabled the use of technology to medically assist reproduction (Choe, Archer and Shank, 2022). These assisted reproductive technologies or ART which are usually high cost, are some of the more controversial points in the low priority that fertility care occupies in SSA, and persist in being a challenge for resource-constrained national health budgets.

2.4 Are Assisted Reproductive Technologies in SSA Really Needed?

"The most important thing in life is having a child. Nothing is more special than a child"

Sir Robert Edwards

(British physiologist and Nobel Prize for the development of *in vitro* fertilisation)

As mentioned in the previous paragraph, one strategy to treat infertility, and potentially achieve a live birth, is through a group of high-end medical procedures known as ART. The most common ART method is *in vitro* fertilisation (IVF) developed in the 1970s by Sir Robert Edwards and Prof. Patrick Steptoe (Edwards and Steptoe, 1980). According to estimates, there have been more than 8 million births worldwide through IVF since 1978, enabling numerous couples to achieve parenthood (Dyer *et al.*, 2018). This technique is used to treat infertility in several nations of the Global North and has been used in the Global South as well, in recent years, including South Africa, Nigeria, Ghana, India and most of Latin America.

According to the latest studies, the global fertility services market was valued at US\$ 17 billion in 2021 and by 2026, it is anticipated it will reach a market size of US\$ 40 billion (Data Bridge Market Research, 2022). The average IVF/ICSI cycle cost depends to a certain extent to the context. In middle and high income countries, the cost spans from US\$ 800 in India to US\$ 12,513 in the United States with an average of US\$ 4,800 in the United Kingdom and South Africa (Teoh and Maheshwari, 2014). In Africa, Hörbst (2016) reported that IVF in Mali costed approximately US\$ 5,000, similar to that in the UK, and this high cost was mainly caused by the cost of the fees for international embriologists, and laboratory devices or medicines - most of them imported from Europe. Taken in the context of SSA, these costs are considered exorbitant and they reflect how IVF treatment

services are unevenly accessed. As a result, infertility has been referred to as the sickness of the wealthy, with treatments mainly available to few and privileged couples (Serour *et al.*, 2019).

However, without the assistance of industry in the creation and production of both fertility medications and technologies, reproductive medicine would be unattainable. Infertility products like gonadotrophins (GnRH) and GnRH agonists/antagonists are critical for successful ovarian stimulation and ovulation induction (Humaidan *et al.*, 2017; Karacan *et al.*, 2017). Using culture media and incubators, woman's eggs can be fertilised, and embryos can grow in vitro up to the blastocyst stage (Mantikou *et al.*, 2013). Gametes and embryo freezing has dramatically transformed reproductive medicine, giving patients who do not respond well to treatment and those who have important genetic abnormalities, the opportunity to achieve a pregnancy (Blockeel *et al.*, 2016; Rienzi *et al.*, 2017). Finally, the fertility industry is responsible for all these developments, which in return benefit patients but inevitably increase profit opportunities (D'Hooghe, 2017; Tannoury and Attieh, 2017). Undoubtedly, ART are sophisticated and expensive, requiring high levels of laboratory capacity, equipment, and expertise (Choe, Archer and Shank, 2022). Depending on the country income and health system capabilities, ART can be totally subsidised, partially reimbursed through co-payments from the patients, or exclusively funded with out-of-pocket (OOP) payments (Chambers *et al.*, 2014; Panitch, 2015; Njagi *et al.*, 2023). As already noted, the cost of these technologies poses a major concern in SSA countries, where for the most part, all ART performed are paid directly by the patients without any medical insurance neither public nor private. For Insogna and Ginsburg

(2018), health care disparity is exacerbated by the high costs of infertility treatment and the absence of universal insurance coverage requirements (Insogna and Ginsburg, 2018). However, this argument also considers if the expense of ART should be covered by the taxpayers and how society views reproduction. To answer this and comprehend if publicly funded ART are a potential reality in SSA, two concepts must be considered, that of the "*right to reproduce*" and that of the "*need to reproduce*" (Panitch, 2015).

Given the WHO and UN definitions of reproductive rights mentioned above, public coverage of ART is justified on the grounds of the right to reproduce (UNFPA, 1994). However, this definition does not consider the allocation of finite resources nor the ability of a society to afford it. Therefore, a more intriguing viewpoint is to consider reproduction as a fundamental need and while arguing for the satisfaction of a 'need', arguments for public ART might be better supported. The need to reproduce and found a family, also emphasise the importance of universal IVF coverage based on the significance of being able to fulfil the social role of parenthood, deprivation of which would cause great harm to those individuals that wish to become parents (Braybrooke, 1989).

While it is generally acknowledged that people have the basic right to procreate, there is less agreement on the social claim that they have the right to specific healthcare services, such as access to ART, in order to become parents (Mahowald, 1993). In fact, in certain policy settings, it is argued that people shouldn't be able to legitimately request medical treatment simply because they want to have a child, and this view is particularly exacerbated in the presence of specific conditions such as, for example, couples infected with HIV or in certain groups of

women and men (e.g. women who identify as lesbians, single women, women with disability, male homosexuals, etc.) (Peterson, 2005).

In order to answer the question of who (and why) should have access to ART, one must take equity and equality principles into account. Since equity calls for treating people fairly while taking into consideration their specific characteristics, equality calls for treating everyone the same regardless of their differences (Pennings, 2008; Ekechi, 2021). The human rights concept of not-discriminating on the basis of a person's disability prompts the question of whether the equity principle calls for specific public financial requirements for ART (Njagi *et al.*, 2023). Health systems that offer publicly-funded health services to restore reproductive abilities may assert that their duties in treating all eligible patients with equity have been fulfilled, and that they have no further longer ethical obligations to care for people who have health conditions that ordinary care cannot treat (Tannsjö, 2007).

The equity concept is thereby satisfied by treating diseases that lead to infertility, such as ovulatory abnormalities or Fallopian tube blockages. As a result, it is not uncommon for many nations to offer state-financed infertility services (diagnosis, medical and surgical procedures that restore fertility), but not to fund ART because those technologies cannot alter the underlying medical conditions causing infertility. This lack of access to ART, primarily brought on by its high cost, continues to be a significant equity issue, raising concerns about the reproductive rights of those with poor financial resources (Ombelet, 2011).

To support state-funded reproduction technologies, a recent study by Connolly *et al.* (2021) estimated the return on investment for every child born via

IVF, if public funding for ART was available. In South Africa, it was projected that based on the average cost of publicly funded IVF, and cost required to give birth to a child, the tax return on investment is 5.64-fold with "*positive economic benefits from public financing of IVF*" (Connolly *et al.*, 2021, p. 14). Despite the many limitations of this study, there is a window of opportunity for African governments to reflect on the benefits of a well-structured fiscal system, the economic return of investing in ART with public funds, and the promotion of a sustainable health system (Connolly *et al.*, 2021; Martins and Connolly, 2022). These findings are sustained by a WHO survey on SRH policies that have shown that in the African region less than 5% of ART treatment is publicly subsidised²². It can be asserted that ART are indeed much needed to help African couples to overcome their fertility concerns. The quality and availability of these technologies should have the same standards currently applied in countries of the Global North, and whatever low-cost initiatives are explored and considered, safety must be assured for all patients (Teoh and Maheshwari, 2014).

Nonetheless, the cost of ART is a challenge for health systems, and mostly so for those in the Global South, and this justifies, in part, the 'infertility inertia' of the policymakers – or lack thereof. While making efforts to create more reasonably priced ART for women and men in the Global South, both the European Society of Human Reproduction and Embryology (ESHRE) and The Walking Egg Foundation²³ have worked, along with other researchers, to promote accessible and affordable infertility treatments (Ombelet, 2011, 2013, 2015; Ombelet and Onofre, 2019). This

²² [https://platform.who.int/data/sexual-and-reproductive-health-and-rights/national-policies/srh/financial-subsidy-for-assisted-fertility-services-\(public\)](https://platform.who.int/data/sexual-and-reproductive-health-and-rights/national-policies/srh/financial-subsidy-for-assisted-fertility-services-(public))

²³ www.thewalkingegg.com

has resulted in promising low-cost IVF initiatives that have been developed with encouraging results (Van Blerkom *et al.*, 2014). These low-cost initiatives include simplified self-testing semen analysis tools (Kobori, 2019; Yoon *et al.*, 2020; Onofre *et al.*, 2021), mild ovarian stimulation protocols (Nargund, Datta and Fauser, 2017), and 'one-day' diagnostic for STI (Ombelet and Campo, 2007).

Despite these low-cost initiatives, that are not yet widely available, the high cost of ART and a rapid increase of private IVF clinics in SSA is cited by some scholars as having an impact on access to health care (Dhont *et al.*, 2010; Hörbst, 2016; Hörbst and Gerrits, 2016). Moreover, the upsurge of private IVF clinics in the SSA continent is somewhat unregulated, with scarce involvement of the public health sector and with an inconsistent picture of how these clinics work and with what results (Dyer *et al.*, 2020; IFFS, 2022).

2.4.1 Effectiveness of Fertility Treatments

Fertility treatment has indeed revolutionised the way to procreate and has made possible for many people with infertility to have children (Edwards and Steptoe, 1980). However, despite the increasing success rate and the scientific advancements of those treatments, a portion of these individuals still struggle to become pregnant and for many of those achieving a pregnancy or a live birth remains an impossible task (Wyndham, Marin Figueira and Patrizio, 2012)(Nardelli *et al.*, 2014). Factors reducing the effectiveness of fertility treatments include: (i) female age; (ii) male factor infertility; (iii) lifestyle factors; and (vi) medical conditions (Cissen *et al.*, 2016). Specifically, female age is a significant factor affecting the success of fertility treatment. The natural decline in quality and quantity of eggs with age makes it harder to achieve a successful pregnancy, even with fertility

treatment (Wyndham, Marin Figueira and Patrizio, 2012). While female infertility is often the primary focus of fertility treatment, also supported by pronatalist views and the social norms that prescribes women to have children, male-factor infertility can also significantly reduce the chances of success (Agarwal *et al.*, 2019; Duvuru *et al.*, 2022). Lifestyle factors such as smoking, alcohol consumption, and obesity may reduce the chance to conceive, even during the treatment for infertility (Bala *et al.*, 2021; Carson and Kallen, 2021). Lastly, medical conditions such as endometriosis, polycystic ovary syndrome, and premature ovarian failure can also contribute to low effectiveness of fertility treatments (De Ziegler, Borghese and Chapron, 2010; Blumenfeld, 2020; Hodgson *et al.*, 2020). However, the provision of ART should not be the endpoint where efforts and answers are concentrated. In fact the socio-cultural, tradition norms, and patriarchal structures that established that women (and men) must procreate, are problematic (Gürtin, 2016). Ultimately, the fertility industry and pronatalist society often portray assisted reproduction as a means to achieve success in creating a family (Sperling and Simon, 2010; Birenbaum-Carmeli, 2016; Hiadzi, Woodward and Akrong, 2023). This portrayal is based on the societal expectation that having a child is a fundamental aspect of achieving success in life, particularly for women. The fertility industry, which includes pharmaceutical firms, clinics and medical professionals offering ART services, often markets these services as a solution to infertility, contributing to increasing the hope of those struggling to conceive. This marketing emphasises the success rates of ART procedures (often displayed as rates in clinical pregnancies rather than live births), promoting them as a reliable means of achieving pregnancy and parenthood without explaining the multiple factors that

contribute to the limited success of the fertility treatments. Studies from Ghana, shown that those who are unable to conceive without medical intervention may feel stigmatised and view ART as a means of achieving social acceptance (Sahinoglu and Buken, 2010; Asante-Afari, Doku and Darteh, 2022). This emphasis on success through ART can also have negative consequences. For example, the pressure to have a child using ART can lead to significant emotional and financial stress for those undergoing the procedures and perpetuating the idea that those who cannot conceive without medical intervention are somehow deficient (Chehreh, Samani and Taghinejad, 2013). Further, despite the available literature having shown a positive correlation between single embryo transfer in IVF/ICSI cycles and better obstetric and perinatal outcomes (Martin *et al.*, 2017; Ozmen, Tola and Karahasanoğlu, 2023; Rodriguez-Wallberg *et al.*, 2023), in African settings the practice of transferring multiple fresh embryos is still commonplace. This is linked to an increased rate of twin pregnancies that amplified the magnitude of neonatal mortality and perinatal complications such as preterm births and low weight at births (Elias *et al.*, 2020; Aftab *et al.*, 2021; Archary *et al.*, 2023). In SSA contexts, this can further exacerbate the costs for the health system in managing neonatal intensive care. In many countries, this specialist care is even unavailable (Ginsburg, Macharia and Ansermino, 2021; Kamala *et al.*, 2022). Giving the limitations of the above, fertility care should be approached in a more holistic way and not limited to ART and IVF because they are not the ultimate solution.

Lastly, ART failure rates should be presented to all impending parents during the first stages of the fertility journey to avoid disappointment, frustration and stress in case of unsuccessful results, and this potentially includes the

acceptance of a life without children, although embracing this option is still very challenging in some settings, including Nigeria and India and for certain couples (Ibisomi and Mudege, 2014; Boivin *et al.*, 2022).

In order to better understand utilisation, availability, and effectiveness of ART, the International Committee for Monitoring Assisted Reproductive Technologies (ICMART) started, in 1989, to collect worldwide data on ART. At the moment, 65 countries and over 2,500 fertility clinics around the world report information concerning ART to the committee. Having data available on global, regional and national levels creates visibility and impact and may influence policy creation for fertility care. Furthermore, data on ART utilisation has been suggested as a measure of both access to services and gender inequality. For example, the last ICMART report (2019) showed a strong correlation between gender disparity and the use of ART. Specifically, the greater the disparity between genders, the less ART are accessed (Dyer and Zegers-Hochschild, 2019).

In SSA, the provision and access to ART is reported to be very low by the recently created African Network and Registry for ART (ANARA) (Dyer *et al.*, 2020). According to estimates, the global need for ART rates at least 1,500 cycles per million people per year (MPPY). In 2014, SSA contributed to 1% (256,000 cycles) of the total 1,647,777 ART cycles reported globally. These figures showed the huge shortage (and underreporting) of ART services for couples living with infertility in SSA (Adamson *et al.*, 2018). ANARA has revealed that data concerning ART utilisation have started to be recorded from 18 African countries and more than 70 fertility centres. With a different degree of adherence and participation, data on

ART cycles are now reported from South Africa, Nigeria, Egypt, and Ghana as the biggest contributors to ART²⁴ data in Africa (Dyer *et al.*, 2020).

Regardless of what reported above by Dyer et al. (2018), it is hoped that ANARA will expand and that the data gathered throughout Africa will become more reliable, though the statistics from these African countries are likely to only partially reflect real ART usage. There is reason to expect that the gathering of information on the use of ART will assist in lessening the burden of infertility in Africa and render the invisibles infertile more visible, further reducing inequality and inequity in accessing fertility care (Dyer *et al.*, 2018).

ART utilisation is not the only indicator that can be used to assess infertility and fertility care. Other dimensions are needed, such as the number of first-line treatments, tolerability of cure, counselling, psychosocial factors (e.g., measure of stigma), quality of life, patient centeredness, and perception of care (Boivin, Takefman and Braverman, 2011). It is crucial to consider all these indicators when assessing the effects of including fertility care (prevention, diagnosis, and treatment) in health policies and practices. Because stakeholders and clinical services may use indicators to evaluate the multifaceted quality of treatment, having a collection of indicators that encompasses both clinical and non-clinical measures is necessary. In addition, these indicators must be gender-sensitive and disaggregation is required because men and women may seek medical help in different ways and with a range of dynamics occurring (Dancet *et al.*, 2013).

In an effort to summarise the obstacles accessing ART in resource-poor countries, Serour (2019) identified seven main barriers (Figure 2.6). First, the

²⁴ www.anara-africa.com

epidemiological barrier, where due to the lack of a common definition of infertility, data on access to ART are not being systematically captured by the health management information systems. Secondly, the *geographic-financial* barrier due to the disparity of services between rich and resource-poor countries, and within the same country, between urban and rural areas. The lack of resources also impedes the establishment of ART in public health facilities, and poor financial protection mechanisms via public health insurance schemes. This results in the impoverishing effect of OOP expenses by users (Dyer and Patel, 2012; Chambers, Adamson and Eijkemans, 2013; Dyer *et al.*, 2013; Njagi *et al.*, 2023)

Chan (2012) describes OOP expenditures as one of the most inequitable methods to finance healthcare services. Access to public funded ART should reflect pre-established criteria because it may be unrealistic to deliver free ART for all but the minimum evidence-based treatment should be available (NICE, 2014).

The third barrier involves the *sociocultural and religious* barriers, or the perception of infertility influenced by the culture, society and religious views, including the acceptance of ART as a treatment for infertility. In some interpretations of Islam and Christianity, for example, sperm donation is not an acceptable practice and it is considered equivalent to adultery (Inhorn, 2012); in others, only IVF and intracytoplasmic sperm injection (ICSI) are permitted (Saniei and Kargar, 2021). The fourth barrier relates to *sexual and reproductive health education*. Poor education fuelling myths and mistaken beliefs surrounding infertility, for example the role of contraceptives on involuntary childlessness (Boivin *et al.*, 2020), might amplify public reluctance toward ART (Asemota and Klatsky, 2015). Similarly, poor fertility awareness of factors related to fertility also influences

the societal perception of childlessness (Dierickx *et al.*, 2019). Lastly, it is known that the success rate of IVF decreases in women over 35 (Aflatoonian *et al.*, 2011; Humm *et al.*, 2015). This needs to be addressed clearly during education and information sessions on fertility. Fifthly, *restrictive health policies* could obstruct access and provision of ART. To this effect, many African governments do not yet fully recognise infertility as a reproductive health problem, nor is infertility being acknowledged by the international community intervening on reproductive health, with the exception of the WHO. In this regard, and to the best of knowledge, fertility care programmes in Africa are not currently under the attention of any international cooperation agencies or donors (Bahamondes and Makuch, 2014). The final barrier is that *establishing ART facilities* requires costly supplies, an uninterrupted power source (for example to cryopreserve oocytes and fertilised embryos), strict procedures of quality control, and highly trained laboratory personnel. In SSA, skilled health providers trained in ART are usually either not available, or they migrate from the public to the private sector or internationally for a better chance of a professional career and a higher salary (Serour *et al.*, 2019). It is important to reiterate that the private market for infertility care also remains largely unregulated, and access to infertility treatment could be unfair for those couples that cannot afford the treatments. To this effect, accessibility, acceptability, quality, and availability of infertility services are imperative to promote fertility care interventions and equitable health systems (Botha, Shamley and Dyer, 2018; Dyer and Zegers-Hochschild, 2019; Dyer *et al.*, 2020).

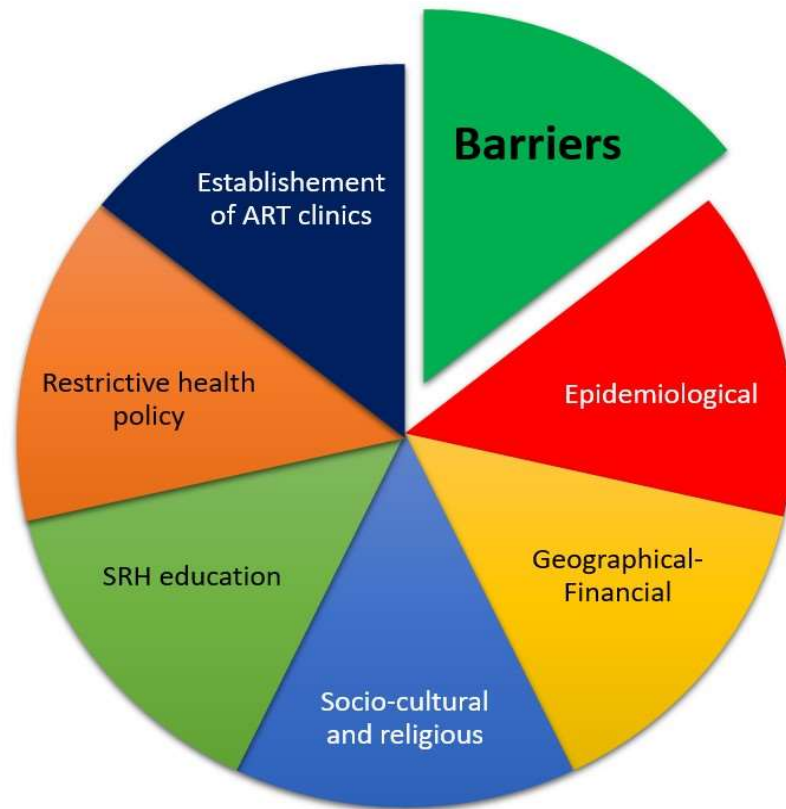


Figure 2.6: Barriers to Access ART²⁵

In this chapter it has been argued that there is a real need for ART in SSA. Countries confronting economic pressure may not be in a position to provide the full package of ART, but solutions and hybrid models can be created to deliver the most comprehensive coverage for fertility care. Another critique emerging from the academic research is the fact that (in)fertility care is often conceptualised as IVF or other ART within the biomedical sphere. Yet, fertility care is a broader set of interventions including psychological care, fertility awareness and the dismantlement of the pronatalist discourse that reduces women to the role of

²⁵ Figure created by the author and adapted from (Serour et al., 2019). The figure is illustrative and the size of the slices are meaningless for proportion purposes.

mother and men to that of fathers. While, in the fertility care panorama, ART are undoubtedly one of the most researched topics, this thesis takes the view that fertility care should not be reduced to ART only, and should instead take a broader and more comprehensive vision.

To this effect, one unexplored and overlooked topic is policy creation for fertility care that also includes the provision of infertility treatments, but is not limited to this alone. The next section provides an exploration why such comprehensive package for fertility care is still little considered in the global health agenda in general, and more specifically in SSA health systems.

2.5 Positioning Infertility in the Global Agenda on SRH

The vision of the WHO is "*the attainment by all people of the highest possible level of sexual and reproductive health*" (WHO, 2022b, p. 1). In 2015, the United Nation General Assembly established universal access to SRH care as one of the SDG. To this effect, target 3.7 encourages that "*by 2030, universal access to sexual and reproductive health-care services...and the integration of reproductive health into national strategies and programmes*" (United Nations, 2016, p. 20) should be achieved (Sundari Ravindran and Govender, 2020).

As seen in previous sections, infertility and fertility care are an essential part of the package of SRHR interventions (Butler *et al.*, 2019). Furthermore, infertility is also related to the SDG 5, specifically target 5.6 and the political declaration on UHC, actions 29, 68, and 69 (United Nations, 2019).

Yet, in celebrating the 25th anniversary of the ICPD (ICPD25) in 2019, and endorsing the positive progress that had been made to improve many areas of SRH, among others reducing maternal mortality and increasing the demand for

contraceptive services, little was said for infertility (Dierickx *et al.*, 2021). This jeopardised three decades of research and advocacy on this matter and further contributes to the invisibility of it in policy spaces.

In SSA, the negligent approach toward fertility care poses a further burden on infertile couples, because of the disproportionately low priority of infertility in SRH policies. As a result, there is no comprehensive data on the prevalence of infertility and the calibre of services provided in several SRH interventions (Ombelet, 2011). In fact, the management of infertility still shows fragile links in the SRH *continuum* of care with limited literature having assessed factors to include fertility care in health policies (Ombelet, 2009; Ombelet and Goossens, 2017), and how this would help childless people and couples to access and use such services (Tabong and Adongo, 2013b).

2.5.1 Ethical Considerations for Fertility Care

While dealing with reproductive autonomy and the inequitable position of fertility care in the SRH continuum, policy concerns remain a challenge for many SSA health systems (Ombelet, 2011). First, SSA health systems generally do not offer an inclusive package of SRH interventions to those in need. On the contrary, they are inclined to implement vertical and cost-effective health interventions targeting conditions with high morbidity and mortality, often financed by international development agencies (Roudi-Fahimi, Ashford and Khalil, 2008). In this scenario, infertility is marginalised due to not being a life-threatening condition and because of its costly treatments, as noted above. This implies the allocation of already stretched national resources to more prominent health conditions. However, also ethical concerns should be accounted for in order to provide an explanation why

fertility care is not prioritised even when resources are allocated. Persad and colleagues (2009) identified four categories that respond to allocation principles, specifically egalitarianism (treat people equally), prioritarianism (favouring the *worst-off*), utilitarianism (maximising benefits), and social usefulness (Persad, Wertheimer and Emanuel, 2009). Despite it is not possible to incorporate all ethical factors into a single principle, an explanation how infertility could be considered within these four categories is provided below.

In terms of egalitarianism and treating couples with infertility equally, the rich and well-connected ones may be favoured since they will be more likely to access (and use) the service more readily if it is offered on a “first-come, first-served basis”. A system such as the lottery would disregard other important factors since random judgments may treat everyone equally but may not treat them as equals (Dworking, 2002). The argument for prioritarianism, that favours the sickest and youngest, ignores the reproductive needs of older couples and underestimates the needs of those who may become infertile in the future. Utilitarianism, a strategy frequently adopted by governments in their health systems, aims to maximise the overall benefits with the maximum of coverage. Researchers in public health are often confronted with the principle of *utilitarianism* – where cost-effectiveness and “*the greatest good for the greatest number*” dictum is the overarching philosophy (Bentham, 1789). Okonofua (1996) and Pennings (2008), for example, discussed that public health interventions should target the utilitarian use of resources and should address health conditions with the highest morbidity and mortality in order to save the most lives. This excludes infertility from the list because of its relatively very low perceived morbidity and mortality. In this regard, for example, mental health issues

associated with infertility, are little counted as morbidity despite a broader literature point to the emergence of significant mental health issues in both infertile women and men with infertility and that in certain environments, mental health is still deeply stigmatised, and specialised care is frequently scarce (Roberts et al., 2020).

Further, the two scholars pointed out that efforts should be directed to infertility awareness and prevention in order to change societal views and consequently reduce the burden of childlessness (Okonofua, 1996; Pennings, 2008). Although a discussion on the cost-effectiveness of infertility treatment is beyond the scope of this research, it is argued that the utilitarian discourse, if applied, would limit the space for fertility care in many countries of the Global South, with vast consequences, both ethical and social, for millions of infertile couples.

Finally, promoting social usefulness²⁶ has the benefit of embracing values that presently exist and are expected to endure in the future. However, there is also the risk to exploit individuals with infertility, by varying factors such as a specific profession or unemployment (Hall and Hanekom, 2019). In the end, no single principle but a combination of them should be considered while planning for allocation of resources within an ethical lens because all of those principles carry strengths and limitations.

Unfair access to infertility services may constitute a human rights violation. This is particularly true when it comes to the provision of ART, where individuals who can afford infertility treatments get more help than others (Ombelet, 2011). In SSA inequality in accessing fertility care is still very high, and in some instances, the

²⁶ Social usefulness is any action which is aimed at satisfying needs not normally or sufficiently considered by the market and which is carried out for the benefit of persons requiring compensation for a health, social, educational or economic disadvantage (Gadrey, 2004, p. 120)

reproductive needs of the people do not meet those assumed by the policymakers. This is another important element because health policies that address the reproductive needs of the citizens have a much greater chance to succeed (Fledderjohann and Barnes, 2018).

Finally, it is important to consider how the UN's principle of "*No one left behind*" applies to childless people.

Undoubtedly, infertility is not a lethal condition, but it impacts greatly on the quality of life of millions of men and women (Chachamovich *et al.*, 2010; Direkvand-Moghadam, Ali and Azadeh, 2014; Bayoumi *et al.*, 2021). In societies where children are wanted and highly valued both as a social and economic investment, such as the case in SSA, policy attention to fertility care is both essential and timely mandatory, in order to fully embed fertility care in national health policies. Ombelet (2014) has stated that to incorporate fertility care into health policies and to increase access to infertility services, a substantial reduction of the cost of ART must be achieved.

However, even the most well-intended policy may not have the desired impact if its implementation is defective (Duflo and Banerjee, 2011). From the users perspective, women in the Global South consider infertility treatments of paramount importance, and they are willing to do whatever it takes to access them, often overshadowing other important health problems (Aboulghar, 2005).

2.6 Ongoing Debates Surrounding the Inclusion of Fertility Care in Health Policies and Practice – Examples from Low and Middle-Income Countries

The WHO defines health policy as all “*decisions, plans, and actions that are undertaken to achieve specific health care goals within a society*”²⁷. The creation of health policies provides the framework for deciding, standardising, testing and improving clinical practice and services, and achieving a better collaboration among healthcare providers (Timmermans, 2020). Moreover, policy creation provides the opportunity to generate guidelines to prevent human errors and poor communication with respect to medical decisions. In the establishment of a health policy, policymakers should be supported by domain experts, who rely on scientifically grounded and evidence-based outcomes to backup decisions on a specific health matter. However, the scientific evidence is not always necessarily accurate for all health conditions (Brdarić *et al.*, 2020), and in practice, decision-making based on evidence remains an exception, rather than a norm (Moutselos and Maglogiannis, 2020). This is the case of infertility in that, despite increasing evidence of its social, emotional and economic impact, it remains largely unaccounted for in policies and practice (Hamberger and Janson, 1997; Inhorn and Patrizio, 2015; Zhang *et al.*, 2022).

Fertility care policymaking is crucial for multiple reasons. First, it makes the policy visible in the political arena, provides a space for the conceptualisation of fertility care, and can be used as leverage to fund its implementation and monitoring. Second, the provision of infertility services incorporated within

²⁷ WHO | Health policy [Internet]. WHO. Available from: https://www.who.int/topics/health_policy/en/

reproductive health programmes requires policymakers to take into account the needs of infertile individuals. Finally, in order to be conceptualised, health policy needs data to understand the magnitude of the problem, and routine data collection and analysis might allow policymakers to choose the most comprehensive and appropriate approach in delivering services addressing fertility issues.

Since the ICPD, discussions have been generated about the inclusion of fertility care in public health policies and systems, and much literature has been produced, often highlighting the lack of research on that matter (Ombelet *et al.*, 2008; Dyer, 2008; Ombelet, 2009; Ombelet and Goossens, 2017; Serour *et al.*, 2019). This academic work is supported and backed by the WHO, which has recommended to its Member States to establish policies for fertility care²⁸ (WHO, 2013b). In a recent online survey on including infertility in SRH policies (2019), the WHO reported that 75% of responding countries have indeed included infertility in their policies but in the African region, this rate falls to 30%²⁹.

However, regardless of the high estimates of involuntary infertility in SSA and the WHO's recommendations, both policymakers and global health actors have shown slow progress in addressing fertility care (Berdzuli, Mikkelsen and Gemzell-Danielsson, 2018). The decision to not deal with infertility is mainly due to the fear of population growth and the demographic legacy, where it was argued that population growth (and fertility) must be curbed (Pennings, 2008; Ombelet, 2011). However, this argument is rhetorical, firstly because other strategies, such as educating women, offering contraceptives, and permitting safe abortions can

²⁸ <https://www.who.int/news-room/fact-sheets/detail/infertility>

²⁹ <https://platform.who.int/data/sexual-and-reproductive-health-and-rights/national-policies/srh/policies-and-legislation-on-infertility-management>

effectively limit population growth without violating people's rights; second, the justification for helping people with infertility is that they should not bear the entire burden of the overpopulation alone because *"a child wish expresses a personal need that cannot be satisfied by the neighbours having a child"* (Shah, 1994; Pennings, 2008, p 17). Further, if the argument of overpopulation is considered, it must be applied to any child that is brought into this world, and not exclusively to children of infertility affected parents.

Considering the population control strategies evoked at the beginning of this chapter, policymakers around the world, and in most countries of the Global South, have since adopted policies to lower (the case in the majority of countries) or maintain (the case in very few countries) fertility rates to curb population growth (Ouedraogo, Tosun and Yang, 2018). This approach, was and still is, strongly supported by international cooperation agencies, and takes little account of the needs of people living with infertility.

Policies and family planning programmes that aim to lower fertility and to encourage people to plan for smaller families are more common in countries with high birth rates and rapidly growing populations, such as in the case of SSA nations (Bongaarts and Hodgson, 2022). In 2013, however, Gabon introduced a policy to raise its fertility rate designed to act on the extremely low fertility levels and the high estimated prevalence of infertility³⁰ (Larsen, 2003; Mascarenhas, Flaxman, *et al.*, 2012; Mounkala, Boyd and Huyser, 2019). Since then, two more African

³⁰ <https://www.gabonreview.com/gabon-15-des-couples-frappes-par-linfertile/>

countries, namely Mauritius and South Sudan, have established policies promoting fertility (Table 2.3).

Table 2.3: Policies Concerning the Current Fertility Levels in SSA, 2015-2019

Policies on fertility, sub-Saharan Africa (2015-2019)	N.
Lower fertility	35
Raise fertility ³¹	3
Maintain fertility ³²	2
No policy ³³	9

(United Nation Department of Economic and Social Affairs, 2021)

Gabon, Mauritius and South Sudan are not the only LMIC that have created policies to raise fertility rates. Outside of SSA, Cuba, Egypt, Ethiopia, Iran, Morocco, Thailand, and Türkiye among other LMIC, also have policies addressing fertility and were able to give priority and to setting up infertility care policies³⁴- with different degrees of comprehensiveness, and despite their income ranking and the weaknesses of the respective health systems (Ministry of Health Uganda, 2001; Ministry of Health Ethiopia, 2016; Morshed-Behbahani *et al.*, 2020; Ministère de la sante et de la protection sociale, 2021; United Nation Department of Economic and Social Affairs, 2021; Bezad *et al.*, 2022). In 2018, both Morocco and Thailand strengthened their national reproductive health policies and infertility services. In Morocco, the government enacted a law on ART (Lois 47-14) (Bezad *et al.*, 2022) to guide fertility care in the country. In Thailand, fertility care was incorporated, for the

³¹ Gabon, Mauritius, South Sudan

³² Botswana, Tanzania

³³ CAR, Congo, Liberia, Namibia, Sao Tome and Principe, Seychelles, Somalia, South Africa, Sudan

³⁴ <https://platform.who.int/data/sexual-and-reproductive-health-and-rights/national-policies>

very first time, as an essential intervention in the country's National Reproductive Health Strategy (WHO, 2020). Despite data on the Egyptian infertility policy are currently unknown³⁵, Egypt was able to reduce its fertility rate and built fertility clinics in both public and private sectors (Inhorn, 2009). In Egypt, fertility care in the form of IVF dates back to the 80s when it was one of the first three Muslim nations in the Middle East, beside Jordan and Saudi Arabia, to introduce IVF in 1986 (Inhorn *et al.*, 2017). Pivotal was the leadership of two Egyptian gynaecologists who played an important political and advocacy role in the prioritisation of infertility care (Inhorn, 2003a; Inhorn and Gürtin, 2012). This has led to the subsidisation of ART for the infertile who were identified as poor.

Lastly, in Türkiye, that has seen the first IVF clinic opened in 1988 and where publicly- funded IVF began in 2005, activists from patient organisations have lobbied for fertility care and achieved their objective with the government for the creation of an infertility policy in which the government's social security agency covers the costs of the first and second IVF cycles (Gerrits, 2012). Moreover, the country has also opened up to medical tourism for ART, and this has generated the growth of the sector with over 160 assisted reproduction centres operating in the country, a majority of which are private IVF clinics (Yildiz and Khan, 2016). However, it is unclear whether these benefit local populations or only those from abroad.

All the above may indicate that, in the future, resource-limited countries could see an increase in the formulation of fertility care policies to counter the natural decrease of their fertility rates (Morshed-Behbahani *et al.*, 2020). It is worth

³⁵ <https://platform.who.int/data/sexual-and-reproductive-health-and-rights/infertility-data>

recalling, however, that ART has little impact on population fluctuations, because only a marginal portion of the population can afford them, and their success rate, despite the significant improvements, is extremely variable (Pennings, 2008; Rezaeiyeh *et al.*, 2022).

Despite multiple researchers advocating for the inclusion of fertility care in health policies and reproductive health programmes (Ombelet, 2009; Gerrits and Shaw, 2010; Dierickx *et al.*, 2019; Serour *et al.*, 2019), Okonofua and Datta, in their 2002 article, reiterated that addressing - and including - infertility in family planning interventions, would gain community confidence and improve programme utilisation, by assisting both the couples who are looking for children as well as those wishing to delay pregnancies. To this effect, for these authors, family planning, programmes may be seen as the ideal place to address infertility (Okonofua and Datta, 2002). A similar argument was sustained by Vayena *et al.* (2009) stating that enlisting infertility services within reproductive health programmes opens the door to providing a spectrum of services and could be considered opportunistic use of the same resources for multiple interventions (Vayena *et al.*, 2009). The quote by Prof. Fathalla, at the beginning of this chapter, is a reminder that SRHR must be seen in an holistic and inter-disciplinary way in order to be fair and equitable for all (Fathalla, 2002, 2017).

Political willingness and recognition of the burden that involuntary childlessness bring to the life of couples are important steps toward the absorption and inclusion of fertility care in health policies. Governments need to consider allocation of financial resources, quality control, and equitable access as well as infrastructure, and the deployment of highly specialised human resources. Due to

the implication of infertility management on the financial burden of governments, some authors debated that prioritising a public health policy that takes into consideration care for infertility does not imply that all its management, for example the treatment with ART, should be funded by the public health sector (van Balen and Gerrits, 2001).

From an academic point of view, research on the inclusion and implementation of fertility care in health policies and practice is scarce but needed at a country-level, and it is believed that nations should decide the best approach in terms of managing infertility because there is no “one-size-fits-all” solution. The health system should comply within its context and resources, but without losing sight of health rights and reproductive justice for all its citizens (WHO, 2013a). Context, including the prevalence of infertility among other variables such as stigma and fertility awareness, should be taken into consideration by policymakers. Ombelet et al. (2008) stressed that infertility programmes in resource-constrained nations could only be put into action - and maintained - with the backing of both national policy creators and global players. Other than that, policies including fertility care should address how childless individuals might equally and fairly access infertility services and reduce, by consequence, the burden of this condition (Berer, 2003).

The next chapter takes on board the limits and challenges for the inclusion of fertility care in health policies examined above, and explores factors hindering and enabling fertility care policy creation through a systematic review of qualitative literature. The review was important to frame the research topic and particularly: (i) to acknowledge previous contributions on fertility care policy creation; (ii) to

familiarise with the most relevant fertility care subject-experts; and (iii) to identify and summarise current fertility care gaps. The review has allowed the creation of a conceptual framework for fertility care as a model or rapid tool, to be used by policymakers willing to include fertility care in their health policies. Further, it has provided the foundations for the development of the data collection tools used in this research.

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3. Chapter: Barriers and Facilitators for the Inclusion of Fertility Care into Reproductive Health Policies in Africa: A Qualitative Evidence Synthesis

Anna Affferri^{1*}, Haddijatou Allen², Andrew Booth¹, Susan Dierickx³, Allan Pacey⁴, and Julie Balen^{1*}

¹ School of Health and Related Research (SchARR), University of Sheffield, S14DA, Sheffield, S14DA, United Kingdom

² Medical Research Council, The Gambia Unit, Serekunda, The Gambia

³ Research Center Gender, Diversity and Intersectionality, Vrije Universiteit Brussel, 1050, Belgium

⁴ Department of Oncology and Metabolism, Faculty of Medicine, Dentistry and Health, The Medical School, University of Sheffield, Sheffield, S102RX, United Kingdom

* Correspondence address. School of Health and Related Research (SchARR), University of Sheffield, Sheffield, S14DA, United Kingdom. E-mail:

j.balen@sheffield.ac.uk (JB)

In order to generate a detailed background for this research, a systematic review of the literature was carried out. This chapter reports on the findings of the qualitative review and focuses on understanding the inclusion of fertility care into reproductive health policies in Africa. Particularly, the aim of this review was to identify inhibitors and enablers for the prioritisation of fertility care by African health policymakers. The QES has specifically selected original and published papers, opinion pieces and viewpoints targeting African countries. At the end of the review, a conceptual framework was created, serving as a tool to inform fertility care policy creation, and potentially strengthening of national (in)fertility services.

The review was first conducted between February and April 2020 and was completed in October 2020. The paper was accepted for publication in December 2021 in *Human Reproduction Update*. Volume 28, Issue 2, March-April 2022, Pages 190–199, <https://doi.org/10.1093/humupd/dmab040>

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The paper in this chapter was written with 5 co-authors; Haddijatou Allen, Susan Dierickx, Andrew Booth, Allan Pacey, and Julie Balen. Anna Afferri conceived the concept, created and refined the search strategy, carried out the search, and created the initial draft of the manuscript. Haddijatou Allen conducted an independent second review following the search strategy and reviewed the thematic coding; Andrew Booth has provided guidance on the technicalities to perform the QES; Susan Dierickx, Andrew Booth, Allan Pacey, and Julie Balen supervised and reviewed the work and provided feedback on the manuscript.

Barriers and facilitators for the inclusion of fertility care in reproductive health policies in Africa: a qualitative evidence synthesis

Anna Afferri ^{1,*}, Haddijatou Allen², Andrew Booth¹, Susan Dierickx³, Allan Pacey ⁴, and Julie Balen ^{1,*}

¹School of Health and Related Research (ScHARR), Faculty of Medicine, Dentistry and Health, University of Sheffield, Sheffield, UK
²Medical Research Council, Department of Vaccines and Immunity, The Gambia Unit, Serekunda, Gambia ³Research Center Gender, Diversity and Intersectionality (RHEA), Vrije Universiteit Brussel, Brussel, Belgium ⁴Department of Oncology and Metabolism, Faculty of Medicine, Dentistry and Health, The Medical School, University of Sheffield, Sheffield, UK

*Correspondence address. School of Health and Related Research (ScHARR), University of Sheffield, Sheffield S14DA, UK.
Tel: +44-7415-129-614; E-mail: aafferri1@sheffield.ac.uk  <https://orcid.org/0000-0002-0306-6705> (A.A.); E-mail: j.balen@sheffield.ac.uk  <https://orcid.org/0000-0002-4736-8465> (J.B.)

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BACKGROUND: Infertility affects over 50 million couples worldwide and impacts people's social and emotional wellbeing. In low- and middle-income countries, particularly across Africa, the inclusion of fertility care into reproductive health (RH) policies remains fragmented or non-existent.

OBJECTIVE AND RATIONALE: This review aims to provide a framework for understanding the inclusion (or lack thereof) of fertility care in RH policies in African settings. It synthesizes the barriers and facilitators to such inclusion, with a view to uncovering the positioning of fertility care in broader health systems and on the agendas of key stakeholders such as health policymakers and practitioners.

SEARCH METHODS: A qualitative evidence synthesis was performed, systematically searching papers and grey literature. Searches were conducted in MEDLINE, EMBASE, CINAHL, Web of Science and Scopus between February and April 2020. No date restrictions were applied. Language was limited to publications written in English and French. Two reviewers independently screened titles and abstracts, and extracted data, applying thematic coding. The quality of the included papers was evaluated using The Joanna Briggs Institute Checklist for Text and Opinion Papers.

OUTCOMES: The search identified 744 papers, of which 20 were included. Findings were organized under four cross-cutting categories, namely: perceived importance of infertility; influence of policy context; resource availability and access; and perceived quality of care. Across these categories, key barriers to the inclusion of fertility care in RH policies were limited political commitment, under-recognition of the burden of infertility and high costs associated with ART. Conversely, facilitators comprised specialized training on infertility for healthcare providers, standard procedures for ART safety and guidelines and North–South/South–South collaborations.

WIDER IMPLICATIONS: The inclusion of fertility care in African RH policies depends upon factors that include the recognition of infertility as a disease, strong political engagement and proactivity and affordability of ART through opportunities for partnership with the private sector, which ease costs on the public health system. Further qualitative and quantitative research, including context-specific analysis and in-depth comparative approaches across diverse African countries, will help to delineate differential impacts of local and global factors on fertility care to address this neglected RH issue.

Key words: fertility care / infertility services / reproductive health / health policy / Africa / ART

Introduction

Infertility is an important yet neglected reproductive health (RH) issue that significantly impacts upon wellbeing (Gipson et al., 2020). While the global prevalence and incidence rates remain unclear, infertility is estimated to affect 15% of reproductive-age couples (Gerrits et al., 2017), yet this is likely to be an underestimation. In the Global South, this includes almost 25 million couples, with highest proportions in Africa and Southeast Asia (Mascarenhas et al., 2012). Infertility in Central Africa is often referred to as ‘bareness amid plenty’ signifying its presence in countries with otherwise high-fertility rates (van Balen and Gerrits, 2001). The consequences of infertility can be overwhelming with an array of social, emotional and economic impacts and the burden afflicting couples, and in particular women, are severe (Okonofua et al., 1997; Dierickx et al., 2018; Serour et al., 2019; Dierickx, 2020).

In Africa, numerous biomedical-related conditions contribute to infertility, including a high prevalence of sexually transmitted infections (STIs), unsafe abortions and poor birth care leading to pregnancy-related sepsis (Tjam et al., 1986; Sharma et al., 2009). It has, therefore, been argued that infertility can be prevented through improved sexual and RH education and via the promotion of a healthy lifestyle (FIGO, 2012). Though success rates vary, infertility can be clinically managed with medications and ART (Bahadur et al., 2020). Of note, however, is that obstacles to early acceptance and implementation of ART in Africa have included socio-cultural and religious barriers (Chiwere et al., 2021) as well as limitations in health system readiness, as Africa represents <2% of global ART provision (Dyer et al., 2020). The package of interventions aimed to support women and men living with infertility to ‘...realize their desires associated with reproduction and/or to build a family...’ is encompassed in a comprehensive set of activities named ‘fertility care’ that includes fertility awareness, prevention, management and support (Zegers-Hochschild et al., 2017). Infertility services extend beyond treatments such as cryopreservation of gametes or embryos, IVF and ICSI, to include diagnostic screening and assessments, all of which are included in the fertility care package.

Since the 1994 International Conference on Population and Development (ICPD) recognized RH as a universal right, increased

attention has been directed at the prevention, management and treatment of infertility (United Nations, 1994). Yet, fertility care remains absent or poorly represented in many RH policies, especially in Africa (Nachtigall, 2006; Ombelet et al., 2008). Following the ICPD recommendations, several authors have noted the benefits of including fertility care in RH policies; however, there is little agreement on the policy process of how such inclusion could be implemented and successfully scaled up across different settings (Gerrits and Shaw, 2010; Dierickx et al., 2019; Serour et al., 2019). Furthermore, an in-depth analysis on why strategies such as the introduction of low-cost ART in African settings and other approaches have resulted in limited impact on access to high-quality fertility care for all is essential.

The systematic review of qualitative research (also known as a qualitative evidence synthesis or QES) is an approach aiming to understand, explain and provide rich interpretations related to health conditions, interventions or policies, bringing together multiple perspectives, including contradictory viewpoints (Flemming et al., 2019). Owing to its additional utility in retrieving and analysing texts, opinions and policy documents, this approach is increasingly used in understanding health system decision-making processes and was therefore selected for this review (Booth et al., 2019). Furthermore, one of the acknowledged functions of QES is to evidence suppositions that are commonly believed but have not been substantiated across multiple studies. By focusing on barriers and facilitators for the inclusion of fertility care into broader RH, this review provides a comprehensive overview of fertility care policy in Africa, thereby broadening and complementing a recent review by Chiwere et al. (2021) on IVF and other ART in low- and middle-income countries (LMICs). A conceptual framework, based on the evidence, is proposed to facilitate a better understanding of the main influences shaping fertility care policy inclusion in African contexts.

Methods

The protocol for this review was registered on 13 July 2020, and published on PROSPERO, on 14 August 2020 (ID CRD42020175808). The Preferred Reporting Items for Systematic

Reviews and Meta-Analyses (PRISMA) guidelines were used for reporting purposes (Moher *et al.*, 2009).

Search strategy

Published and unpublished papers were retrieved from multiple sources, including direct contact with three authors. The electronic databases searched included MEDLINE, EMBASE (via Ovid), CINAHL (via EBSCO), Web of Science and Scopus. The PubMed Central website was also searched for completeness. Records identified through Google Scholar were extracted with the dual purpose of checking for citations and searching for relevant documents in the grey literature. A combination of free-text keywords, controlled vocabulary, Boolean operators AND and OR and subject headings were used in combining: infertility (fertility care, fertility service and other related terms, through use of 'explode' or 'truncation' and MESH); Africa; health policy; and RH. Two lead reviewers (A.A. and H.A.) were involved in searching the databases and identifying relevant references and they independently selected relevant papers to be included in the review. The complete search strategy is provided in [Supplementary Data File S1](#). The PerSPeCTiF framework was used as a question formulation framework as it accommodates context, perspective, time and space within a health system context (Booth *et al.*, 2019). The framework is provided in [Supplementary Table S1](#).

Study selection

The databases were searched between February and April 2020 with no initial cut-off start date. Papers published in English and French were included. We included literature reviews, monographs, commentaries, viewpoints and opinion papers that specifically addressed policy related to fertility care in African contexts. Studies that focused on ART were selected if they reflected on barriers and facilitators for inclusion in health services provision. We excluded studies evaluating the prevalence of infertility, the biomedical and traditional treatment of infertility, RH genomics/genetics and socio-cultural or religious barriers. The complete list of eligibility criteria is summarized in [Supplementary Table SII](#). The lead reviewers screened the papers by title and abstracts and the final selection was based on full-text reading. During the study selection phase, the opinion of a third reviewer (J.B.) was required for a small number of papers. Discrepant results were resolved by discussion until a unanimous decision was reached among all three reviewers. The full list of excluded papers is provided in [Supplementary Table SIII](#). Key characteristics of the included papers are available in [Supplementary Table SIV](#).

Quality assessment

This review did not focus on the analysis of qualitative studies and therefore a formal approach to quality assessment based on study design was not appropriate. The lead reviewers assessed and validated the quality of the selected papers using the Joanna Briggs Institute Checklist for Text and Opinion. Six criteria were assessed, notably: the source of opinion or authorship; the field of expertise of the author; the relevant population/audience as the central focus of the opinion; rationale or basis of the opinion; clear reference of the existent literature; and if any incongruence with the sources was logically defended (McArthur *et al.*, 2015). As specified by the developers of

the checklist, the lead reviewers attributed to each paper a criterion and the overall quality of the papers was labelled as 'high', 'medium' or 'low'. The quality assessment for each included paper is available in [Supplementary Table SV](#).

Data extraction

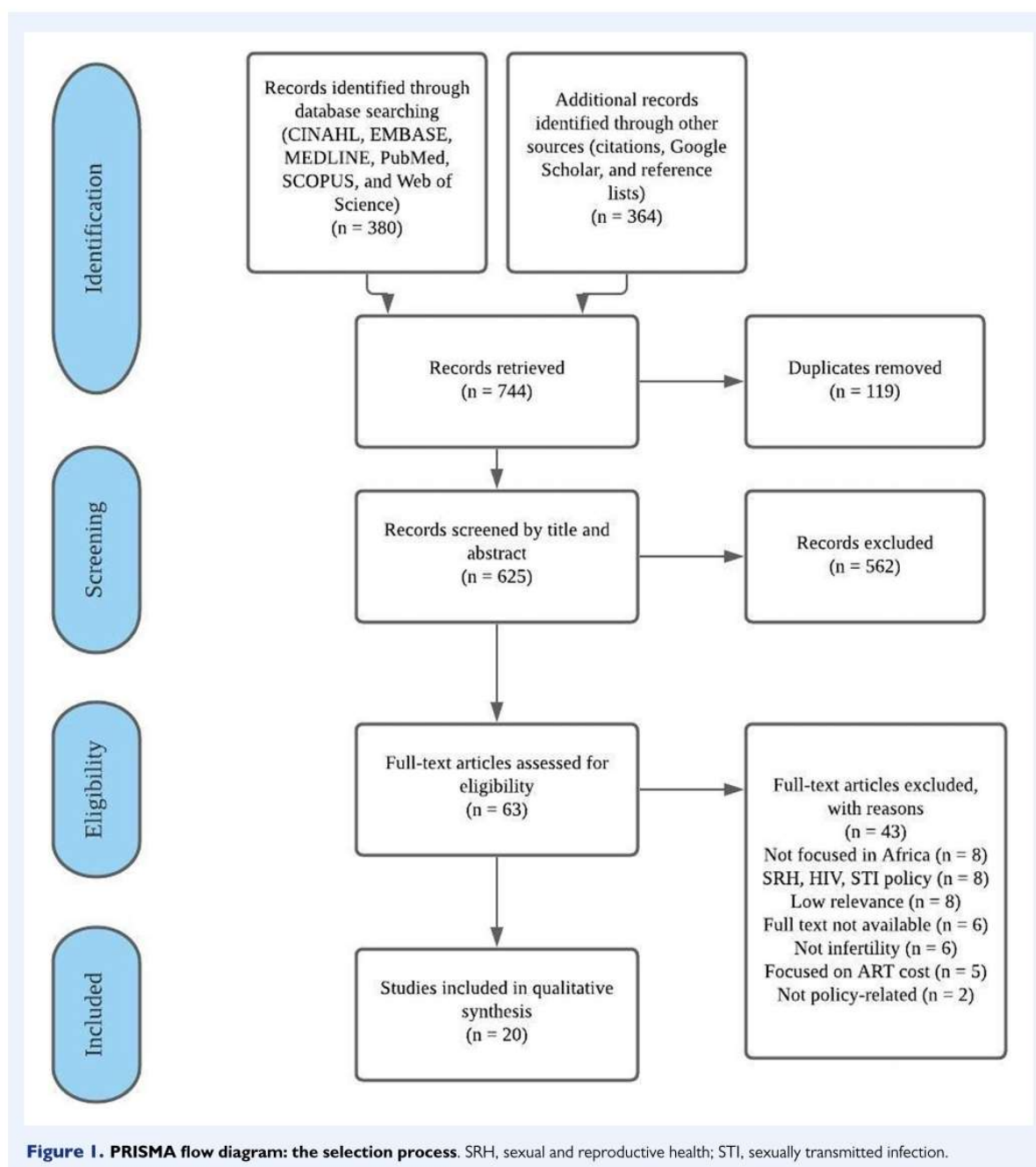
The data were extracted according to characteristics of the selected papers, including information about: the author(s) and date of publication; the settings of the study; the data collection method; and the type of paper. The lead reviewers independently read the selected papers and compiled a matrix indicating factors enabling and/or inhibiting fertility care policy in African health systems including, but not limited to, barriers and facilitators concerning the inclusion of fertility care and services in RH policies, the cost of infertility treatment, public-private partnership (PPP) and training of healthcare providers on infertility management. Data were extracted from the papers in the form of text fragments. Each section of the paper was reviewed, with particular attention to findings and recommendations. Data from the conclusion section of the paper were also extracted and included within this synthesis.

Data synthesis

Lead reviewer A.A. used a thematic synthesis approach consisting of three coding stages and departing from the Thomas and Harden method (Thomas and Harden, 2008), each stage allowing themes to be increasingly elaborated. In the first stage, fragments of text were extracted and classified according to meaning and content, inductively and iteratively with an intentionally broad scope. This generated 18 'factors' which were categorized as 'barriers' or 'facilitators' ([Supplementary Table SVI](#)). In the second stage, these 18 factors were grouped into eight 'themes' (elements of fertility care that might influence policymaking) as detailed in the following section. These themes were subsequently used to identify relevant fragments of text and sentences within and across papers, with the purpose of interpreting rather than simply aggregating information (Barnett-Page and Thomas, 2009). In the third stage, the eight themes were further analysed and clustered into four cross-cutting 'categories', namely: perceived importance of infertility; influence of policy context; resource availability and access; and perceived quality of care. The three stages of coding are displayed in [Supplementary Table SVII](#). Each cross-cutting category included one or more themes and represents the overarching level of coding ([Supplementary Fig. S1](#)). Factors are described in detail and referenced for transparency in [Supplementary Table SVIII](#). Finally, a conceptual framework was developed offering a graphical model of factors that enable the inclusion of fertility care in RH policies in Africa.

Results

The search identified 744 references of which 119 were excluded as duplicates and a further 562 were deemed not relevant. A full-text review was conducted on 63 documents from which an additional 43 were excluded leaving 20 papers for the final analysis. A PRISMA flow chart (Moher *et al.*, 2009) illustrating the process for the study identification and selection is shown in [Fig. 1](#).



Of the 20 papers included in the QES, six specifically focused on African countries (Ghana, Kenya, Nigeria, Sudan, Tanzania and The Gambia); a further six mentioned African countries and Sub-Saharan Africa in broader terms (e.g. West Africa including Mali, Togo and Senegal). The remaining eight cited LMIC or resource-poor settings more generally without naming specific countries, although referring to

Africa. The papers comprised a set of articles, literature reviews, systematic review, monographs, commentaries, viewpoints, brief reports, short communications and opinion pieces. Of all the selected papers, 12 (60%) were rated as high quality, 3 (15%) as medium/high quality and 5 (25%) as medium quality. No studies were discarded based on the quality assessment.

Perceived importance of infertility

Theme 1: Perceived importance among policymakers

The recognition of infertility as a disease or disability that negatively affects large numbers of women and men is important for appropriate prioritization within the national health agenda and broader policymaking processes. Sharma *et al.* (2009) reported that political willingness and commitment are essential for the consideration of infertility within comprehensive RH. Similarly, international stakeholders' interest in infertility is vital, yet still largely missing in global health (Ombelet, 2011; Gerrits *et al.*, 2017; Dierickx *et al.*, 2019). Equally important in recognizing infertility as an RH issue, Serour *et al.* (2019) contend that population-level databases do not accurately report the burden of infertility. In two papers in Nigeria and Sudan, authors suggest that the systematic collection of infertility-related health information is essential for improved resources allocation (Akinloye and Truter, 2011; Khalifa and Ahmed, 2012). Furthermore, recording such infertility-related data would allow for international comparisons and benchmarking in access, efficacy, quality and safety of ART (Serour *et al.*, 2019) and other aspects of fertility care.

... Infertility should be recognized as a public health issue worldwide, including in developing countries; policymakers and health staff should give attention to infertility and the needs of infertile patients. ... (Ombelet, 2014, p.2)

Theme 2: Perceived importance among society

In Sub-Saharan Africa and other resource-constrained settings, infertility is often perceived as a woman's problem, highly stigmatized by societal taboos, and simply not discussed in public spaces (Gerrits and Shaw, 2010; Hammarberg and Kirkman, 2013). Unequal gender norms and relationships were also found to exert an influence on access to, and utilization of, health services. One study in The Gambia found that women with infertility seek healthcare by themselves, with little participation of the spouse (Dierickx *et al.*, 2019).

Nevertheless, infertility is important for men too and, as shown in Nigeria and Sudan, male infertility is often wrongly associated with a lack of masculinity and, in consequence, is frequently stigmatized and ignored (Inhorn, 2009; Akinloye and Truter, 2011; Khalifa and Ahmed, 2012). To overcome male-related (and general) misperceptions of infertility, Gerrits *et al.* (2017) suggest that health education focusing on the de-stigmatization of infertility may help sensitize society. Raising awareness of biomedical causes of infertility, the commonality of male factor infertility and the benefits of timing intercourse according to the fertile window are also important (Sharma *et al.*, 2009; Gerrits, 2012).

Influence of policy context

Theme 3: Effects of policies

Several authors maintain that despite the challenges, fertility care needs to be included in national RH policies (van Balen and Gerrits, 2001; Ombelet, 2009). When included, regulation and access to infertility services are legitimized, leading to an improved provision in the public and/or private sectors (Sharma *et al.*, 2009; Ombelet, 2014). In contrast, it has been argued that collaborations between local governments, civil society and the research community might not exert sufficient power or influence for the formulation of health policies that include fertility care if international partnerships are not established

and maintained (van Balen and Gerrits, 2001; Ombelet, 2014). Hörbst (2012) highlights that, in Mali, international donor funding played a key role in influencing infertility policy and governance, though donor dependency is also cited as a barrier in the decision-making process of legislators (Hammarberg and Kirkman, 2013). North-South and South-South collaborations have arisen over the past decade, exploring new approaches to fertility care and specifically to ART that could be applicable in LMIC settings. To this effect, both ESHRE and the Walking Egg Project partnered with African countries to support infertility care and low-cost IVF (Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Ombelet, 2014). Furthermore, some fertility clinics and research centres have also established relationships with ART centres in Europe, in the USA and in African countries mainly for training purposes or to purchase second-hand equipment (Gerrits and Shaw, 2010; Hörbst, 2016; www.alazhar-iicpsr.org). Finally, Sharma *et al.* (2009) note that the formulation of specific fertility care guidelines is vital to reducing the risks of, and increasing the safety associated with, treatment. Fertility care protocols should follow international standards and be applied uniformly in public and private facilities.

Resource availability and access

Theme 4: Cost of ART

Making infertility care affordable across the African continent is of utmost importance and requires the development of low-cost regimens and techniques (Akande, 2008; Bahamondes and Makuch, 2014; Ombelet, 2014). Asemota and Klatsky (2015) suggest that IUI should be used as a first-line treatment for unexplained infertility. Both IVF and ICSI can be offered at a much lower cost if less expensive methods and laboratory materials are used (Ombelet, 2009). However, the efforts to make ART affordable in LMIC must not be allowed to result in the provision of poor quality care, and safety standards should not be compromised in the pursuit of cost reduction (Ombelet, 2011).

... Reducing ART cost by all possible means is important to increase access to ART in Africa. ...

(Serour *et al.*, 2019, p.3)

Theme 5: Private care

Several authors claim that private actors are important partners in the provision of infertility care in Africa (Okonofua, 1996; Akande, 2008; Akinloye and Truter, 2011; Hörbst, 2012; Khalifa and Ahmed, 2012). Indeed, ART is mostly provided by the private sector in many African countries, with some cases of PPP (e.g. Nigeria and Egypt) (Akande, 2008; Serour *et al.*, 2019). Yet, the costs associated with many private clinics are generally unaffordable to the majority of those in need, further exacerbating the inequalities in access to treatment (Dyer, 2008). To help alleviate public health financing, and to maximize health resources while keeping equity in mind, there have been calls for major investments by, and a co-operative environment with, the private sector. This may help increase access to infertility services through long-term PPP building (Gerrits, 2012).

... PPPs can offer services at lower costs that are more realistic in developing countries. In addition, PPPs can help influence the establishment of standards, regulations and policies to safeguard the health of couples undergoing treatment. ...

(Akande, 2008, p.13)

Theme 6: Referrals

The development of an appropriate referral system between different levels of care—both public–private and traditional–modern—needs to be evaluated during the design of RH policies that account for fertility care (van Balen and Gerrits, 2001). Indeed, appropriate referral is essential in the effective provision of infertility services (Dyer, 2008). van Balen and Gerrits (2001) further specify that for a comprehensive inclusion of fertility care within RH policies, a concise analysis of the health system structure, including the referral system, must be undertaken. This analysis should include all levels of care and also the informal and private sectors (van Balen and Gerrits, 2001).

...infertility services should be sensitive to the role of traditional health care. Greater collaboration between the two health care systems is generally considered desirable as this may increase referral of infertile couples to the biomedical sector...

(Dyer, 2008, p.32)

Perceived quality of care

Theme 7: Drugs, equipment and supplies

Infertility care requires highly specialized equipment, as well as a variety of supplies and drugs. Yet, as described by Ombelet (2009), not all infertility regimes require expensive drug protocols (i.e. ovulation induction with clomiphene citrate is more cost-effective). In her qualitative research in West Africa, Hörbst (2012) suggests that using an out-sourced laboratory could reduce the cost of infertility treatment because it does not require purchasing of equipment or maintaining experienced staff. Similarly, Khalifa and Ahmed (2012) propose that fertility clinics can share embryologists and cryo-banking to reduce the cost of procedures. Yet, providing safe and high-quality infertility services does require the availability of a minimal infrastructure capability (Bahamondes and Makuch, 2014).

Theme 8: Specialized training for health providers

The provision of fertility care entails skilled labour. Several authors described that specific training is necessary to create, improve or maintain the technical abilities of the healthcare providers in managing infertility (Hörbst, 2012; Ombelet, 2014). Infertility training is often undervalued or missed from the medical/allied health educational curricula (van Balen and Gerrits, 2001; Sharma et al., 2009) or continued professional development. Such training is expensive, and usually requires trainees to travel abroad to learn new techniques (Hammarberg and Kirkman, 2013). Seeking collaboration with international academic clinical specialists—especially embryologists and andrologists—can be explored as a means of developing local capability (Hörbst, 2012), particularly with the recent transition to digital learning brought on by the coronavirus pandemic. Authors highlighted that unregulated practice and lack of professional oversight could lead to a distorted perception of the quality of care and induce a certain level of professional liberty (Gerrits and Shaw, 2010; Hörbst, 2012; Asemota and Klatsky, 2015).

...Local providers can be trained to provide a basic evaluation and guidance or treatment for specific causes of infertility...

(Asemota and Klatsky, 2015, p.19)

Extending from the above findings, a conceptual framework was created offering a graphical model, which could support fertility care

polymaking in Africa. Within the four categories, a list of items was identified to guide policy actors towards a most wide-ranging analysis of determinants for fertility care polymaking (Fig. 2).

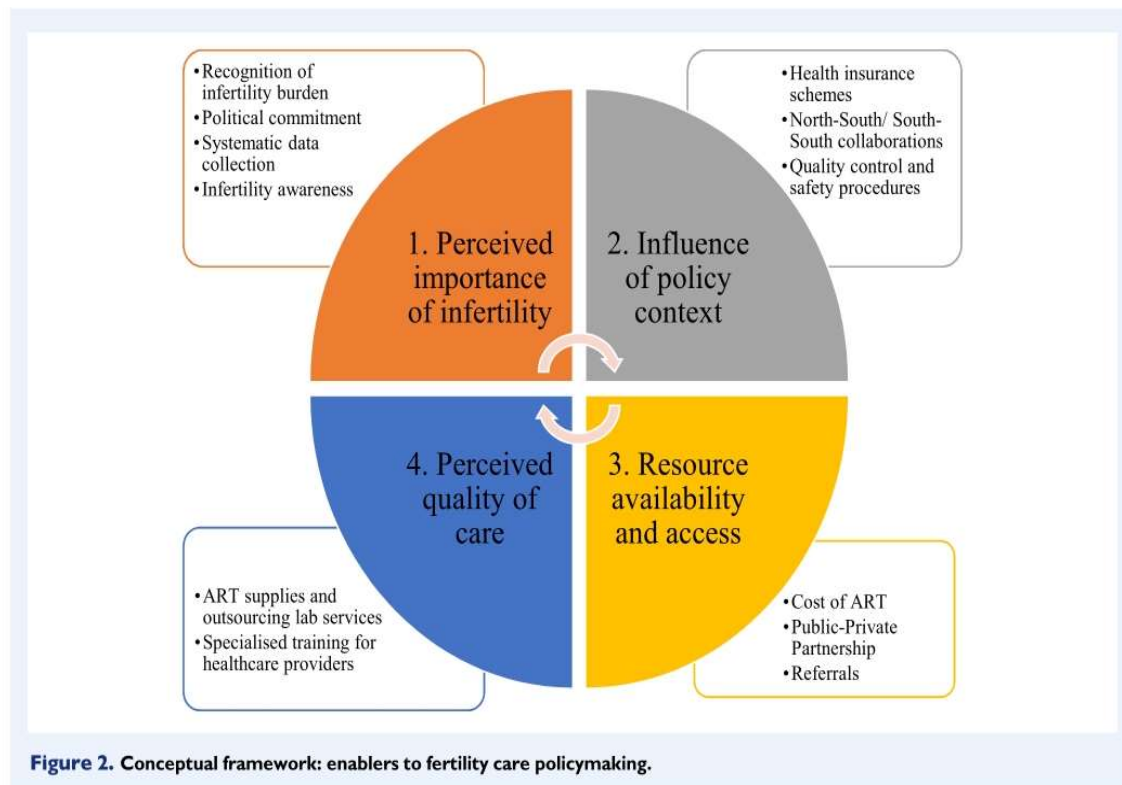
Discussion

This work reviewed and synthesized factors that inhibit or enable the inclusion of fertility care into RH policies in Africa. The findings highlight that policymakers and international stakeholders require urgent information and sensitization on infertility in order to understand its importance as a biomedical and social condition and as an RH right. Yet their interest in, and commitment to, infertility is diminished by the prevailing view that it is a condition without life-threatening consequences and its priority within RH policies remains masked by more high-risk conditions (Gerrits et al., 2017). We argue that this de-prioritization of infertility is strongly influenced by an absence of systematic recording, storing and sharing of relevant data, among others. The information gap also negatively influences African policymakers' responsiveness and the allocation of resources required to address infertility (Sharma et al., 2009; Gerrits and Shaw, 2010; Khalifa and Ahmed, 2012). Finally, the adoption of a 'small family' norm and the focus on reducing fertility rates makes prioritization of infertility even more pressing. Couples who postpone or widely space pregnancies should also have the means to achieve one if and when the support is needed (Fathalla, 2002).

The limited awareness of infertility among the public and even among some health professionals fuels misinformation, perpetuates myths—for example, that use of contraceptives causes infertility—and amplifies fear, stigma and public reluctance to seek treatment (Asemota and Klatsky, 2015). This is exacerbated by low levels of attention to (in)fertility in health education programmes. Undervaluing interventions that focus on RH education may also impede recognition of early signs and symptoms that could lead to infertility (namely STIs) and can delay access to treatment (Dyer, 2008). Holistic approaches to fertility education, awareness and literacy in resources-poor settings can help better inform and sensitize the public (Bahamondes and Makuch, 2014; Dierickx et al., 2019) and should begin in adolescence in order to have an impact on future prospects of fertility (Ombelet, 2009).

Raising awareness on infertility and improving RH literacy more broadly is also key to reducing stigma and fostering changes in policy and practice (Dierickx et al., 2019). In Turkey, for example, activists from patients' organizations have successfully lobbied for fertility care, gaining traction with the government and instigating the formulation of a national infertility policy (Gerrits, 2012). Similarly, in The Gambia, infertility-related non-governmental organizations, such as Safe Haven, raise awareness through public walks and other campaigns and groups of women with infertility, the *Kanyaleng*, support each other by providing a safe space to release infertility-related social pressure (Dierickx et al., 2019; Dierickx, 2020). Lastly, in Egypt, once ICSI was introduced to treat male infertility, husbands become enthusiastic supporters of ART and encouraged their female partners to accept IVF (Serour and Serour, 2021).

Several other factors influence fertility care policy creation, one being dependency on external funds. Donors can steer the policymaking process by exerting political influence in areas concerning public health



and social policy. In this regard, the lack of global interest in infertility, from a donor perspective, has resulted in comparatively little attention on the issue (Hörbst, 2012). Similarly, the frequent absence of state subsidies and health insurance schemes contributes to poor access to infertility services among those most in need (Gerrits, 2012; Hörbst, 2012). Access might be facilitated through the adoption of a model of subsidizing infertility treatment allowing, for example, 2–3 cycles of treatment funded by the public sector for couples with specific characteristics (women under 40 years of age, primary infertility, socio-economic status, etc.; Inhorn and Gürtin, 2012). This model could form a first step towards decreasing inequalities in access to infertility treatment in selected African settings.

Yet, the high costs associated with ART remain a major impediment (Chiware *et al.*, 2021). With the aim of decreasing these costs in the Global South, ESHRE and The Walking Egg Foundation have worked, alongside researchers, to promote more reasonably priced ART (Ombelet, 2013, 2014; Ombelet and Goossens, 2016). Despite promising efforts, however, these North–South collaborations remain restricted to a few African clinics mainly because of the challenges in the allocation of public funding, optimization of ART techniques and an absence of fertility care in national RH policies. Attempts to include fertility care or a component of infertility treatment (such as low-cost IVF) have been achieved in a few African countries (Ombelet and Onofre, 2019). However, many of these strategies have failed to successfully integrate fertility care in national RH policies. This may be, in part, related to the difficulties in ensuring regulatory oversight and an absence of country-level professional societies, though further in-depth

research is needed in this area (Asemota and Klatsky, 2015). A reduction in the cost of ART, while feasible, may not therefore offer an immediate solution (Ombelet, 2014). To reduce the costs, international donors and other stakeholders, such as pharmaceutical organizations, would have to support the longer-term development of low-cost approaches. Such investment requires that donors recognize infertility as a global RH issues of importance in LMIC, including across Africa (Ombelet, 2011).

The African Network and Registry for ART (ANARA), established in 2015, is an important South–South collaboration that facilitates, via data sharing, an improved understanding of access to ART in Africa. According to the most recent data, Africa provides only 1% of ART, worldwide. With 20 African countries in the ANARA network, several, including South Africa, Nigeria, Egypt, Sudan and Ghana, now systematically report on ART. While Dyer *et al.* (2020) asserted that the data from these African countries are still little representative of the true utilization of ART, it is anticipated that ANARA will develop and that ART from data across Africa will become more robust. Even though it is too early to evaluate the impact of the African ART registries, there is good reason to believe that the collection of data on ART utilization will help strengthen decision and policymaking and could contribute to reducing the burden of infertility in Africa (Botha, Shamley and Dyer, 2018; Dyer and Zegers-Hochschild, 2019; Dyer *et al.*, 2020).

Another major barrier to the provision of fertility care is the lack of appropriate infrastructure, equipment and supplies. The organization of infertility services extends beyond mere technical expertise; it also

requires a continuous supply of high-quality laboratory materials (Okonofua, 1996). Yet, not all cases of infertility require costly, high-technology treatments. For example, IUI is far less complex—and cheaper—than IVF and achieves similar live birth success rates (Bahadur et al., 2020). Furthermore, simple procedures, such as the intravaginal culture of oocytes, have considerably reduced the cost of ART and can be performed with minimal equipment investment (Frydman and Ranoux, 2008; Khan et al., 2013). In this regard, simplification of ART becomes fundamental for the delivery of infertility care within African health systems, both in the public and private sectors.

Open and bi-directional communication between the public and private health sectors can facilitate discussion on whether building a PPP is valuable for the provision of infertility services (Akande, 2008; Gerrits, 2012; Hörbst, 2012; Hammarberg and Kirkman, 2013). In countries where the public sector cannot afford laboratory equipment, staff or expensive therapeutic protocols, partnership with private fertility clinics can add significant value. The public sector would rely on private facilities for supplies and human resources while private fertility clinics would have increased patient flow, allowing medical skills to be maintained. Building on public–private trust also facilitates transparent sharing of data between both sectors (Hörbst, 2012) and referral pathways may be established without losing track of patients (Dyer, 2008; Asemota and Klatzky, 2015). To this effect, the FIGO Fertility Toolbox offers indication on how both public and private networks can be strengthened and provides valid pathways of referral between levels of care (FIGO, 2012).

Fertility care embedded in broader RH policies can stimulate the creation of national guidelines and protocols, the gold standard for the provision of high-quality services (Sharma et al., 2009). The existence of national regulations ensures that physicians establishing fertility clinics are supported by comprehensive standards (Gerrits and Shaw, 2010; Hammarberg and Kirkman, 2013). The establishment, in early 2020, of the African Federation of Fertility Societies (AFFS) is a remarkable first step towards the creation of national branches of fertility societies and can be the driving force in bringing together infertility specialists, creating a space where the provision of infertility services is considered safe and of high quality (Gerrits, 2012; Asemota and Klatzky, 2015). Finally, the recent creation of the World Health Organization Sexual and Reproductive Health and Rights Policy Portal is giving fertility care policymaking a new impetus, and increase global attention.

Moving forward, findings suggest a strong need and timely opportunity for African governments to increase their focus on fertility care and its inclusion in RH policies through South–South and North–South partnerships for technical and financial assistance where required. Contextualized strategies should be developed based on local needs, priorities, resources and perspectives. African researchers, clinicians, policymakers and patients must be supported as equal and vested partners in researching and addressing infertility across the continent.

Limitations

The findings of this review must be considered in light of several limitations. Firstly, the QES presents a plethora of factors that potentially influence the inclusion of fertility care in RH policies in African settings. Although these factors reflect the opinions of experts and researchers, they do not fully explain why and how policymakers and practitioners

might consider how to apply them when establishing or implementing an RH policy that includes fertility care. Findings therefore cannot be overstated, but they can facilitate an understanding of how approaches differ across contexts and where improvements can be made. An in-depth context-sensitive analysis is needed in countries where fertility care has been included and in those where it has not. Secondly, owing to limits in the available literature specifically addressing *policymaking and fertility care* in Africa, it was challenging to trace and identify papers focused on these two themes. To this effect, there is an urgent need for further research in this area. Finally, papers using concepts such as ‘developing countries or low-resource settings’ were included when they appeared to refer to Africa. However, such labels are vague and extend to geographic areas, such as Latin America and South Asia, which were not specifically targeted in this review. The authors recognize that specific local factors may exert different impact and that context-relevant findings might have been missed or overlooked.

Priorities for further research

Further research is required to contextualize factors and processes that influence the inclusion of fertility care in national RH policies in African countries. While fertility care is receiving increased attention from the World Health Organization, to date it has been prioritized in few African countries (WHO, 2019) and efforts need to be boosted and sustained over time. Future studies should aim to understand how to successfully and sustainably include fertility care in RH policies in African settings by focusing on the reasons for policy successes and failures. Multidisciplinary and/or mixed-methods research on fertility care can help us to better understand infertility in relation to socio-economic, cultural-religious and political determinants. This has the potential to influence the health system in general, and specifically the provision of fertility care through informing development and implementation of locally and nationally appropriate policies. If appropriately contextualized, findings might be relevant to resource-poor regions other than Africa where fertility care also remains scant. Finally, implementation of already included fertility care policies requires further attention through operational research and improved uptake of policy into practice. As a starting point, researchers could compare across countries that have already included fertility care and services in their RH policies and form recommendations for best practices.

Conclusion

This review reveals that including fertility care in RH policies in Africa will require the recognition of infertility as a disease, strong political commitment and improved affordability of ART. Civil society leaders and other stakeholders should call for increased attention and awareness concerning infertility. To overcome budget limitations and reduce the cost of equipment, supplies and drugs, African governments could continue to build collaborations with the private sector and seek support from international partners. Human resources, infrastructures and supplies should be further developed, and standardized protocols drafted. Infertility is accompanied by strong social and emotional factors affecting the wellbeing of women and men, and addressing the gender dimensions of infertility is one of the foremost tasks required.

Supplementary data

Supplementary data are available at *Human Reproduction Update* online.

Data availability

The data underlying this article will be shared upon reasonable request to the corresponding author and/or the first author.

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Authors' roles

Conceptualization: A.A., J.B., S.D. and A.P. Formal analysis: A.A. and H.A. Investigation: A.A., H.A. and J.B. Methodology: A.A. and A.B. Writing—original draft: A.A. Writing—review and editing: A.A., H.A., J.B., A.B., S.D. and A.P.

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Conflict of interest

None declared.

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3.1 Contributions to Thesis

This evidence synthesis review confirmed that multiple factors mediate the decision of policymakers for including fertility care in reproductive health policies in Africa. Among those factors, political will and the high cost of ART. The latter factor confirms prior literature where the understanding of the feasibility of low-cost infertility treatment remains challenging mainly due to limited research. This also reflects the abulia of the market that move around fertility clinics, very much motivated by lucrative goals, and for so the little interest in reducing the prize for those treatments. The lack of interest in research for low-cost ART alternatives indicates a window of opportunity to explore and test, treatments and therapeutic protocols that could contribute to decrease further the cost of these treatments and might increase the demand – and access – for the most in need.

The conclusion that primary studies on fertility care policymaking were scarcely available provides evidence that there is the potential to broad health system research and include (in)fertility among other reproductive health interventions. Finally, the evidence synthesis review has contributed in the generation of a conceptual framework, a rapid tool to the benefit of policymakers, allowing them to pattern factors enabling the inclusion of fertility care in the health policies. This framework has the potential to assist in public health prioritisation for fertility care, in the creation of standards and guidelines for clinical practice, and in resource spending choices - such as the acquisition of equipment or of a certain medications, among others.

Lastly, the review has helped with the creation of the interviews guides used for the qualitative component of this research, narrowing the questions to the

context, and permitting to cover aspects of fertility care that have not been previously considered. In this regard, some of the questions for the interviews have followed the conceptual framework, and has facilitated the creation of themes during the thematic coding and the data analysis.

The next chapters introduce the case study of this research, The Gambia (*Chapter 4*), and the methodological approach chosen for the study (*Chapter 5*). Finally, in *Chapters 6 and 7*, this thesis explores the availability of infertility services in public and private facilities in The Gambia and the perception of policymakers and health practitioners concerning the challenges and opportunities that will arise from the implementation of fertility care.

Supplementary Data

1. Search strategy

Medline/EMBASE via OVID SP (132 papers)

1. infertility.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
2. childlessness.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
3. barrenness.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
4. infecundity.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
5. sterility.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
6. exp Infertility/
7. exp Infertility, Female/
8. 1 or 2 or 3 or 4 or 5 or 6 or 7
9. exp africa/ or exp africa, northern/ or exp "africa south of the sahara"/
10. Africa, Western/ or Africa, Northern/ or South Africa/ or Africa, Eastern/ or Africa.mp. or Africa, Central/ or "Africa South of the Sahara"/ or Africa/ or Africa, Southern/
11. 9 or 10
12. exp global health/ or exp public health/ or exp reproductive health/ or exp sexual health/ or exp "social determinants of health"/
13. reproductive health.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol

supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
14. policy.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
15. Policy/ or Health Policy/ or Policy Making/
16. 12 or 13
17. 14 or 15
18. 8 and 11 and 16 and 17

PUBMED (118 papers)

(Policy OR "Policymaker" [All Fields] OR Health system [Text Word]) AND (Africa OR Algeria OR Angola OR Basutoland OR Benin OR Botswana OR Burkina Faso OR Burkina Fasso OR Burundi OR Cameroon OR Camerons OR Cameroon OR Cameroons OR Cape Verde OR Central Africa OR Central Africa Republic OR Chad OR Comores OR Comoro Islands OR Comoros OR Cote d'Ivoire OR Dem Republic of Congo OR Djibouti OR East Africa OR Egypt OR Equatorial Guinea OR Eritrea OR Eswatini OR Ethiopia OR French Somaliland OR Gabon OR Gabonese Republic OR Gambia OR Ghana OR Gold Coast OR Guinea OR Guinea Bissau OR Horn of Africa OR Ifni OR Ivory Coast OR Kenya OR Lesotho OR Liberia OR Libya OR Madagascar OR Malagasy Republic OR Malawi OR Mali OR Mauritania OR Mauritius OR Morocco OR Mozambique OR Namibia OR Niger OR Nigeria OR Norther Africa OR Republic of Congo OR Rhodesia OR Ruanda OR Rwanda OR Sao Tome' and Principe OR Sahel OR Senegal OR Seychelles OR Sierra Leone OR Somalia OR South Africa OR South Sudan OR Southern Africa OR Sub-Saharan Africa OR Sudan OR Swaziland OR Tanzania OR Tchad OR The Gambia OR Togo OR Togolese Republic OR Tunisia OR Uganda OR Upper Volta OR Urundi OR West Africa OR Zaire OR Zambia OR Zimbabwe) AND (Reproductive OR Health OR "Practice" [All fields]) AND (Childlessness OR Infecundity OR Infertility OR Subfertility OR Barrenness)

Web of Science (67 papers)

ALL=(infertil*) AND ALL=(africa) AND ALL=(health policy)
 ALL=(northern africa OR western africa OR eastern africa OR southern africa OR central africa OR sub-saharian africa) AND ALL=(reproductive health policy) AND ALL=(infertil*)

Google Scholar (357 papers)

"Infertility services" AND integrat* AND Polic* AND Africa
 "Infertility services" AND "Policy" OR "Health system" AND "Reproductive Health" AND "Africa"

CINHAL via EBSCO (15 papers)

(MH "Infertility") OR "infertility" OR (MH "Childlessness") OR "Childlessness" "barrenness" OR (MH "Infertility Care)" OR "subfertility" AND (MH "Africa") OR "africa" OR (MH "Africa South of the Sahara") OR (MH "Africa, Western") OR (MH "Africa, Southern") OR (MH "Africa, Northern") OR (MH "Africa, Eastern") OR (MH "Africa, Central") OR (MH "South Africa") AND (MH " Reproductive Health Policy") OR (MH "Health Policy") OR "reproductive health policy"

SCOPUS (48 papers)

(TITLE-ABS-KEY (childlessness OR Infecundity OR infertility OR subfertility OR barrenness)) AND (TITLE-ABS-KEY (health AND policy)) AND (TITLE-ABS-KEY (Africa))
(TITLE-ABS-KEY (childlessness OR Infecundity OR infertility OR subfertility OR barrenness)) AND (TITLE-ABS-KEY (reproductive AND health AND policy)) AND (TITLE-ABS-KEY (Africa))

2. PerSPECtiF framework

Per	S	P	E	(C)	Ti	F
Perspective	Setting	Phenomenon of interest	Environment	(optional Comparison)	Time Timing	Findings
From the perspective of the health system	Africa (all countries)	Inclusion of fertility care into reproductive health policy	People living with infertility	Current practice (Compared with countries and health systems where fertility care is included)	Current	Factors that enable or inhibit inclusion

3. Inclusion and exclusion criteria

<i>INCLUSION</i>	<i>EXCLUSION</i>
Papers from Africa or with a strong focus on African settings	Papers focused on diseases not related to the reproductive tract and/or targeting genomics/genetic
Papers with a focus on infertility from a policy/management/service delivery point of view	Studies focused on behaviours, perceived definition of, causes and acceptance of ART, and social- psychological-cultural determinants of male and female infertility including gender-based violence and religious barriers
Papers where ART are discussed as part of the fertility care service provision and policymaking	Studies concerning medical, herbal, surgical treatment for female and male infertility
No language restriction	Studies solely focused on ART such as eggs freezing, embryo freezing and transfer, IVF, ICSI, eggs or sperm donation
Qualitative or systematic reviews; opinion pieces, commentaries.	Studies focused on the aetiology of infertility as consequence of female genital mutilations, pregnancy-care, unsafe abortion, cancer, STIs, TB, malaria, and HIV/AIDS
	Studies on the prevalence of primary and secondary infertility
	Studies focused on cross-border reproductive health
	Papers where full text was not available

4. Characteristics of excluded papers

<i>Papers</i>	<i>Reason for exclusion</i>
(Brown <i>et al.</i> , 2016); (McMillan, 2001); (Nygren and Zegers-Hochschild, 2008); (Ombelet <i>et al.</i> , 2008); (Pennings, 2008); (Pennings <i>et al.</i> , 2009); (Lemoine and Ravitsky, 2013); (Serour, 2008)	Not Africa-focused (n =8)
(Bergstrom, 1992); (Gerrits, 2018); (Ombelet, 2017); (Ombelet, 2015); (Sundby & Larsen, 2006); (Vayena, 2009)	Full text not available (n = 6)
(Berer, 2003); (Church <i>et al.</i> , 2010); (Cooper <i>et al.</i> , 2004); (Cooper <i>et al.</i> , 2015); (Hope <i>et al.</i> , 2014); (Lush, 2000)	Not infertility (n = 6)
(Adekile, 2013); (Cooke <i>et al.</i> , 2008); (Inhorn and Patrizio, 2014); (Ombelet and Onofre, 2019); (Vayena <i>et al.</i> , 2009)	Focused solely on ART or ART cost (n =5)
(Nachtigall, 2006); (Rowe, 1999)	No policy-related (n = 2)
(Dhont, 2013); (Gwet-Bell <i>et al.</i> , 2018); (Moungala <i>et al.</i> , 2019); (Ombelet, 2008); (Van Der Poel, 2012); (Van Zandvoort <i>et al.</i> , 2001); (Zegers-Hochschild <i>et al.</i> , 2014); (Zegers-Hochschild <i>et al.</i> , 2017)	Low relevance (n = 8)
(Heffron <i>et al.</i> , 2015); (Hough, 2010); (Lusti-Narasimhan <i>et al.</i> , 2014); (Pinsky <i>et al.</i> , 2018); (Richey, 2004); (Starrs <i>et al.</i> , 2018); (Sundby, 2014); (Wouters <i>et al.</i> , 2010)	SRH, HIV policies or STIs (n = 8)

5. Characteristics of included papers

<i>Papers</i>	<i>Settings</i>	<i>Methods</i>	<i>Type of paper</i>
Akande, 2008	Nigeria	NS ³⁶	Article
Akinloye and Truter, 2011	Nigeria	NS	Literature review
Asemota and Klatsky, 2015	Africa	NS	Article
Bahamondes and Makuch, 2014	Developing countries	Literature review	Article
Dierickx <i>et al.</i> , 2019	The Gambia	Qualitative research	Article
Dyer, 2008	African countries	NS	Article
Gerrits and Shaw, 2010	Sub-Saharan Africa	Systematic review	Systematic review
Gerrits, 2012	Developing countries	NS	Monograph
Gerrits <i>et al.</i> , 2017	Kenya and Ghana	Proceedings from experts workshop	Short communication
Hammarberg and Kirkman, 2013	Resources-constrained settings	NS	Article
Hörbst, 2012	West Africa (Mali, Togo, Senegal)	Qualitative and observational research	Article
Inhorn, 2009	Developing countries	NS	Article
Khalifa and Ahmed, 2012	Sudan	Qualitative research	Monograph
Okonofua, 1996	Nigeria	NS	Article
Ombelet, 2009	Resource-poor countries	NS	Article
Ombelet, 2011	Developing countries	NS	Viewpoint
Ombelet, 2014	Tanzania	NS	Commentary
Serour <i>et al.</i> , 2019	Africa	NS	Brief Report
Sharma <i>et al.</i> , 2009	Low-resource settings	NS	Literature review
van Balen and Gerrits, 2001	Poor-resource areas	NS	Opinion

³⁶ NS: not specified

6. Quality assessment checklist

<i>Authors</i>	<i>Clear source of opinion</i>	<i>Author standing within field of expertise</i>	<i>Intended audience</i>	<i>Rationale</i>	<i>Reference extant literature</i>	<i>Defending opinion</i>	<i>Overall quality</i> 37
Akande, 2008	H	H	H	H	M	H	H
Akinloye & Truter, 2011	H	M	L	M	H	M	M
Asemota & Klatsky, 2015	H	H	H	H	H	H	H
Bahamondes & Makuch, 2014	H	M	H	H	H	M	H
Dierickx <i>et al.</i> , 2019	H	H	H	H	M	H	H
Dyer, 2008	H	H	M	M	H	L	M
Gerrits & Shaw, 2010	H	H	M	M	H	M	M/H
Gerrits, 2012	H	H	H	H	M	H	H
Gerrits <i>et al.</i> , 2017	H	H	M	M	M	L	M
Hammarberg & Kirkman, 2013	H	M	L	H	H	M	M/H
Hörbst, 2012	H	M	M	H	M	H	M/H
Inhorn, 2009	H	M	M	H	H	H	H
Khalifa & Ahmed, 2012	H	H	H	H	M	H	H
Okonofua, 1996	H	H	L	H	H	M	H
Ombelet, 2009	H	H	H	H	M	H	H
Ombelet, 2011	H	H	H	H	H	H	H
Ombelet, 2014	H	H	H	H	H	H	H
Serour <i>et al.</i> , 2019	H	H	M	H	H	H	H
Sharma <i>et al.</i> , 2009	H	H	M	M	M	M	M
van Balen & Gerrits, 2001	H	H	L	H	M	M	M

³⁷ H: high; M: medium; L: low

7. Synthesis of thematic analysis

Factors	Akande 2008	Akinloye 2011	Asemota 2015	Bahamondes 2014	Dierickx 2019	Dyer 2000	Gerrits 2010	Gerrits 2012	Gerrits 2017	Hammarberg 2013	Hörbst 2012	Inhorn 2000	Khalifa 2012	Okonofua 1996	Ombelet 2009	Ombelet 2011	Ombelet 2014	Serour	Sharma 2009	Van Balen 2001
<i>BARRIERS</i>																				
Under recognition of infertility burden (16)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Women's problem (14)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
High cost associated with ART (12)			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>
Private sector care unaffordable (11)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Poor involvement of partner (8)		<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Poor political commitment (7)				<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	
Lack of state-subsidy and health insurance (6)								<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>
Donor dependency (6)			<input type="checkbox"/>		<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>				
Poor referral system between levels of care (5)					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>						<input type="checkbox"/>	
Unregulated practice and lack of professional oversight (4)			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>									
Poor systematic data collection (3)							<input type="checkbox"/>	<input type="checkbox"/>										<input type="checkbox"/>		
Lack of accreditation bodies and standardised guidelines (3)							<input type="checkbox"/>						<input type="checkbox"/>		<input type="checkbox"/>					
Lack of specific fertility care management or training (2)							<input type="checkbox"/>						<input type="checkbox"/>							
Weak infrastructure and specialised equipment (2)													<input type="checkbox"/>					<input type="checkbox"/>		

Factors	Akande 2008	Akinloye 2011	Asemota 2015	Bahamondes 2014	Dierickx 2019	Dyer 2009	Gerrits 2010	Gerrits 2012	Gerrits 2017	Hammarberg 2013	Hörbst 2012	Inhorn 2009	Khalifa 2012	Okonofua 1996	Ombelet 2009	Ombelet 2011	Ombelet 2014	Serour	Sharma 2009	Van Balen 2001
<i>FACILITATORS</i>																				
Political commitment and lobbying (12)	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
North-South collaboration (10)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>
Fertility education (9)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Quality control and standard procedures																				
Fertility care guidelines and legislation (9)			<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Fertility care management training for health providers (9)			<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infrastructure, supply and equipment																				
Outsourcing lab services (8)	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
Affordable and simplified ART (7)	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Infertility awareness (7)					<input type="checkbox"/>			<input type="checkbox"/>					<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Public-Private Partnership (6)	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>							
Systematic data collection (5)		<input type="checkbox"/>											<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
State-subsidy and health insurance schemes (3)							<input type="checkbox"/>						<input type="checkbox"/>						<input type="checkbox"/>	
Functioning referral system (2)			<input type="checkbox"/>																	<input type="checkbox"/>

8. Framework for factors, themes, and categories

<i>Stage 1</i>	<i>Stage 2</i>	<i>Stage 3</i>
Factors (n = 18)	Themes (n = 8)	Categories (n=4)
Political commitment; recognition of infertility burden; data collection	Perceived importance among policymakers	Perceived importance of infertility
Woman's problem; involvement of husband/partner; infertility awareness, fertility education	Perceived importance among society	
State subsidy and insurance schemes; donor dependency; quality control and standard procedures; North-South/South-South collaborations	Effects of policies	Influence of policy context
Direct and indirect costs associated with ART	Cost of ART	Resource availability and access
Public-Private Partnership	Private Care	
Referral system	Referrals	
Package of drugs, medical equipment, and supplies necessary to deliver infertility services; infrastructure	Drugs, equipment and supplies	Perceived quality of care
Training needs; regulation of medical practice	Specialised training for health providers	

9. Summary of findings

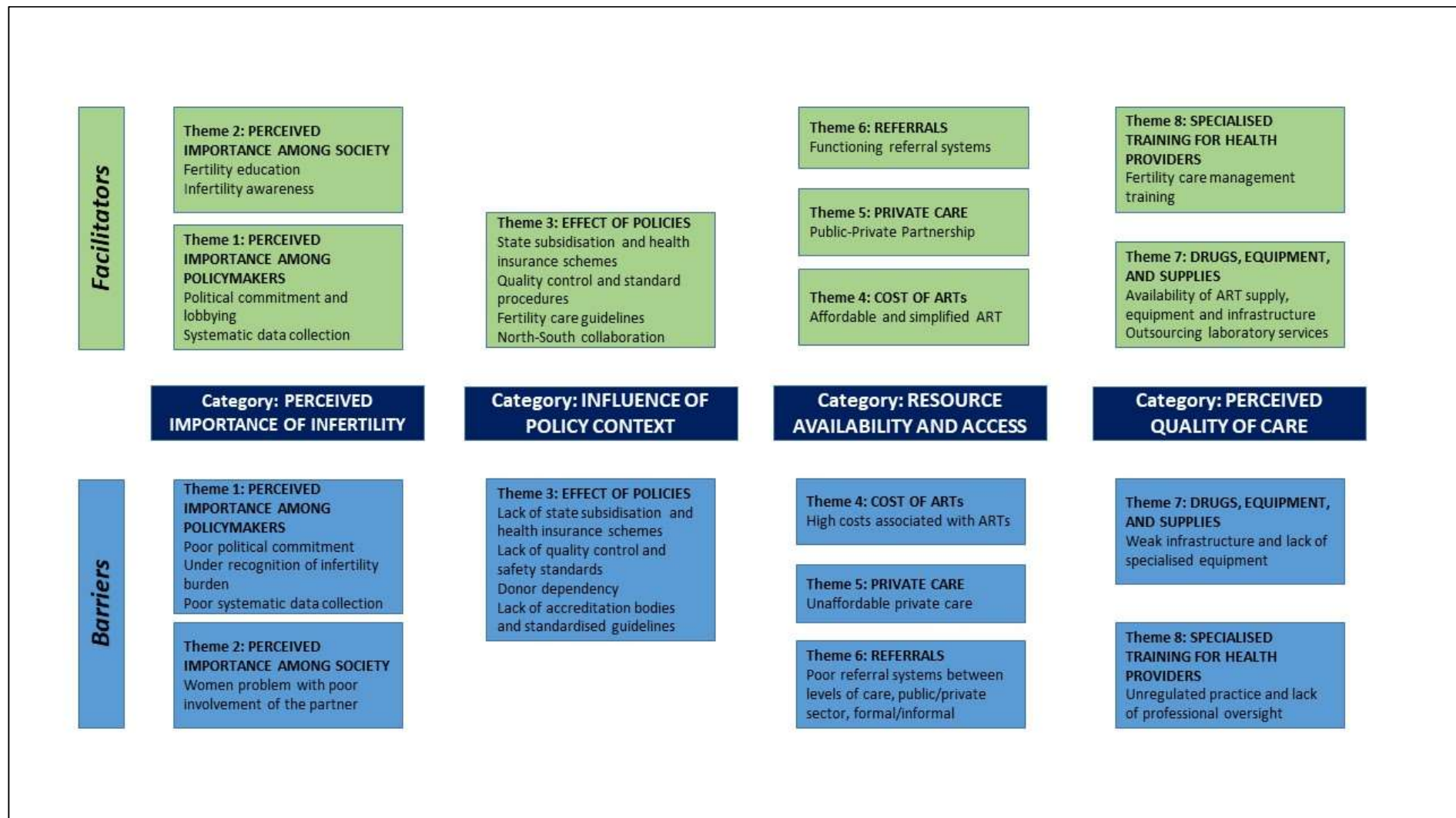
	<i>Relevant papers</i>
1. PERCEIVED IMPORTANCE OF INFERTILITY	
<i>Theme 1: Perceived importance among policymakers</i>	
Facilitator: Political commitment and lobbying	(Okonofua, 1996; van Balen and Gerrits, 2001; Akande, 2008; Dyer, 2008; Ombelet, 2009, 2011, 2014; Sharma <i>et al.</i> , 2009; Gerrits and Shaw, 2010; Akinloye and Truter, 2011; Gerrits, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Gerrits <i>et al.</i> , 2017; Serour <i>et al.</i> , 2019; Dierickx <i>et al.</i> , 2019)
The willingness of the government body to include fertility care into reproductive health policy is primordial. The inclusion also serves as regulation for infertility services providers, such as private sector clinics, to impede 'professional liberty'. Governments prioritise investments in the prevention of infertility rather than cost-effective technologies.	
Barrier: Under recognition of infertility burden	(van Balen and Gerrits, 2001; Akande, 2008; Dyer, 2008; Ombelet, 2009, 2011, 2014; Sharma <i>et al.</i> , 2009; Inhorn, 2009; Akinloye and Truter, 2011; Gerrits, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Serour <i>et al.</i> , 2019; Dierickx <i>et al.</i> , 2019)
Health systems in Africa do not recognise infertility as a burden or a priority health issues. This affects policymaking and resource allocation. Assets are assigned to reduce fertility rates and slow population growth. International community pays little attention in providing support for fertility care management.	
Barrier and facilitator: Systematic data collection	(van Balen and Gerrits, 2001; Sharma <i>et al.</i> , 2009; Gerrits and Shaw, 2010; Akinloye and Truter, 2011; Gerrits, 2012; Khalifa and Ahmed, 2012; Ombelet, 2014; Serour <i>et al.</i> , 2019)
Data on infertility cases, ART provision scarcely reported and not the focus of the health management and information system. Knowing a national estimate on infertility is associated with an increased recognition of the problem.	
<i>Theme 2: Perceived importance among society</i>	
Barrier: Conceptualised as women's problem, with poor involvement of the partner	(van Balen and Gerrits, 2001; Dyer, 2008; Sharma <i>et al.</i> , 2009; Inhorn, 2009; Gerrits and Shaw, 2010; Akinloye and Truter, 2011; Ombelet, 2011; Khalifa and Ahmed, 2012; Gerrits, 2012; Hörbst, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Dierickx <i>et al.</i> , 2019)
Infertility linked with profound suffering, particularly on the part of women. In Africa, women are blamed for childlessness even if the partner is infertile. Reproductive health policy including fertility care should recognise gender disparity and address it comprehensively.	

Facilitator: Infertility awareness and fertility education	(van Balen and Gerrits, 2001; Dyer, 2008; Ombelet, 2014; Sharma <i>et al.</i> , , 2009; Ombelet, 2009, 2011; Gerrits, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Gerrits <i>et al.</i> , 2017; Dierickx <i>et al.</i> , 2019)
Support from media and patient networks is necessary to disseminate information concerning infertility and to change the socio-cultural beliefs linked to childlessness. Success is possible when people group themselves with the aim of reducing societal, cultural, psychological and economic consequences of unwanted infertility. When infertility is discussed with politicians, patients' voice become critical.	
2. INFLUENCE OF POLICY CONTEXT	
<i>Theme 3: Effects of policies</i>	
Barrier and facilitator: State subsidy and health insurance scheme	(Okonofua, 1996; van Balen and Gerrits, 2001; Inhorn, 2009; Sharma <i>et al.</i> , 2009; Gerrits and Shaw, 2010; Gerrits, 2012; Hörbst, 2012; Khalifa and Ahmed, 2012; Serour <i>et al.</i> , 2019)
Apart from rare exceptions, subsidisation of infertility services in Africa is no existent. Recipients treated for infertility pay the majority of the expenses with out-of-pocket funds. Urban areas accommodate the majority of infertility clinics. Due to this, additional indirect costs (e.g., transportation and lodging) are also associated while seeking for infertility care.	
Barrier: Donors' dependency	(Okonofua, 1996; Ombelet, 2011; Hörbst, 2012; Hammarberg and Kirkman, 2013; Asemota and Klatsky, 2015; Dierickx <i>et al.</i> , 2019)
The decisions of policymakers are dependent upon sponsoring organisations and must comply with donors' requirements instead of local or national health system needs. Allocation of funds rely on epidemiological data while the burden of infertility is unaccounted for. International willingness to support fertility care and infertility services is missing but essential to alleviate couples with infertility and to improve equity and access to infertility treatment.	
Barrier and facilitator: Quality control, standards procedures, accreditation bodies	(Okonofua, 1996; Ombelet, 2011; Sharma, Mittal <i>et al.</i> , 2009; Ombelet, 2009; Gerrits and Shaw, 2010; Gerrits, 2012; Hörbst, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Dierickx <i>et al.</i> , 2019)
To guarantee safe ART treatments and monitor complications and side effects, standardised procedures and quality control for infertility care are needed. Creation and dissemination of these standards should be provided by the formal health sector.	

<p>Facilitator: North-South collaboration</p> <p>Collaborations with Western specialists can be considered, when local administrations cannot provide infertility services. Training can be provided to few local specialists and cascaded, later on, to other members of the infertility team. Second-hand equipment can be purchased from fertility clinics in developed countries and transnational professional networks created for training purposes. Infertility is generally overlooked in all levels of care.</p>	<p>(van Balen and Gerrits, 2001; Gerrits and Shaw, 2010; Ombelet, 2011, 2014; Gerrits, 2012; Hörbst, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Dierickx <i>et al.</i>, 2019)</p>
<p>3. RESOURCE AVAILABILITY AND ACCESS</p>	
<p><i>Theme 4: Cost of ART</i></p>	
<p>Barrier and facilitator: Cost of ART</p> <p>Costs associated with infertility treatment are perceived as unaffordable for the majority of couples and unfeasible for most African health budgets. ART are considered a luxury. Affordable cost of ART is associated with willingness, by the health systems, to provide these treatments.</p>	<p>(Okonofua, 1996; van Balen and Gerrits, 2001; Akande, 2008; Dyer, 2008; Inhorn, 2009; Ombelet, 2009, 2011, 2014; Gerrits and Shaw, 2010; Akinloye and Truter, 2011; Khalifa and Ahmed, 2012; Gerrits, 2012; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Gerrits <i>et al.</i>, 2017; Serour <i>et al.</i>, 2019; Dierickx <i>et al.</i>, 2019)</p>
<p><i>Theme 5: Private care</i></p>	
<p>Barrier: Private sector unaffordable</p> <p>Due to the high cost of the private sector, inclusion of infertility care in public health policy is essential. This is associated with health justice, universal health coverage and increased access to infertility services.</p>	<p>(Okonofua, 1996; Dyer, 2008; Sharma <i>et al.</i>, 2009; Ombelet, 2009, 2011, 2014; Hammarberg and Kirkman, 2013; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015; Dierickx <i>et al.</i>, 2019; Serour <i>et al.</i>, 2019)</p>
<p>Facilitator: Public-Private Partnership</p> <p>Public-private partnership model improves access, quality, and efficiency of infertility care. Joint ventures with the private sector are associated with optimisation of resources and provision of care once unavailable in the formal public health sector. Considering the private sector as an actor in reproductive health policy and practice could create a fertile and productive environment and may be beneficial.</p>	<p>(Akande, 2008; Akinloye and Truter, 2011; Gerrits, 2012; Hörbst, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013)</p>
<p><i>Theme 6: Referrals</i></p>	

Barrier and facilitator: Poor referral system between levels of care, public/private sector, formal/informal	(van Balen and Gerrits, 2001; Dyer, 2008; Sharma <i>et al.</i> , 2009; Gerrits and Shaw, 2010; Khalifa and Ahmed, 2012; Asemota and Klatsky, 2015; Dierickx <i>et al.</i> , 2019)
The health systems cannot always guarantee an efficient referral system between levels of care, public and private health facilities, and formal and informal care.	
4. PERCEIVED QUALITY OF CARE	
<i>Theme 7: Drugs, equipment and supply</i>	
Barrier: Poor infrastructure and specialised equipment	(Sharma <i>et al.</i> , 2009; Khalifa and Ahmed, 2012; Serour <i>et al.</i> , 2019)
Health infrastructure inadequate and poorly equipped contributing to the perceived low quality of care. The lack of specialised drugs, equipment and supplies led women to seek care with unskilled providers or to travel abroad to comply with the gaps in service availability.	
Facilitator: ART supplies and outsourcing laboratory services	(Okonofua, 1996; van Balen and Gerrits, 2001; Akande, 2008; Sharma <i>et al.</i> , 2009; Ombelet, 2011; Hörbst, 2012; Bahamondes and Makuch, 2014; Asemota and Klatsky, 2015)
Availability of equipment and supplies specific to infertility care impact positively on the delivery of services and they are paramount for the sake of a comprehensive fertility policy. Outsourcing laboratory services catering for more than one fertility clinic might be a solution to decrease costs related to diagnosis and treatment of infertility. Pharmaceutical firms contribute to providing laboratory equipment at low price.	
<i>Theme 8: Specialised training for health providers</i>	
Barrier: Unregulated practice and lack of professional oversight	(Gerrits and Shaw, 2010; Hörbst, 2012; Asemota and Klatsky, 2015; Dierickx <i>et al.</i> , 2019)
The absence of a professional body or fertility society to regulate and control the provision of infertility care is linked to a certain professional liberty.	
Barrier and facilitator: Fertility care management training	(van Balen and Gerrits, 2001; Ombelet, 2009, 2014; Sharma <i>et al.</i> , 2009; Gerrits and Shaw, 2010; Hörbst, 2012; Khalifa and Ahmed, 2012; Hammarberg and Kirkman, 2013; Asemota and Klatsky, 2015; Gerrits <i>et al.</i> , 2017; Serour <i>et al.</i> , 2019)
Specific training for health providers is associated with increased identification of infertile cases and prompt referral or treatment. Trust in the capability of health providers is linked to the perception of the quality of fertility care.	

10. Schematic representation of barriers and facilitators associated with each cross-cutting categories



4. Chapter: The Gambia

The Gambia was selected as the case study location for this work, based on the elements outlined in *Chapter 1* (study rationale). Below, a broad picture of country is given, including aspects of political history, demography and health policy and systems framework.

4.1 Country Profile

4.1.1 Colonial, Post-Colonial, and Political History

The Gambia, the smallest nation in the continent of African, became self-governing in 1963 and achieved independence in 1965 after more than two hundred years of British colonial rule. For centuries, European countries such as Britain, Portugal and France have colonised the West African region and established settlements involving both commercial and slave trade (Bertocchi, 2016). The Gambia was not spared from such colonialism approach despite having limited natural resources (mainly groundnut) to exploit, with the exception of the human slave trade (Gijanto, 2020).

Relatively little is known about The Gambia in the pre-colonial period³⁸ with knowledge that has be kept alive by oral traditions and have contributed to preserve part of the country's pre-European history alive. Until the late 19th century, The Gambia was closely tied to that of neighbouring Senegal and the region was often referred to as Senegambia. There are indications (fragments of pottery) that the Jola were among the early settlers in The Gambia (Linares, 1987). However, by in the fourteenth century the Mandinka Empire of Mali spanned from

³⁸ <https://www.accessgambia.com/information/history.html>

East to West regions beyond the River Niger, including the Senegambia on the Atlantic. Almost the whole trans-Saharan commerce was governed by this enormous empire. But by the start of the 15th century, the empire had lost its control and had shrunk back to its original starting ground. By the middle of the 15th century, a group of Mandingos settled in the basin of the Gambia River introducing Islam into The Gambia. When the first Europeans, primarily Portuguese, arrived in The Gambia in 1455, the Mandinka empire was still in its infancy. Although they did not settle, the Portuguese maintained a monopoly on commerce throughout the coast of West Africa for the whole of the 16th century.

Up until the middle of the 16th century, the Portuguese monopolised the development of economic and slave commerce. From the colonialist point of view, Portuguese exploration was so successful that prompted more Europeans, including British, to travel to Africa and West African regions, and engage in commerce with the local populations (Sarr, 2014). Germans established the first European settlement in the Gambia in 1651 when they erected a fort on James Island. They were overthrown by the British ten years later after constructing new forts in Barra and Bathurst (now Banjul) that were better situated to regulate the movement of ships. The country was then controlled by the British while Senegal was under the colonial rule of France. Despite, the British colonisers kept a low profile, avoiding to interfere with local ethnic groups through overthrowing local leaders and concentrating their commercial interests along the River Gambia (Gijanto, 2020), the human capital that was lost due to the slavery, left major challenges for the country development in addition to the societal deficit and cost borne by families of those

that were taken by the slave trade. The country became a republic in 1970 under the Dawda Jawara presidency.

President Jawara took over a country where little infrastructural investments were left, such as hospitals, schools and roads. However, under Jawara's leadership, the country improved enormously in terms of health and education and this was supported with investments from highly engaged actors such as international development agencies (Sundby, 2014). For example, in line with the Alma Ata principles (WHO-Unicef, 1978), primary health care was instituted to provide health services to rural communities and specialised hospitals were build, such as a maternity wing at the hospital of Banjul (Sundby, 2014).

After a previous unsuccessful coup in 1981, and the economic crisis also caused by tensions with Senegal, the Gambia came under military rule in July 1994 by Yahya Jammeh and other young Gambian National Army officers. At the beginning of Jammeh's mandate, some improvements were made by his government including a ban on Female Genital Mutilations (FGM) and increasing school attendance for girls, but these successes were relative and challenged by his controversial lifestyle and his brutal leadership.

The First Republic's democratic institutions of the Jawara presidency were supplanted by a self-constituted military council that ruled by decrees and institutional brutality under Jammeh. During that time, rights and liberties diminished, and people were tortured or simply disappeared if they spoke against the political regime and ideology (Jeng, 2014). Many were forced to relocate outside the country or to displace their families (Nabaneh, 2019). President Jammeh used a variety of strategies to maintain political power, including the use

of Islam and anti-Western rhetoric. Jammeh came from a family known for practising alternative medicine (herbalism), and he did not attend any formal medical training, yet he used his power to impose fraudulent health treatments, such as herbal cures for HIV/AIDS (Bosha *et al.*, 2019). Later in his tenure, he declared that could treat several illnesses, including cancer, diabetes, and infertility. Jammeh was defeated in 2016 by Adama Barrow after more than 20 years of dictatorship, leaving the country with a range of issues caused by governmental negligence, particularly in the health sector (Saine, Ceesay and Sall, 2013; Hultin *et al.*, 2017). This scenario was made much more challenging since Jammeh was also suspected of stealing millions from the nation's coffers before going into exile (Green, 2017).

4.1.2 Demography and Health Indicators

Based on the latest data, the current population of The Gambia is estimated at approximately 2.5 million, with women of reproductive age (WRA) counting for 23% of the total population. Average life expectancy at birth is 62 years (The World Bank, 2021). According to the 2019 World Population Prospects, 64% of the country's residents live in urban areas (WHO, 2019) which is not dissimilar from the general trend of countries in SSA where a steady rate of urbanisation will be witnessed by mid-century (Saghir and Santoro, 2018). The UHC service coverage index³⁹ scored The Gambia at 48 out of 100 (Mcfarlane *et al.*, 2022). Vis-à-vis reproductive health indicators, the total fertility rate is estimated at 4.4 births per woman (3.9 urban *vs* 5.9 rural). This is similar to the SSA fertility rate mean but in the

³⁹ Universal health coverage service coverage index: Average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population (SDG indicator 3.8.1)

last DHS 2019, a good portion of Gambian married women also expressed the “[...] *desire to control their future fertility*” and, by consequence, decrease the number of births (The Gambia Bureau of Statistics, 2020, p. 13). This high fertility level results in a youthful population structure in which 44% are younger than 15 years and only 2.5% are older than 65 years (WHO, 2019).

The maternal mortality ratio for the seven year period before the 2019 DHS was estimated at 289 maternal deaths per 100,000 live births. Thirty-three percent of women and 45% of men aged 15-49, reported having an STI or symptoms of an STI but had not sought advice or treatment, and 73% of women aged 15-49 are reportedly circumcised (The Gambia Bureau of Statistics and ICF, 2014). Harmful cultural practices including FGM which were banned in 2015 by former President Jammeh, could have serious implications on fertility despite data on these issues being limited. Infibulation, a more extreme form of FGM, has been linked to primary infertility in one study (Almroth *et al.*, 2005). Further, in settings where FGM is practiced, ascending pelvic infection as well as challenging or painful intercourse due to an infibulated vagina have both been proposed as potential causes of infertility (Reisel and Creighton, 2015).

4.1.3 Administration and Economy

The country is divided into seven administrative zones including two municipalities and five regions: Banjul and Kanifing municipalities, and West Coast, Lower River, North Bank, Central River, and Upper River regions (Figure 4.1). For statistical purposes, The Gambia is divided into eight local government areas (LGAs), specifically: Banjul, Kanifing, Brikama, Mansakonko, Kerewan, Kuntaur, Janjabureh, and Basse (The Gambia Bureau of Statistics and ICF, 2014).



Figure 4.1: Regions of The Gambia⁴⁰

The Gambian economy is focused on the traditional livelihood farming and the tourism industries. Prior to the COVID-19 pandemic, The World Bank estimated the country's GDP growth at 6.2 % in 2019, supported by an exceptional increase in the tourism industry. The poverty rate declined from 9.2 % in 2015 to 8.4 % in 2019 (pre

⁴⁰ Source: www.istockphoto.com

COVID-19 pandemic). However, the COVID-19 global crisis resulted in a contraction of the economy in The Gambia as in many other places, reversing gains in poverty reduction, triggering job losses, lowering remittances from abroad, heightening health spending, and raising food prices⁴¹. Further, the Russian war in Ukraine has also added significantly to food prices, with the lasting impacts of that not yet fully known. As a result, poverty increased again up to 9% in 2021. As a low-income country⁴², 10% of the population are still living below the poverty line of less than 2USD a day (The World Bank, 2021).

4.2 The Gambian Health System

Although over the past few decades the health status of Gambians has greatly improved, the results of the DHS published in July 2020, showed a state with still fragile health indicators and with reproductive health needs that are not completely satisfied (The Gambia Bureau of Statistics and ICF, 2014). The Gambian health system is regulated by a series of policies and strategic plans including a specific Reproductive Health Policy and a National Family Planning policy (Ministry of Health & Social Welfare, 2007, 2019a). As documented by Sundby (2014), the Gambian health system went through a substantial transformation from the post-colonial period (1970s -1980s) of highly-qualified and highly motivated stakeholders - and a major influx of international donors funds, to a new millennium (1990s-2000s) where international agendas and funds were oriented toward disease-specific programmes and less committed state-level actors (Sundby, 2014). This shift in the international

⁴¹ www.worldbank.org/poverty

⁴² worldbank.org/en/country/gambia/overview#1

health priority has burdened and influenced the implementation of many health services, particularly the maternal and child health programmes.

Despite showing health outcomes similar to neighbouring countries, such as a high prevalence of malaria, malnutrition, pneumonia and tuberculosis, The Gambia also displays signs of the so-called "*epidemiological transition*"⁴³ where infectious tropical diseases cohabit with non-communicable diseases (NCD). Most medical facilities and staff members are concentrated in urban areas of the country, and geographic access to care is unevenly distributed. Additionally, there are differences between regions, with the Western Region, or West Coast, holding the majority of the financial, human and institutional resources. The informal health sector, represented by traditional healers, serves as the first interaction with healthcare services for many rural communities (Ministry of Health & Social Welfare, 2017). Both *for-profit* and *not-for-profit* organisations provide health services in the private sector, and the WHO supports the health system via the Country Cooperation Strategic Agenda (WHO, 2018).

Despite the health system achieved some notable accomplishments (Sine, Saint-Firmin and Williamson, 2019), multiple factors place a significant burden on the provision of care, particularly insufficient financial support, failing physical infrastructure, shortage of proper supplies and equipment supply chain, and high attrition rate of health providers. As a result of poverty, traditional beliefs, and lack of awareness, Gambian citizens may delay in seeking medical care appropriately,

⁴³ Epidemiological transition is a theory which "describes changing population patterns in terms of fertility, life expectancy, mortality, and leading causes of death" (Wikipedia, 2020)

which contributes to poor health outcomes (Ministry of Health & Social Welfare, 2012).

The Gambian health system is organised into three levels of care: (i) primary (village health services); (ii) secondary (minor and major health centres); and, (iii) tertiary (district, general and teaching hospitals) (Figure 4.2).

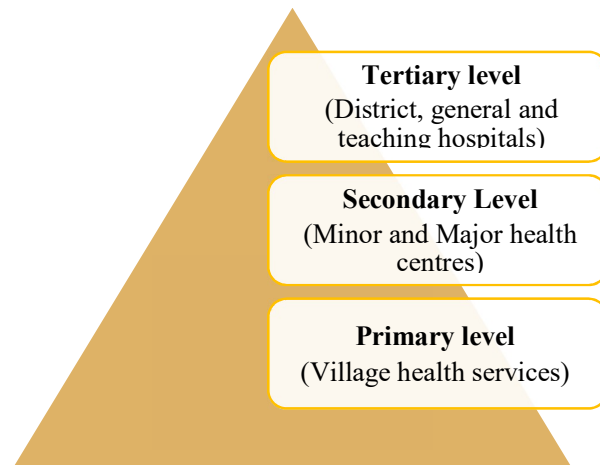


Figure 4.2: The Current Gambian Health System⁴⁴

However, in 2021, the Gambian government renewed its national health policy for the subsequent 10-year period. It has proposed substantial changes in the health pyramid, with new levels of care including a re-distribution of health services in which the Ministry of Health (MoH) will remain in charge of policy' creation and the National Health Service (NHS) will be in charge of policy implementation (Figure 4.3).

⁴⁴ Figure created by the author from (Ministry of Health & Social Welfare, 2021)

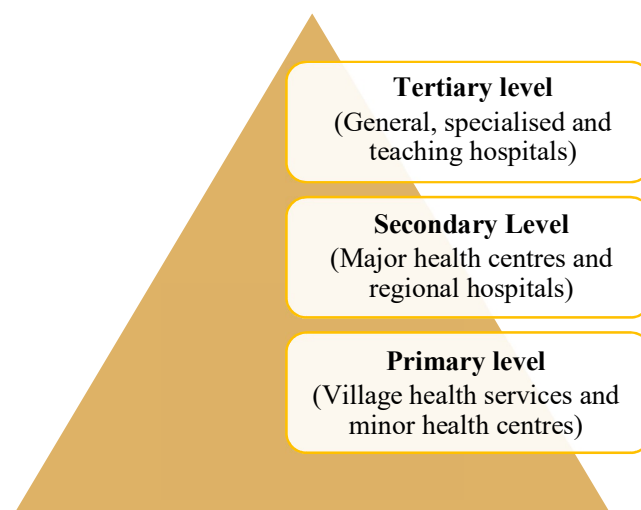


Figure 4.3: The Envisaged Gambian Health System within the National Health Services Tiers⁴⁵

Currently, the Gambian health system is organised as follows:

- a. **Primary Level (Village Health Services).** The primary level consists of community health, mainly delivered by the community birth companions (CBC) - formerly known as traditional birth attendants, trained community health workers (CHW), and community nurses. The primary level of care is the official entry point within the Gambian health system, especially in rural areas, and the community health providers are involved in health promotion and prevention, the treatment of minor illnesses, and referrals to the second tier of care.
- b. **Secondary Level (Minor and Major Health Centres).** The secondary level of care aims to provide a majority of the essential health care package to the population. Health services, such as basic emergency obstetric care, are provided by minor health centres. They serve as one of the referral points for the village health services. The secondary level is also comprised of major

⁴⁵ *Ibid*

health centres, providing comprehensive emergency obstetric care and serving as the referral centres for smaller health facilities.

- c. **Tertiary Level (District, General, and Teaching Hospitals).** In the tertiary tier, hospitals provide specialised care and are referral points for major medical facilities. The tertiary level includes specialised facilities such as eye care and the small teaching hospital 'Edward Francis' (EFSTH).

The Gambian health system includes also other structures such as the private and informal sectors, human resources for health (HRH), health financing, and research that all contribute to its functioning.

The Private Health Sector. The private health sector includes the private *for-profit* and private *not-for-profit* systems. Private medical facilities are overwhelmingly concentrated in the Greater Banjul Area, with limited access for people living in rural communities (Ministry of Health & Social Welfare, 2012). Furthermore, coordination across the health system, and particularly with the private sector, is a major challenge for The Gambia (Sine, Saint-Firmin and Williamson, 2019). The new health policy has promised to foster better harmonisation across the health system, including the private sector, and to regulate the provision of health services via a series of measures counting on standardisation of quality of care, accreditation procedures, and the strengthening of public-private partnerships (Ministry of Health & Social Welfare, 2021).

Human Resources for Health (HRH). Similar to other African countries, and despite being a relatively small nation, The Gambia suffers a chronic shortage of HRH (Sine, Saint-Firmin and Williamson, 2019). This situation is further exacerbated by thousands of Gambian health professionals within the diaspora that fled during

Jammeh' rule and have not yet returned (Green, 2017). There is insufficient health personnel to fulfil the demands of the people with respect to health care services, especially in public health facilities (Ministry of Health & Social Welfare, 2021), and the last report on HRH (2009) cited that none of the public health providers had reached the minimum recommended ratio of one health worker per 1000 population (Toure *et al.*, 2009). The development of HRH is not the only issue faced by the Gambian health system: both deployment and retention of health workforce, above all in rural areas, further affect health services delivery (Snow *et al.*, 2011).

Health Financing. The percentage of gross domestic product (GDP) allocated to health corresponded to 1% in 2019 (WHO, 2022a) and reflected less than the minimum recommended by the 2001 Abuja Declaration of 15% (Organisation of African Unity, 2001). As percentage of the general health expenditure, external funding was 45.5% in 2015, showing that donor aid is a major source of Gambian's health finance (Ministry of Health & Social Welfare, 2015; Sine, Saint-Firmin and Williamson, 2019). Private expenditures for health stood at 31% of the total health budget. Health insurance coverage is poorly represented in the Gambian health system, and only 3% of the total population, mainly civil servants, were covered by a voluntary ⁴⁶ insurance scheme in 2013 (The Gambia Bureau of Statistics and ICF, 2014). One of the main causes of financial stress, OOP payments, were estimated at 24.5% (Ministry of Health & Social Welfare, 2021). To reduce OOP expenditures on health, with the aim of improving-financial protection for families and communities and aligning with the UHC, the National Assembly passed a bill on the national health insurance in November 2021. Within the scheme, health services included in

⁴⁶ <https://www.who.int/teams/health-systems-governance-and-financing/health-financing/hfpm-background-indicators>

the minimum benefit package such as preventive and curative care for all newborn, children, adolescents, men and women, are covered. Considering that appropriate care for infertility is also included in the minimum benefit package, it is expected in the future that some fertility care services (mostly screening and testing) will be covered by the national health insurance (Ministry of Health & Social Welfare, 2017).

Health research. Most of the country's health research is conducted by the Medical Research Council (MRC), whose presence in The Gambia dates back 75 years. The MRC has established several field sites in the interior of the country, producing important biomedical discoveries, mainly focusing on the health of children and on malaria (Roca *et al.*, 2015; Usuf *et al.*, 2018; Wariri *et al.*, 2019). MRC is a modern health research enclave that is generally appreciated by health professionals in Gambia, who often have the opportunity to train and work in the MRC campus (Palmer, Anya and Bloch, 2009; Sundby, 2014). Another portion of health research in the country is conducted by scholars based at the University of The Gambia.

Informal health system. The informal healing system is highly valued and sought by Gambians, for some even before they attend for conventional medicine. This informal system includes herbalists, spiritualists, marabouts, and all people practicing traditional medicine (Ministry of Health & Social Welfare, 2012). In the ecology of the Gambian health system, this structure contributes significantly to the health of the population and the MoH has regulated and integrated the informal health system within the public health one (Ministry of Health & Social Welfare, 2021). To this regard, and to increase and strengthening the collaboration between the formal and informal health systems, the MoH is implementing a *people centred and cultural identity* approach where it recognises the importance of meeting local

demand and the value of the traditional structures (Ministry of Health & Social Welfare, 2012). To this end, and in theory, the MoH gives attention to the establishment and maintenance of regulatory mechanism to incorporate and control traditional medicine, and facilitates the collaboration with traditional medicine agencies to share knowledge, information, and experiences (Ministry of Health & Social Welfare, 2021).

4.3 Infertility in the Gambia

The prevalence of infertility in The Gambia is believed to be consistent with that of other African nations. In 2010, primary infertility accounted for an estimated 2% of women who seek a child and secondary infertility was at 10.6% (Mascarenhas *et al.*, 2012), with a total infertility rate of approximately 13%. Another study, conducted at the teaching hospital, reported 14% infertility among women consulting for fertility issues (Anyanwu and Idoko, 2017). Despite up-to-date information about STI prevalence being unavailable, tubal occlusion due to chronic pelvic inflammation is often reported as the main cause of secondary infertility, the type that affects Gambian women most frequently (Sundby, 1997; Anyanwu and Idoko, 2017). Male-factor infertility is estimated at 8.9% despite recent data are being severely limited (Anyanwu and Idoko, 2017).

As noted in *Chapter 1*, studies conducted on infertility in the country to date have approached the topic from ethnographic and medical anthropological perspectives, mainly to investigate and understand the social, cultural, and emotional toll that involuntary childlessness takes on Gambian men and women. Particularly, Dierickx *et al.* (2018, 2021) have reported that in The Gambia, a strong societal pressure persists on women to reproduce, and their inability to fulfil the motherhood role

causes, among others consequences, stigma, economic problems, and physical violence during their marriages. In the Gambian society, most women must satisfy their reproductive role in order to be considered part of the community and to benefit from all that childbearing unlocks, such as inheritance and social consideration. Due to societal traditions, such as pronatalist norms, many women who experience infertility live lives that are marked by social and emotional suffering, as well as low sense of self-esteem. Male perspectives, that are yet to be fully explored in the country, are also reported as impacted by fertility issues with high levels of psychological and social distress (Dierickx *et al.*, 2018; Hanna and Gough, 2020; Dierickx, Oruko, *et al.*, 2021).

A traditional structure exists for those women experiencing infertility and child loss: the *Kanyalengs* (Hough, 2010). The Gambia's *Kanyalengs* are groups of women who have suffered infertility or child loss. The majority of the Gambian *Kanyalengs* are related to the Mandinka or Jola ethnic groups, but they may include women from different ethnic groups too. The *Kanyalengs* groups offer social, emotional, and reproductive support. It doesn't change the fact that they are infertile or 'largely childless' but it does express optimism that they might be able to surmount these obstacles and join the group of women who have healthy and large families (Sundby, 1997; Hough, 2006; Dierickx *et al.*, 2019; Dierickx *et al.*, 2019; Dierickx, 2020). Studies that have assessed the difference among urban and rural women with infertility, showed that urban-based women who usually have higher socioeconomic status are less likely to be confronted with overt stigmatisation because they seem to have more power in both their marriages and society at large. On the contrary, women from low socioeconomic backgrounds are more likely to

face social stigmatisation if they are labelled as infertile by their family and community (Dierickx *et al.*, 2018).

4.4 Health Policy Frameworks and Fertility Care

Although general knowledge of fertility care policymaking processes was very limited prior to this research, the Gambian health system appeared similar to other West African countries, in which the health agenda is established to respond to competing health priorities, such as reducing maternal and newborn morbidity and mortality, and increasing contraceptive uptake (Ministry of Health & Social Welfare, 2019a).

Over the years, The Gambia has produced a substantial volume of health policies and other related documents to support the wellbeing of its citizens. All these policies reflect on the political will to enhance the Gambian health system and were configured around the political context of the country. During President Jammeh's rule, for example, some services such as HIV and fertility care were halted because of international donors' withdrawal after the state coup (Sundby, 2014), and due to the direct involvement of the President in these health matters (Hultin *et al.*, 2017; Bosha *et al.*, 2019; Dierickx *et al.*, 2019).

The national health policies are framed to respond to the National Population Policy that seeks to raise the level of living in the Gambia so as to improve the quality of life for its citizens. In the 2007 National Population Policy (Republic of The Gambia, 2007), The Gambia renewed its interest in reproductive health, and particularly in family planning (FP). This was further developed in multiple subsequent policies, specifically the National Health Strategic Plan 2014-2020 (Ministry of Health & Social

Welfare, 2014), the National RMNCAH⁴⁷ Policy 2017-2026, the National RMNCAH Strategic Plan 2017-2021, and the National Family Planning Policy (Ministry of Health & Social Welfare, 2019a) including a cost implementation plan supporting FP commodities (Ministry of Health & Social Welfare, 2019b). These health policies seek to achieve, among others, reductions in maternal mortality and intensified efforts toward universal access to sexual and reproductive health, in order to accelerate the realisation of the Sustainable Development Goal 3 and the principles of the ICPD agenda.

Recently, the government has renewed the national health policy covering the decade 2021-2030 with a specific focus on *“Building Partnerships for Quality Health Care for All”*, to provide the public with primary health care that is high-quality, inexpensive, and equitably distributed (Ministry of Health & Social Welfare, 2021). To achieve this target, the MoH aims to reducing OOP healthcare and catastrophic expenditures. On paper, these policies may appear optimistic, but in reality their implementation is complicated by multi-level factors, including, but not limited to the deployment and retention of human resources for health (Hudson, Hunter and Peckham, 2019; Sine, Saint-Firmin and Williamson, 2019).

Fertility care and infertility management have been a target of the Gambian health system since the 1993 FP policy. In fact, the Gambian government has included fertility care in its health legislation with the aim to *“reduce the incidence of infertility and subfertility by providing management services for those in need”* (Ministry of Health & Social Welfare, 1993). Despite having experienced some setbacks due to opposition by religious leaders and lack of political commitment

⁴⁷ RMNCAH: Reproductive Maternal Neonatal Child Adolescent Health

(Sundby, 2014), the interest in infertility has been reinforced in subsequent policies. These policies provide advice on family planning and, by large, on reproductive health matters, including infertility and subfertility, demonstrating the Gambian MoH's will to improve sexual and reproductive health for its population (Ministry of Health & Social Welfare, 2007, 2012). The latest FP policy (2019-2026) reiterates the importance of infertility for the wellbeing of Gambians, and states in key strategy 1.2 that it will "*provide quality services for the prevention, investigation and treatment of infertility*". Moreover, infertility management is mentioned in the minimum FP services package (Ministry of Health & Social Welfare, 2017b, p. 11) that clearly outlines the provision of infertility/subfertility services including comprehensive investigation of male and female partners, appropriate treatment including ART, and infertility counselling (Ministry of Health & Social Welfare, 2019).

It appears evident, from a first reading of the policies, that The Gambia has recognised infertility as a health priority for men and women. However, it also appears much more evident that, over the years, little has been done with regard to fertility care, with the health leadership not giving practical priority to infertility until recently (Balén *et al.*, 2020, *unpublished*). Although the Gambian government has embedded the prevention and management of infertility in various health policies, it has struggled to detail how to put fertility care into practice. In fact, addressing fertility care requires a comprehensive public health framework, the first step of which is to develop a national strategic plan that details the why, who, and the how of such interventions. This struggle shows that even in the situation where fertility care is included in national health policies, implementation remains highly problematic. While concrete action will vary depending on the political, economic

and sociocultural context, in The Gambia these challenges mainly indict to the lack of routine data collection on infertility, the poor ability of health providers to investigate and treat fertility-related issues, the insufficient budget allocated to health, and the lack of continuity in infertility advocacy and awareness (Ministry of Health & Social Welfare, 2017a).

As mentioned previously, high financial dependence of the health sector on international development donors that are focused on reproductive health topics other than infertility does not help the Gambian health system (Sundby, 2014; Sine, Saint-Firmin and Williamson, 2019). As a result, fertility care implementation remains minimised and undervalued despite the current political desire to address the issue.

The Gambia is not alone in its fight against infertility. Although international cooperation agencies not currently funding any infertility-related activities, the White Rose Interdisciplinary Network for Fertility Care in the Global South⁴⁸ is supporting both the MoH and the University of the Gambia with technical and educational guidance. The network was created in 2021 thanks to the White Rose Collaboration Fund grant and in collaboration with UK-based universities of York, Leeds, and Sheffield. Specifically, the network was deeply involved in the organisation of the first Fertility Care Policy dialogue workshop in 2020, which brought together various stakeholders including the MoH, Gambian activists, and academics from the UK and Belgium, and re-ignited the importance of supporting couples experiencing fertility issues. The workshop has further set priorities in identifying short- and long-term objectives for fertility care (Balén *et al.*, 2020, *unpublished*) and it has furthermore, benefited from lessons learned on enhancing

⁴⁸www.fertilitycareforall.org

fertility care from the WHO. The accomplishments of the network were the result of a unique combination of academia, local activism and policymakers' engagement that was pivotal to shaping fertility care in the latest edited national health policy. The Merck Foundation, the philanthropic arm of the pharmaceutical firm Merck KGaA (Germany) also operates in The Gambia, with the aim to improve the health and wellbeing of people through science and technology (Merck Foundation, 2020). The Merck Foundation has, as one of its goals, to reduce infertility stigma through its flagship programme 'More than a Mother' developed through a close partnership with the First Lady HE Mrs Fatoumatta Bah Barrow (Ndovie, 2020). The foundation also provides scholarships to train medical doctors in embryology and IVF, usually in partnership with a third country (India). The scholarship covers the costs for a 3-months training course. During the COVID-19 pandemic, the training was stopped and delivered online focussing on sexual and reproductive health only. It is not clear, however, how Merck operates in The Gambia nor which kind of collaboration and specific activities it has promoted with the MoH to decrease infertility stigma and increase infertility services availability.

4.5 A new decade for the Gambian Health System?

Within the new 2021-2030 health policy, the Gambian government has relaunched its engagement toward fertility care. This is a praiseworthy commitment but on closer scrutiny, it is not markedly different from the written engagement shown in previous policy documents (Ministry of Health & Social Welfare, 2007, 2012, 2019a). More interestingly, however, The Gambia is following through with this progress, specifically with the creation of the RH strategic plan and the greater space given to infertility by the Reproductive Maternal Newborn Child Adolescent Health

(RMNCAH) Unit (Appendix 6). This represents a policy innovation for the Gambian government, considering that dedicated activities - and budget – for fertility care were barely targeted previously. Specifically, these priority areas identified for infertility are to: (i) develop a national guideline for the prevention, investigation and treatment of couples with infertility; (ii) strengthen the capacity of the health facilities for the provisions of quality investigation, early diagnosis and treatment of infertility; (iii) build the capacity of health workers by providing further training on investigation and treatment of infertility; (iv) establish evidence-based research to assess the status of infertility and its associated risk factors in the Gambian context; (v) strengthen partnership, particularly public-private partnership, public-NGOs partnership for the multi-sectoral response for the comprehensive prevention, investigation and treatment of infertility; and (vi) establish data recording and reporting systems for infertility.

Even greater importance is the fact that the RMNCAH Unit has requested the participation and inputs from the Fertility Care Network in the Global South to support the RH strategic plan writing. The partnership between the RMNCAH Unit and the network is, at the same time, unexpected and welcomed. First, this is the first time that the Gambian government has requested input from academia for the redaction of an infertility-related strategic document, and this speaks to the relevance and interest generated by the network's activities. Second, this call is welcomed by the network because it is based on years of collaboration and research on infertility conducted in the country, and it has reinforced the partnership between policy makers, health professionals, activists, and academics.

Additionally, the network has facilitated multiple fertility care-related activities, mainly in The Gambia and recently in Ghana. Current projects include home-testing semen analysis (co-funded by both the University of Sheffield and the WHO), and a short course on fertility care in collaboration with the University of The Gambia⁴⁹. There is a sense of optimism in this process and a positive view for the future, if the collaboration between the network members continues.

In conclusion, the Gambian health system, a decentralised organisation that has in place sound health policies, presents a series of challenges in the operationalisation of some of the components of these policies. This is particularly true for the prevention and management of infertility, and broadly, for fertility care. There is, in this sense, a need to assist Gambian stakeholders with an inclusive fertility care policy allowing its citizens to access the more comprehensive and affordable infertility services.

⁴⁹ <https://www.sheffield.ac.uk/research/features/uniting-experts-address-infertility-gambia-and-beyond>

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5. Chapter: Methodological Overview

This chapter illustrates the methods chosen to implement this research, including the research philosophy, design, and data triangulation. Considering that an in-depth description of the methods that were used for this research is included in the manuscripts for *Chapters 3, 6 and 7*, this chapter aims to provide a methodological overview rather than a detailed account of participants, data collection and analysis.

5.1 Research Paradigm: The Janus Face of Pragmatism

This research is associated with a pragmatic paradigm. Pragmatism developed in the late 1800s from the works of Pierce (1839-1914), James (1842-1910) and Dewey (1859-1952). The central focus of pragmatism is the value of knowledge (and multiple ways of knowing), which depends on the context, and its practicality for daily life issues. Perfect knowledge is neither possible nor necessary. For pragmatists, knowledge and action are meaningful when associated, and they need to focus on practical rather than theoretical issues (Long, McDermott and Meadows, 2018). Pragmatism is particularly appealing for this research because of its flexible approach that accommodates other philosophical positions, and emphasises theories of learning in the service of experience, actions and practice. For this, it agrees with the contribution from both quantitative and qualitative methods employed in this research (Ormerod, 2006).

In philosophical terms, pragmatism recognises that individuals constitute the reality, but at the same time, this reality is a reconstruction of something that already exists. First, pragmatism values both the assumptions of positivist (Auguste Comte, 1798-1857) and interpretivist (Weber, 1864-1920) epistemologies and sees them as two sides of the same coin. Second, pragmatism emphasises the

importance of empirical observations (positivism) but at the same time, these observations rely on the researcher interpretation – meaning making - of the reality (interpretivism). Third, pragmatists recognise the existence of established social structures but also the role of the people that construct these structures. This duality worldview reflects that both philosophical assumptions are interesting in the context of this research.

Using pragmatism is attributable to Dewey's position that assert that beliefs and actions must be interpreted to generate experience (Morgan, 2014). Within the paradigmatic worldview, a mixed-methods approach was employed to gather, analyse and interpret the data in this research. From the pragmatic assumption that quantitative and qualitative methods are not conflicting, this research conducted statistical analysis on the quantitative data collected through a cross-sectional facility-based survey in order to establish the availability of infertility services within the public and private facilities in The Gambia. This method is consistent with the positivism paradigm and further details of the methodology of the survey can be found in *Chapter 6*.

With the understanding of the limits of positivism in representing people's views, capturing stakeholders' narratives about the inclusion and implementation of fertility care in the Gambian health system was also identified as a priority. This qualitative model reflects the interpretivist tradition and was implemented through semi-structured interviews with key national stakeholders. Further details on the qualitative methodology are reported in *Chapter 7*.

This pluralism of methods (survey and interviews) allowed this research to explore with and within multiple perspectives, and to ultimately building an

understanding of the process of inclusion and implementation of fertility care in The Gambia.

5.2 Positionality of the Researcher

As outlined in the preface, because of the intersection between my personal and professional lives, I became interested in infertility as a global health issue. I understand what it means being a childless woman but I lack any understanding of what it is like to be an African childless woman. I come from a European context where fertility care is mostly regulated and where infertility services are available for most people who are in need. In the UK, where I live, various forms of ART are subsidised by the government or covered by private medical insurance. I am also conscious that as a medically trained specialist in reproductive health, and as a public health practitioner, I am in an excellent position to understand infertility from both the biomedical and public health perspectives, and this gave me access, and a privileged entrance, in relation to the participants of my research working both in the health facilities and at government level. However, I recognise that my own identity of white woman contraposed with some of the participants of my study, specifically black African men in position of power, and my persona as a Western female researcher would have powered some of the participants behaviours, for example, being compliant with the 'foreigner' requests or replying in a certain way to my questions (responder bias). Finally, due to the many years working as a manager and evaluator in health programmes, I am in the position to provide a practical perspective to this research that aims to contribute to the broader knowledge on fertility care but, above all, to help Gambian health policymakers to promote a stronger health system.

5.3 Research Design

5.3.1 Mixed-Methods Research Rationale

In recent years, health research has seen an increased interest in using multiple methods, especially for health systems and health policymaking (Ridde and Olivier De Sardan, 2015; Kaur, 2016). The aim of using multiple methods is to generate robust and valid findings, and it is justified by obtaining a deeper and richer understanding of the research phenomena. The combination of quantitative and qualitative methods is called mixed-methods research (MMR). MMR is explained on pragmatic grounds, and it supports researchers in dealing with the complexity of the health systems. Based on existing definitions, MMR acknowledges that combining quantitative and qualitative approaches for data collecting and analysis within a single piece of research mitigates the drawbacks of a single strategy, and builds on the advantages of each approach (Tashakkori and Teddlie, 2010; Creswell and Plano Clark, 2017). Using MMR, the researcher aims to combine the strengths and curb the weaknesses of both approaches (Tariq and Woodman, 2013; Zhang and Creswell, 2013). Often, MMR is carried out in the context of the exploration of health issues, the development of instruments for measuring results and health policies, and the evaluation of health interventions (O’Cathain, Murphy and Nicholl, 2007). However, one of the challenges with MMR is the successful integration of quantitative and qualitative data during the interpretation phase. To mitigate this, a triangulation process was used. Triangulation is further described in this chapter which also includes concepts of how these issues have been mitigated in this research.

MMR was chosen because it was hypothesised that a single dataset was not enough to comprehend the research phenomena, and by the assumption that having multiple datasets would allow a richer understanding of the findings. Furthermore, quantitative and qualitative data answered different research questions. For this research two strands⁵⁰ of data were collected as noted above: a quantitative strand through a cross-sectional survey and a qualitative strand via semi-structured interviews. The intentions of the data collection tools were: (i) to illustrate the actual availability of infertility services in selected public and private health facilities throughout the country, and to understand the routine gathering of infertility data - quantitative strand (*quan*); and (ii) to explore stakeholders' viewpoints on the implementation of fertility care - qualitative strand (*QUAL*). The quantitative results were interpreted, after the analysis, together with the qualitative findings using a triangulation process (Olsen, 2004). The *quan* tool was judged to be the better fit for collecting numerical information and aimed to map health facilities offering infertility services. Semi-structured interviews (*QUAL*) were appropriate in situations where specific opinions and perspectives were being explored from the participant's angle (Bryman, 2016). These interviews were facilitated by interview guides containing questions that were applied in the same way to each participant. Both datasets were collected and analysed independently and the triangulation and interpretation of the two strands occurred after the analysis, in both arms. For the purpose of this thesis four prototype designs⁵¹ were scrutinised (Creswell and Plano Clark, 2017). The designs that appeared more pertinent to answering the

⁵⁰ A strand is a component of a study that encompasses the basic process of conducting quantitative or qualitative research such as posing a question, collecting data, analysing data, and interpreting results based on that data (Tashakkori & Teddie, 2009)

⁵¹ Convergent, exploratory, explanatory, and embedded

research questions were the convergent and embedded designs. However, neither of these was a perfect fit. In the convergent design, for example, the timing of the data collection is usually simultaneous with qualitative and quantitative data collected in the same moment. They are equally important (same weight), and they require that the researcher has strong expertise in both approaches. Conversely, the embedded design uses a qualitative perspective to explain quantitative results. It was decided, though, to align with Morgan's Priority-Sequence Matrix. In this design both called 'quantitative preliminary' or 'sampling sequential', the quantitative method is followed by the qualitative one without interaction except during the triangulation phase (Morgan, 1998) (Table 5.1).

Table 5.1: MMR Rationale

<i>Study Purpose:</i>	To understand factors that enable or inhibit the inclusion and implementation of fertility care in the Gambian health system
<i>Study Strands</i>	Two strands, quantitative and qualitative with no interaction (independent)
<i>Timing or Sequence:</i>	Sequential timing – in which quantitative strand was followed by the qualitative strand
<i>Priority or Weighting:</i>	Priority was given to the qualitative strand (<i>QUAL</i>) following the selected design
<i>Triangulation and Interpretation</i>	To better comprehend the viewpoints of policymakers and implementers in setting priorities for fertility care in The Gambia

5.3.2 Justification Statement

This research was designed and carried out to understand factors that support or hinder the inclusion and implementation of fertility care in The Gambia, by using MMR. The rationale for using MMR was motivated by the prospect of gaining a deeper understanding of policymakers' challenges and opportunities in setting priorities for fertility care in the health system. This approach was theoretically

guided by the qualitative method and has strengthened the overall interpretation of the results better than what could be provided by the quantitative or the qualitative results alone (Creswell *et al.*, 2018) (Figure 5.1).

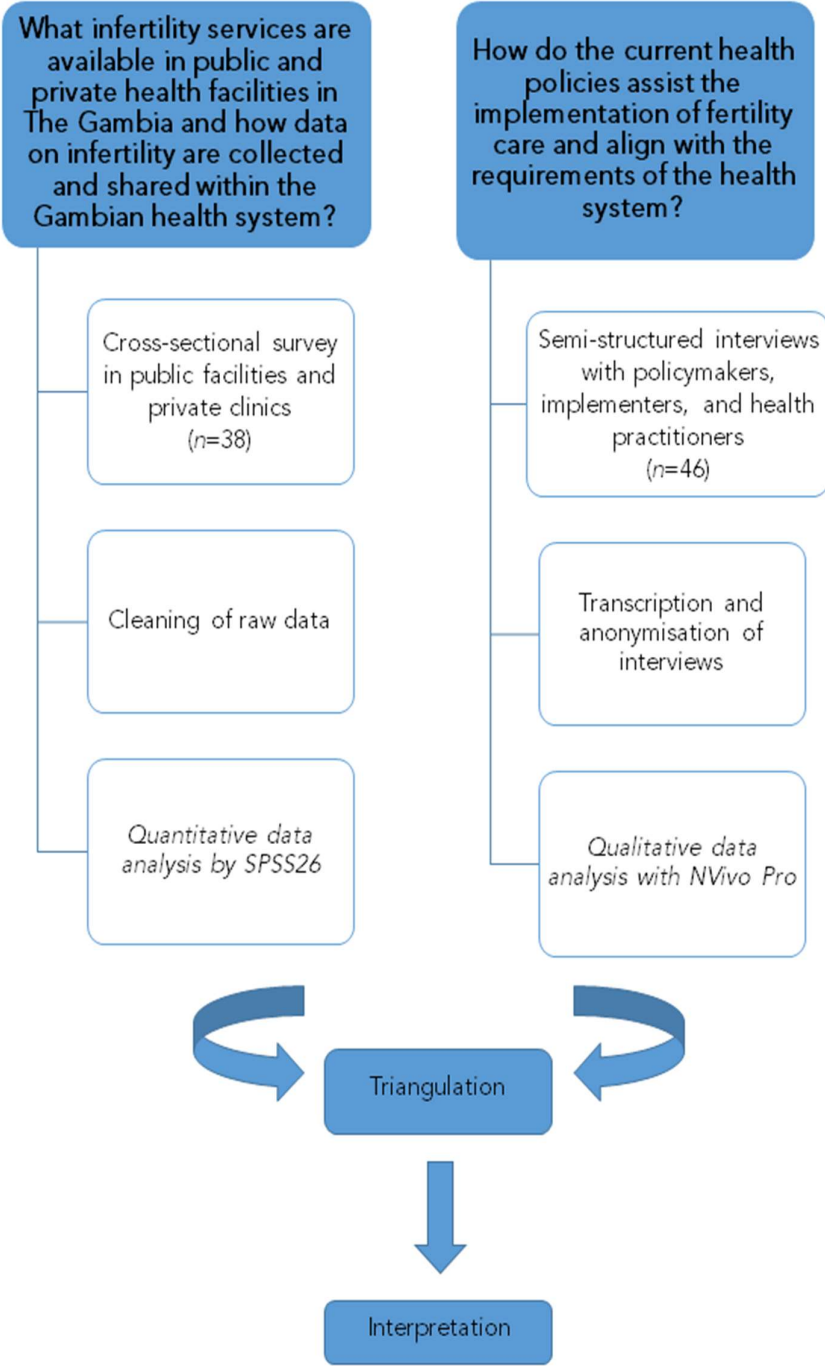


Figure 5.1: Model for Mixed Methods Design

5.4 Data Triangulation

The triangulation of results took place before the interpretation phase of the research, and after the analysis of both datasets was undertaken separately. The primary goal of triangulation is to enhance the efficacy of the study by improving the possibility that results and findings are more reliable and credible when combined or 'triangulated' (Bans-Akutey and Tiimub, 2021). Triangulation is not only intended to validate, but to deepen, broaden, and corroborate the understanding of a particular phenomenon (Olsen, 2004; Bekhet and Zauszniewski, 2012). In the case of this research, triangulation was used to understand a particular perspective of fertility care implementation, and to explain variations between stakeholders' power and position (Heale and Forbes, 2013). The methodological triangulation of datasets involves a variety of techniques, and it is useful in confirming or disproving the research findings. These techniques are described below.

5.4.1 Triangulation Protocol and Convergence Coding Matrix

A triangulation protocol was developed due to its relevance in mixed-methods studies to integrate findings from different datasets (Farmer *et al.*, 2006), and can be found in Table 5.2.

Table 5.2: Triangulation Protocol

<i>Step</i>	<i>Activity</i>
a. Sorting	Findings from each dataset or method are classified into themes to determine areas of content overlap and/or divergence
b. Convergence coding matrix:	Identifying the themes from each dataset in order to determine the degree of convergence
- <i>Convergence</i>	Full agreement between the results from both datasets
- <i>Complementarity</i>	Findings from a dataset explain or complement data from the other dataset
- <i>Silence</i>	One dataset of findings covers the theme, whereas the other is silent on the same theme
- <i>Dissonance</i>	Disagreement between the results in both datasets
c. Convergence assessment	Reviewing the themes to provide a global assessment of the level of convergence. Document when and where datasets have different perspectives on convergence or dissonance of findings
d. Comparison	Compare the assessments of convergence or dissonance sorting from the united datasets to clarify the interpretation of results and determine the degree of triangulation Plan how to deal with differences of opinion and how to make final interpretation decisions

Table created by the author and adapted from (Farmer et al., 2006)

Within this protocol, a *convergence coding matrix* was generated showing the results of the triangulation process. This approach illustrates the extent of convergence, by examining the degree to which the findings from different datasets are consistent, complementary, silent and dissonant. The triangulation process contributes to increased credibility of the research process but could also generate new insights as it forces the researcher to look at the data in a comprehensive way (O’Cathain, Murphy and Nicholl, 2010). The convergence coding matrix generated in this research to triangulate the findings from the quantitative and qualitative datasets is available in Table 9.1 and discussed in *Chapter 9*.

5.5 Ethical Considerations

Ethical clearance was obtained by the University of Sheffield – School of Health and Related Research (ScHARR) Research Ethics Committee (Reference 03785-038109) and from the Joint Gambia Government and Medical Research Council (MRC) at The Gambian at the London School of Hygiene and Tropical Medicine Ethics Committee (Reference 22446) (Appendices 1 and 2).

5.5.1 Participant Consent

All participants were made aware of the study's objectives, the types of questions, and their right to refuse to be interviewed, and to withdraw prior to signing the consent form. Permission to record the conversations was requested from the participants. Written informed consent was obtained from all participants prior to proceeding with the data collection (Appendix 3). A written participant information sheet (Appendices 4 and 5) was provided before the survey and the interviews to explain the details of the study to the participants.

5.5.2 Data Confidentiality

All data collected for this study were coded and anonymised before the analysis. However, a back-up data sheet was created to trace back the interviewee's name and health facility location. This sheet was made available only to the supervisory team. The data were collected in three different formats: (i) audio recordings; (ii) notes taken (in addition or instead of recording); (iii) and videos recordings (in the case of an online interview). Moreover, a virtual database collecting the quantitative information from the survey was generated by the software *Qualtrics XL*. These data were backed up in real time and on a daily basis. The personal laptop and any other device used to store the data were encrypted and protected by a password;

moreover, the data were all backed-up on The University of Sheffield's repository X: Drive. The audio recordings and all other data will be destroyed five years after the end of the Ph.D. Paper copies of the signed consent forms bearing participant names are kept in a secure and locked location. They will be destroyed securely, by shredding, at least 3 years following the close of the study.

5.5.3 Dissemination

Dissemination of the research findings occurred through the publication of some chapters of this thesis in peer-reviewed academic journals. Furthermore, it also occurred via departmental/university lectures, seminars and workshops, and at national and international conferences. A meeting will be held with the MoH in The Gambia and other involved stakeholders to enhance awareness of fertility care and for implementation purposes. This is planned for Spring/Summer 2023. Finally, a podcast and a media article were prepared by the University media team, drawing on the findings of this research.

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PART II

6. Chapter: Availability of Services for the Diagnosis and Treatment of Infertility in The Gambia's Public and Private Health Facilities: A Cross-Sectional Survey

Anna Afferri^{1*}, Haddijatou Allen², Susan Dierickx³, Mustapha Bittaye⁴, Musa Marena⁴, Allan Pacey⁵, and Julie Balen¹

¹ School of Health and Related Research – SCHARR, The University of Sheffield, Sheffield, UK

² Medical Research Council – MRC The Gambia Unit, Fajara, The Gambia

³ Research Centre Gender, Diversity and Intersectionality - RHEA, Vrije Universiteit Brussel, Belgium

⁴ The Gambia Ministry of Health, Banjul, The Gambia; School of Medicine and Allied Health Sciences, University of The Gambia, Banjul, The Gambia

⁵Department of Oncology and Metabolism, The Medical School, The University of Sheffield, Sheffield, UK

*Corresponding author

ORCID of the corresponding author: 0000-0002-0306-6705 (AA)

This chapter reports the results of a cross-sectional survey conducted in 38 health facilities pertaining to the secondary and tertiary levels of care in the public and private health sectors of The Gambia. The study aim was to assess the availability of infertility services and to explore patterns in the Gambian health management information system to record, track and transmit data on infertility. The survey was conducted between March and August 2021. As in *Chapter 3*, this chapter is presented in manuscript form and was published in *BMC Health Services Research* in September 2022; 22(1):1127 <https://doi.org/10.1186/s12913-022-08514-0>

The paper was published open access with a publication fees waiver.


The paper in this chapter was written with 7 co-authors: Haddijatou Allen, Susan Dierickx, Mustapha Bittaye, Musa Marena, Allan Pacey, and Julie Balen. Anna Afferri conceived the idea, designed the data collection tool, statistically analysed the data, and produced the original draft of the manuscript. Haddijatou Allen tested the questionnaire prior to the data collection and collected data from the public and private health facilities in The Gambia. This took place during the time that international travel was not permitted due to the Coronavirus pandemic, yet fieldwork in The Gambia had resumed with permission. Anna Afferri sought permission to begin the data collection and guided Haddijatou Allen (who was already in The Gambia) through digital means. All the co-authors reviewed the work and provided feedback on the manuscript.

RESEARCH

Open Access



Availability of services for the diagnosis and treatment of infertility in The Gambia's public and private health facilities: a cross-sectional survey

Anna Afferri^{1*} , Haddijatou Allen², Susan Dierickx³, Mustapha Bittaye^{4,5}, Musa Marena^{4,5}, Allan Pacey⁶ and Julie Balen¹

Abstract

Background: Infertility is a long-standing reproductive health issue, which affects both men and women worldwide and it is especially problematic in the Global South. In sub-Saharan Africa, understanding the current availability of diagnostic and treatment services for infertility is important because this could guide health systems to improve access to fertility care for all. Yet, few studies have explicitly started from a health system perspective to grasp the availability and integration of infertility services in sub-Saharan Africa. This quantitative study, the first in The Gambia, West Africa, examines the availability of infertility services in public and private facilities as part of a wider endeavour to improve fertility care policy and practice in the country.

Methods: A cross-sectional survey using Qualtrics was administered to 38 health facilities. The survey was carried out between March and August 2021 and involved closed-ended questions. Data analysis consisted of descriptive statistics and t-tests performed using SPSS version 26.

Results: A total of 25 facilities (66%) offered infertility services, of which 13 (52%) were public and 12 (47%) private. Although the availability of screening tests was similar between health institutions, most diagnostic and treatment services were available only in the private sector. Treatment services included: (i) ovarian stimulation ($n = 16$, 42%); (ii) reversal of tubal ligation and/or blockage (tuboplasty) ($n = 4$, 11%); and (iii) intrauterine insemination ($n = 3$, 8%). Assisted reproductive technologies such as IVF and ICSI were not available in public or private sectors. The Gambian health management information system lacked a dedicated space to capture data on infertility. Reported barriers to integration of infertility services in existing reproductive health services included a lack of specialised training, an absence of national guidance on infertility management, and a shortage of appropriate equipment, supplies, and medication.

Conclusions: The availability of infertility services in The Gambia follows a trajectory that is similar to other SSA countries in which services are mostly obtainable through the private sector. Yet, access to private care is expensive and geographically restricted, which exacerbates inequalities in accessing fertility care for all. Improving the provision of

*Correspondence: aafferri1@sheffield.ac.uk

¹ School of Health and Related Research – SchHARR, The University of Sheffield, Sheffield, UK

Full list of author information is available at the end of the article



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infertility services in the public sector requires systematically capturing data on infertility and investing in the provision of a full-range fertility care package.

Keywords: Infertility services, Fertility care, ART, Private care, Sub-Saharan Africa, The Gambia

Background

Infertility, a disease characterised by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse [1]. It is an important reproductive health problem and an essential component of comprehensive sexual and reproductive health rights (SRHR) as declared at the International Conference on Population Development (ICPD), more than 25 years ago [2]. While current estimates are lacking, the most recent global survey commissioned by the WHO in 2010, indicated that up to 48 million couples suffer from infertility worldwide, with half of the global burden of infertility in low and middle-income countries (LMIC) [3–5]. Yet, this is likely to be an underestimation, as insufficient data and high fertility rates in many LMICs mask the true burden of infertility [3, 6].

The provision of infertility services in resource-poor settings is challenging [7–10]. In sub-Saharan Africa (SSA) demands for infertility services, in particular assisted reproductive technologies (ART), have increased rapidly in recent years [11–13] but despite substantial growth in demand, providing these services can be complicated and requires a range of clinical and laboratory facilities that are highly sophisticated and often very expensive [10]. This is one of the reasons why infertility services in SSA are largely confined to the private sector [7, 12, 14, 15] with few exceptions such as South Africa and Nigeria [16–18].

While several anthropological studies in SSA have investigated how the private sector navigates the delivery of infertility services [14, 19], much less research has been conducted with a national health system lens on the availability of infertility services in public facilities. There is currently limited knowledge on the management and uptake of infertility services among men and women, especially in countries where data on these services are not systematically captured and reported. Moreover, in many SSA countries, health professionals often work both the private and public sectors simultaneously which may lead to complex public–private health systems dynamics, with potential unintended consequences for patients and practitioners [20].

This study, the first of its kind in The Gambia, aims to understand the infertility services landscape in both the public and the nascent private health sector to support the inclusion of a fertility care package in the country's sexual and reproductive health (SRH) policy and

practice. This is particularly pertinent as The Gambian government has recently made strides towards the inclusion of fertility care in its national health agenda [21]. Furthermore, The Gambia is an important case study, as previous qualitative research in urban areas of the country has shown that Gambian health care providers and patients have limited knowledge of the availability of infertility services [22]. Finally, as in other SSA settings, the high fertility of Gambian women masks the true burden of infertility in the country [23] and this may diverge attention of policymakers and international donors from interventions that specifically address infertility. Studies report that there is a need for more financial and logistic support, and there is a shortage of adequately and appropriately trained health staff involved in fertility care provision [21, 24].

This study, which builds on previous work in The Gambia and is part of wider body of work, presents the results of a country-wide quantitative cross-sectional survey including public and private health facilities and assess the availability and distribution of infertility services.

Methods

Study setting

The Gambia is a West African country that shares a border with Senegal. The country has an estimated population of 2.3 million inhabitants and a markedly diverse profile, with approximately 60% of the population living in coastal urban areas and the remaining 40% in rural areas [23]. As a result of economic instability and colonial and postcolonial politics, the national health system faces many challenges [25]. Changes in the political environment since 2016 have helped encourage the emergence of private health providers, both *for profit* and *not-for-profit* [26].

The Gambian public health system has a decentralised structure, distributed across three tiers, namely primary, secondary and tertiary levels [25]. The public sector is represented by Edward Francis Small Teaching Hospital (the main referral hospital of the Gambian health system), district ($n=4$) and general hospitals ($n=5$), major and minor health centres and a plethora of rural health posts and village-based health services. The rapidly expanding private health sector is composed of clinics and medical centres, mainly concentrated in urban areas in the Western regions [27]. Research on infertility was conducted in The Gambia over two decades ago [28, 29],

and has recently resumed [30–35]. Anyanwu and Idoko (2017) estimated the prevalence of infertility in The Gambia at 14.3%, allocating its etiology to female (tubal) secondary infertility and male (sperm) factors [35].

Study design

This is a cross-sectional study conducted via a survey questionnaire administered in person to public facilities and private clinics across The Gambia. Thirty-eight ($n=38$) health facilities participated in the survey including 20 (53%) public and 18 (47%) private. Private clinics operated *for-profit* ($n=8$) and *not-for-profit* ($n=10$), whereby *not-for-profit* means that the facility is supported financially by a non-governmental organisation or charity. For the aim of this study, the private clinics were disaggregated into these two arms to investigate any possible difference in the provision of infertility services based on the profit status.

Sample size and recruitment

The sample of health facilities was extrapolated from an exhaustive list provided by the Gambian Bureau of Statistics and via multiple interactions with Gambian health experts, and included both public facilities and private clinics. For the purpose of this study, only health facilities representing secondary and tertiary levels of care were selected. Primary-level facilities (village health posts) were not included in the sample because they do not offer any infertility services, but only offer referrals to the upper levels of care. The sample of public facilities included major health centres, district and general hospitals, and the teaching hospital [26]. These public facilities were recruited in-toto, and represented the entirety of the facilities in these levels of care.

However, during the data collection, it was discovered that some public facilities labelled as major centers were in fact minor centers ($n=6$). Because the sampling and recruitment had already taken place, they were kept in the study for completion purposes.

Given the small sample size, private clinics were selected from the list obtained by the government and simply randomised to have an equal chance of selection for inclusion in the sample. For random selection, we used an online tool that generated a random order of private clinics. Random selection eliminates selective biases and is the only effective strategy for obtaining representative samples. Due to the lack of an updated census for the private sector, during the data collection we came across two additional private clinics. These two additional clinics belonged to the same population as the original sample, with a similar time frame for the data collection and they were therefore included in the sampling.

Prior to the study implementation, permission was requested from the Ministry of Health (MoH), and the purpose of the study was discussed with the seven Regional Health Directorates. All facilities were contacted, and their participation was requested using an official invitation letter with information about the study and details of the ethical approval (see below). An eligible respondent per facility was nominated and then contacted directly by the trained Gambian researcher (HA) and invited to take part in the study. The respondents included health facilities staff, such as medical doctors, gynaecologists, nurses, and midwives who provided information on available infertility services. These key informants were invited to participate because they have relevant knowledge or expertise in fertility care within their organisational settings.

Quality control

The survey questionnaire was pre-tested in two sites in the urban area of Kanifing—Western Region (one public facility and one private clinic). No major modifications were introduced to the tool after testing. Due to the small original sample size, data from the piloted facilities were included in the final analysis.

Data collection

A computer-assisted personal survey was conducted by either the Gambian Research (HA) or the study lead (AA) in the offices, clinic rooms and wards of each facility. The questionnaire was written and administered in English, the official and working language of The Gambia. Data collection was conducted from March to August 2021.

The survey questionnaire contained 36 closed-ended questions which required respondents to provide information on various aspects of fertility care provision. The questions were categorised into six sections and included: (i) demographic information on the professional qualification and gender of the respondents; (ii) characteristics of the study sites (name and location of the facility, level of care); (iii) the availability of reproductive health services including infertility services and personnel; and (iv) the health management system. The remaining two sections included two 4-point Likert scales [36] to help better understand the relevance of key barriers to integration of infertility services. The survey was developed using the web-based Qualtrics XM software version 10, 2021©. An additional file shows this in more detail (see Additional file 1).

Data analysis

Data were analysed using IBM Statistical Package for the Social Sciences (SPSS) for Windows, version 26.0.

The primary analysis applied descriptive statistics using frequencies and cross-tabulation for the main outcome variables. Likert scales were used to rank barriers to integration of infertility services into existing SRH services. Statistical significance was established at $p < 0.05$. Fisher's exact test was used for analysis of contingency tables.

Ethical approval

Ethical approval was obtained from The Gambia Government and Medical Research Council (MRCG) at the London School of Hygiene and Tropical Medicine Joint Ethics Committee (Reference 22,446) and the University of Sheffield – School of Health and Related Research (ScHARR) Research Ethics Committee (Reference 03,785–038,109). Written informed consent was obtained from all respondents prior to the beginning of the data collection.

Results

Characteristics of participating institutions and survey respondents

Slightly over half of the participating institutions ($n = 22$; 58%), including the teaching hospital, were located in the Western regions 1 and 2, including the Greater

Banjul Area. The remaining sixteen (42%) were distributed throughout the country (Fig. 1).

A total of 45% ($n = 17$) of the survey respondents were medical doctors and 55% ($n = 21$) were nursing or midwifery staff; the vast majority ($n = 30$; 79%) were male (Table 1).

Provision of infertility services in public facilities and private clinics

Infertility services were provided in 25 (66%) of the surveyed facilities, specifically in 13 out of 20 (65%) public facilities and 12 out of 18 (67%) private clinics with no statistical difference in the overall infertility service availability between the two sectors ($p = 0.06$). Most (16/25; 64%) facilities that provided infertility services, were located in the Western regions, specifically in the Greater Banjul Area that include the Senegambia, Brusubi, Kanifing and Brikama districts. Furthermore, among these 25 facilities, four (11%) were classified as minor health centres, six (16%) as major health centres, five (13%) as district hospitals, nine (24%) as general hospitals, and one (3%) as a teaching hospital, located in the capital Banjul and representing the referral point for the entire Gambian health system (Table 2).

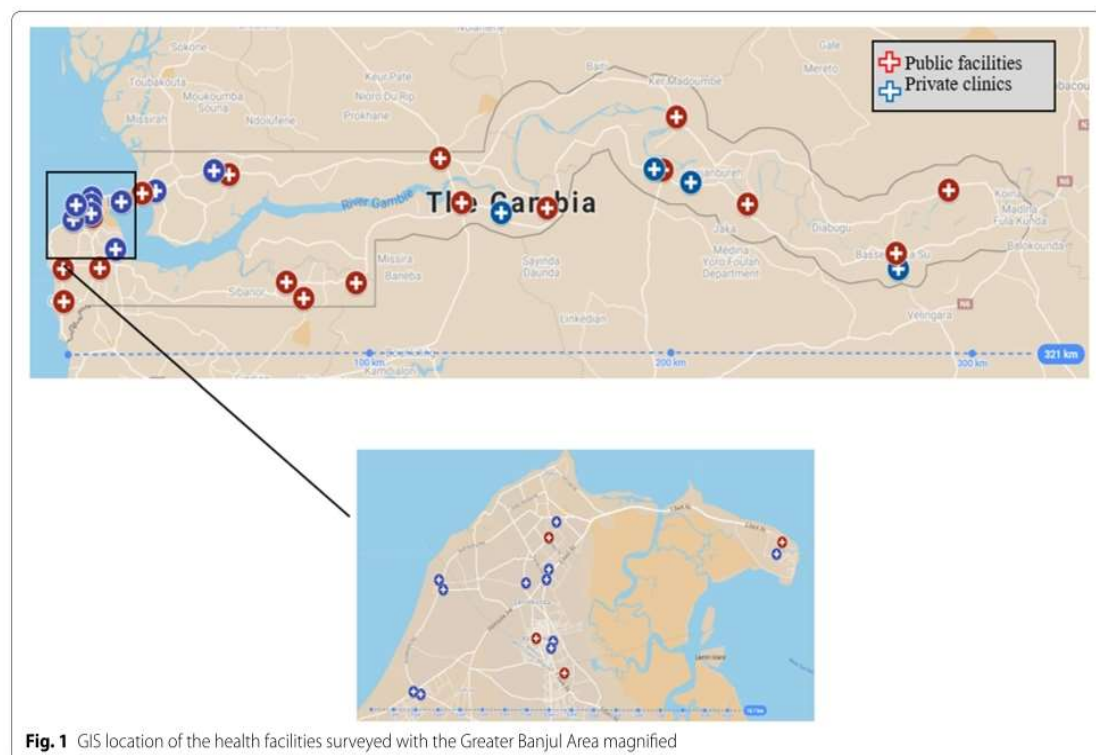


Fig. 1 GIS location of the health facilities surveyed with the Greater Banjul Area magnified

Table 1 Key characteristics of the participating respondents and facilities, and overall ($n = 38$)

	Public facilities ($n = 20$; 53%)	Private clinics ($n = 18$; 47%)	TOTAL ($n = 38$; 100%)
Respondent role			
Doctor (gynaecologist)	2 (10%)	6 (33%)	8 (21%)
Doctor (physician, physician assistant, medical officer, medical assistant)	7 (35%)	2 (11%)	9 (24%)
Nurses-Midwives	11 (55%)	10 (56%)	21 (55%)
Respondent gender			
Male	15 (75%)	15 (83%)	30 (79%)
Female	5 (25%)	3 (17%)	8 (21%)
Level of care			
Secondary	10 (50%)	13 (72%)	23 (61%)
Tertiary	10 (50%)	5 (28%)	15 (39%)
Type of private clinics			
For-profit		7 (39%)	7 (39%)
Not-for-profit		11 (61%)	11 (61%)

Table 2 Infertility services by level of care among the surveyed public facilities and private clinics, and overall ($n = 38$)

	Public facilities ($n = 20$; 53%)	Private clinics ($n = 18$; 47%)	TOTAL ($n = 38$; 100%)
No infertility services	7 (35%)	6 (33%)	13 (34%)
Infertility services	13 (65%)	12 (67%)	25 (66%)
Secondary level			
Minor health centres	1 (5%)	3 (17%)	4 (11%)
Major health centres	2 (10%)	4 (22%)	6 (16%)
Tertiary level			
District hospitals	4 (20%)	1 (6%)	5 (13%)
General hospitals	5 (25%)	4 (22%)	9 (24%)
Teaching hospital	1 (5%)	0	1 (3%)

Infertility screening and diagnostic services in public facilities and private clinics

Most of the institutions that offered infertility services were able to collect patient medical history and perform physical examinations for men and women. Compared to private clinics, public facilities had a slightly increased capacity to undertake testing for Human Immunodeficiency Virus (HIV) and Tuberculosis (TB). Sexually transmitted infections (STI) tests were equally available in both the public facilities and private clinics. However, the ability to carry out key diagnostic components of infertility services was generally higher in the private sector. Specifically, female hormonal profiling was not available in public facilities, and tubal patency investigations such as hysterosalpingogram (HSG) and

sonohysterosalpingogram (SHG) were available in only one out of 20 (5%) public facilities.

Finally, pelvic ultrasound and semen analysis were available in 47% ($n = 18$) and 42% ($n = 16$) of the facilities, respectively (Table 3).

When examining the difference between the private sector *for-profit* and *not-for-profit*, more screening and diagnostic services were available in the former with semen analysis, female hormonal profile, HSG and SHG mostly available in the *for-profit* sector (Table 4).

Infertility treatment services in public facilities and private clinics

Regarding infertility treatments, 16 facilities (42%) provided dilation and curettage (D&C), 16 (42%) offered ovulation induction with Clomiphene citrate or Letrozole, and six (16%) performed varicocele repair surgery. Finally, four facilities (11%) were able to perform reversal of tubal ligation through tuboplasty (one public facility and three private clinics) (Table 5). Three (8%) facilities all of which were private and located in the Western regions, offered Intrauterine Insemination (IUI) and only one (3%) was able to perform vasectomy reversal. ART such as *in-vitro* fertilisation (IVF) and intracytoplasmic sperm injection (ICSI) were reported as not available in The Gambia at the time of data collection.

Infertility service delivery and monitoring

More than half of the facilities ($n = 26/38$; 68%) reported that they consulted between 0–25 clients per week for infertility, but the time taken for infertility consultations was said to absorb a limited amount of time and only slightly increased the workload of the health providers.

Table 3 Details of infertility screening and diagnostic services in public facilities and private clinics, and overall ($n = 38$)

	Public facilities ($n = 20$; 53%)	Private clinics ($n = 18$; 47%)	TOTAL ($n = 38$; 100%)
No screening and diagnostic services	7 (35%)	6 (33%)	13 (34%)
Screening and/or diagnostic services ^a	13 (65%)	12 (67%)	25 (66%)
Screening/diagnostic (general)			
Fertility history-taking	12 (60%)	12 (67%)	24 (63%)
Physical examination (female)	12 (60%)	11 (61%)	23 (61%)
Physical examination (male)	11 (55%)	11 (61%)	22 (58%)
Screening (female)			
STIs	12 (60%)	12 (67%)	24 (63%)
HIV	12 (60%)	10 (56%)	22 (58%)
TB	12 (60%)	6 (33%)	18 (47%)
Visual inspection w/ acetic acid	7 (35%)	5 (28%)	12 (32%)
Smear test	5 (25%)	5 (28%)	10 (26%)
Screening (male)			
STIs	11 (55%)	11 (61%)	22 (58%)
HIV	12 (60%)	9 (50%)	21 (55%)
TB	11 (55%)	6 (33%)	17 (45%)
Diagnostic testing (female)			
Ultrasound (pelvic)	8 (40%)	10 (56%)	18 (47%)
Hormonal profile	0 (0%)	8 (44%)	8 (21%)
Hysterosalpingogram (HSG)	1 (5%)	7 (39%)	8 (21%)
Sonohysterosalpingogram (SHG)	1 (5%)	3 (17%)	4 (11%)
Diagnostic testing (male)			
Semen analysis	7 (35%)	9 (50%)	16 (42%)

^a Clinics can offer more than one type of services**Table 4** Details of infertility screening and diagnostic services in the private sector for profit and not-for-profit, and overall ($n = 18$)

	For-profit ($n = 8$; 44%)	Not-for-profit ($n = 10$; 55%)	TOTAL ($n = 18$; 100%)
No screening or diagnostic services	0	6 (60%)	6 (33%)
Screening and diagnostic services ^a	8 (100%)	4 (40%)	12 (67%)
STIs (both female and male)	8 (100%)	4 (40%)	12 (67%)
Ultrasound (pelvic)	7 (88%)	3 (30%)	10 (56%)
Semen analysis	8 (100%)	1 (10%)	9 (50%)
Hormonal profile (female)	7 (88%)	1 (10%)	8 (44%)
Hysterosalpingogram (HSG)	7 (88%)	0	7 (39%)
Sonohysterosalpingogram (SHG)	3 (38%)	0	3 (17%)

^a Clinics can offer more than one type of services

To this effect, 58% ($n = 22$) of the respondents reported they spent between 0 and 25% of their time consulting for infertility. No statistical difference was observed between sectors ($p = 0.38$).

Approximately half of the facilities (17/38, 45%) reported that 51%-75% of the infertility consultations were attended by women; 8 facilities (21%) reported that in 75%-99% the consultations for infertility are

attended by women and finally, 4 facilities (11%) cited that 100% of their consultation are attended by women. In just under half ($n = 18$; 47%) of the initial infertility consultation, the partners never attend together but this altered in subsequent visits with a cumulative 58% ($n = 22$) of respondents reporting that 'often' and 'usually' one partner accompany the other partner during a follow-up visit.

Table 5 Details of infertility treatment services in public facilities and private clinics, and overall ($n = 38$)

	Public facilities ($n = 20$; 53%)	Private clinics ($n = 18$; 47%)	TOTAL ($n = 38$; 100%)
Dilation and curettage	8 (40%)	8 (44%)	16 (42%)
Ovulation induction	7 (35%)	9 (50%)	16 (42%)
Varicocele repair	3 (15%)	3 (17%)	6 (16%)
Reversal of tubal ligation/blockage	1 (5%)	3 (17%)	4 (11%)
Intrauterine insemination (IUI)	0	3 (17%)	3 (8%)
Reversal of vasectomy	0	1 (6%)	1 (3%)
In-vitro fertilisation (IVF)	0	0	0
Intracytoplasmic sperm injection (ICSI)	0	0	0

Twenty-three out of 38 facilities (61%) indicated that they do not report any data on infertility to the MoH via the Health Management Information System (HMIS) or by any other means. Specifically, 10 (50%) public facilities and 13 (72%) private clinics did not capture infertility data. In a few cases ($n = 10$; 26%) data on infertility was cited as captured and reported to the MoH using the current HMIS form. (Table 6). However, was not clear how the facilities collect and report this data.

Integration of infertility services into existing sexual and reproductive health services

Of the 25 facilities that offered infertility services, just over half ($n = 13$; 52%) offered them five-days a week. In 22 (88%) of the 25 facilities, infertility services were integrated into existing reproductive health services, mainly within gynaecology, family planning or maternal health clinics. However, three *for-profit* clinics provide a standalone service dedicated solely to fertility care patients. Overall, most ($n = 32$; 84%) respondents felt that a lack of specialised training was the strongest impediment to full integration of infertility services in their facility,

followed by the absence of national guidance on infertility management ($n = 31$; 82%) and a shortage of appropriate equipment, supplies and medications, respectively ($n = 30$, 79%; $n = 28$, 74%). Low policy priority for infertility was cited as the sixth main barrier to integration ($n = 25$; 66%) (Fig. 2).

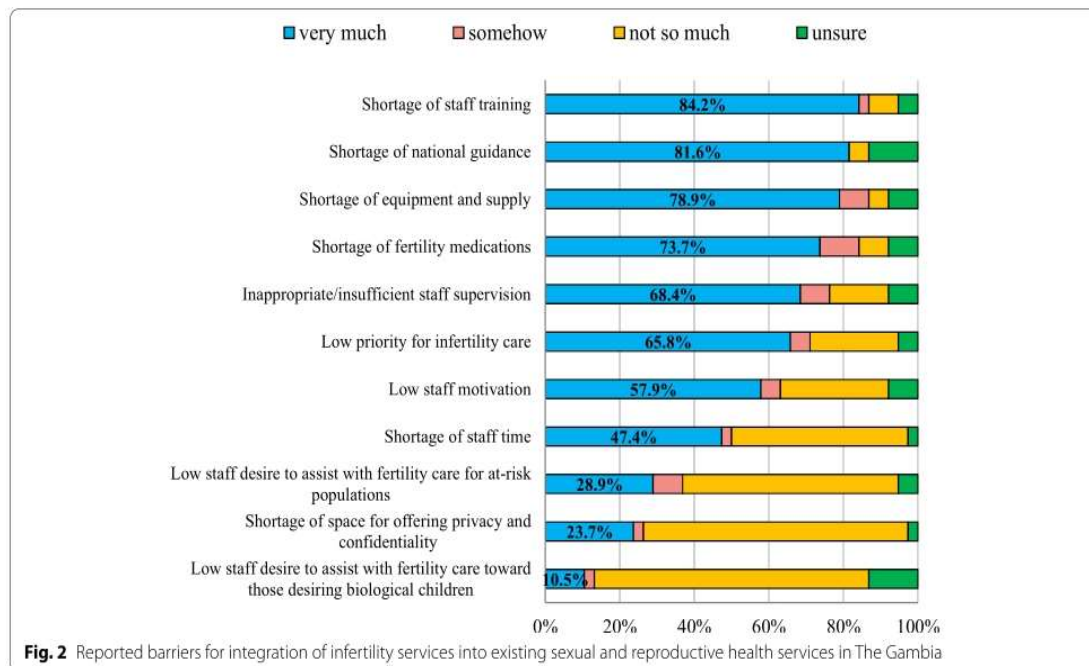
Discussion

The provision of infertility services in The Gambia is characterised by major inequalities, including uneven distribution among urban and rural settings, fragmentation across health sectors, and large geographical distances between communities and clinics. Basic investigations for infertility are generally available in public health facilities. These include medical history-taking, physical examination for both women and men, and screening for STIs, HIV and TB as aligned with national disease control programmes [37]. Although public and private facilities show comparable screening capacity, this trend reverses once diagnostic and treatment services are taken into consideration. In this sense, the private sector provides an increasing proportion of diagnostic and

Table 6 Delivery and monitoring of infertility services in public facilities and private clinics, and overall ($n = 38$)

	Public facilities ($n = 20$; 53%)	Private clinics ($n = 18$; 47%)	TOTAL ($n = 38$; 100%)
Attending initial visit as couple			
Partner never present	10 (50%)	8 (44%)	18 (47%)
Partner often/usually present	2 (10%)	3 (16%)	5 (13%)
Partner occasionally present	8 (40%)	7 (39%)	15 (39%)
Attending follow-up visits as couple			
Partner never present	5 (25%)	2 (11%)	7 (18%)
Partner often/usually present	9 (45%)	13 (72%)	22 (58%)
Partner occasionally present	6 (30%)	3 (17%)	9 (24%)
Capturing and reporting data on infertility			
Yes	7 (35%)	3 (16%)	10 (26%)
No	10 (50%)	13 (72%)	23 (61%)
Do not know	3 (15%)	2 (11%)	5 (13%)

⁵² Dilation&Curettage, endometrial injury and endometrial scratch used synonymously.



treatment services. For example, intrauterine insemination, a relatively simple and low cost fertility treatment that is considered the first-line treatment for mild male-factor and unexplained infertility [38–40], is unavailable in public facilities. These differences are even more accentuated between *for-profit* and *not-for-profit* clinics, where more sophisticated treatments are available in the former.

This picture is not surprising and aligns with market opportunities currently emerging in The Gambia that appear to reflect a trend seen in many countries across SSA [10, 14]. Private clinics exclusively offering fertility care have begun to emerge in recent years, indicating a growing trend for the future provision of infertility services in the country, and across the continent [7]. In The Gambia, while many of the surveyed public facilities offered some type of infertility services, the leading role of the private sector—in particular for infertility treatments—is in sharp contrast with what is offered in the public sector. Although, high costs of private fertility care are likely to also increase inequalities, raising questions about reproductive justice in the country [22, 38, 41, 42]. We assume that the lack of a formal national fertility care package and/or infertility management guidelines contributes to this unequal availability of infertility services between the two sectors, and this may potentially encourage the private sector to develop its own standards. Having established procedures for infertility

management is therefore an essential step for the Gambian health system, in order to provide safe and effective high-quality infertility care.

Also, a more robust collaboration and partnership with the private sector may fill the gaps in the provision of services in the public sector and increase affordability via, for example, subsidisation of care and compliance with the Universal Health Coverage and reproductive health rights fundamentals [43].

Recently, The Gambia has enacted the National Health Insurance Scheme (NHIS) bill, which will cover the cost of an essential health care package for all who register, at a much-subsidised cost. The envelope of diseases and conditions covered by the insurance will be reviewed periodically and expanded as it becomes more affordable. In this regard, this study may help Gambian health policy and decision-makers to initiate discussions to improve infertility diagnosis and treatment, and to implement accessible and affordable infertility services for those in need. Although infertility is not directly linked to an increased mortality rate, research in The Gambia [30, 31] and elsewhere in Africa [44–46] clearly illustrates the significant social and economic burden of infertility and its impact on gender equity, suggesting that this condition should no longer be ignored [47].

Given that the majority of institutions reported most of the consultation were attended by women and the members of the couple visit the facility alone, we can conclude

that women attend initial consultations for infertility without their partner [48]. Although in approximately half of initial consultations by women for fertility problems their partner was not present (results are comparable in both health sectors), the preference of the medical practitioners is to manage infertility as a *couple's issue* [34]. This is further confirmed in this study, which indicate that male partners are more involved in infertility treatment in follow-up visits compared to initial visits. These findings also illustrate similarity with a studies conducted in SSA [34, 49, 50]. Surprisingly, in our study, less than 25% of the consultations are reportedly for male factor infertility, as many studies [51–54] conducted elsewhere have found that the causes of infertility are equally split between genders (in heterosexual couples). This could also be the result of men attending visits of their spouses without being themselves diagnosed. Research has previously shown that stigma surrounding fertility problems for men could result in poor health-seeking behaviour, and increase the already scarce male involvement in the therapeutic journey [34]. It is imperative to understand the aetiology of infertility issues from a Gambian perspective. In fact, as our work indicates, male infertility services are still poorly accessed, and mainly limited to investigation of semen parameters. Treatment for men is essentially restricted to varicocele surgery [55] although there is relatively little evidence that fertility is increased after such surgery [56]. The availability of male hormone testing was not assessed during the survey, but considering the paucity of facilities that offer female hormone profiling, it can be assumed that male hormone testing is also limited in The Gambia [57].

This study found that almost half of the surveyed facilities (42%) offered D&C. It was not clear, however, whether this procedure is linked to the provision of infertility treatment or if it is just one of the services offered to treat gynaecological issues. Previous research although outdated, suggests that this practice might be relatively common in The Gambia [29]. Further investigation is required to understand if this practice is endorsed by the Gambian medical institutions as one of the potential treatment for infertility. Moreover, it is important to note that the literature is discordant in supporting or contradicting endometrial injury as a preparatory step before medically assisted reproduction [58–60]. Given that The Gambia does not currently offer any ART however, D&C is likely to be limited to the treatment of specific gynaecological conditions [61]. As noted above, guidelines on infertility management should be developed and aligned with international evidence-based standards.

The Gambian HMIS lacks a dedicated space to capture data on infertility. Particularly, the current data collection form does not appear to systematically capture

data on infertility, making it difficult to estimate the true demand for and access to infertility services in the country. Obtaining reliable national estimates of infertility services is critical and might increase the attention of policy makers and international donors [3, 62]. In this regard, The Gambian health system may consider adapting its HMIS form to collect consultations for infertility-related issues, disaggregated by sex, in a systematic and comprehensive way. This could stimulate The Gambia to investigate further concerning the true prevalence of infertility in its population and to adapt its reproductive health services for greater inclusion of neglected issues, especially among men [34].

Finally, most of the participants cited a lack of specialised infertility training, an absence of national guidance on infertility management, and a shortage of investment in appropriate equipment, supplies and medication as key barriers to full integration of infertility services into existing reproductive health services. These findings corroborated those from a recent qualitative evidence synthesis conducted in African settings [63] and with studies in other LMIC [64] and highlight, once more, the need to implement a full range of fertility care interventions regulated by national and international policy guidelines [48].

It is important to highlight the study limitations. First, not having an updated census of private clinics might have masked those recently established but not yet listed under the MoH. In this regard, the two additional private clinics included in the study sample were discovered coincidentally, and were established in the six months preceding the survey. Secondly, six of the public facilities that had been labelled as major health centers were indeed minor centers, having been downgraded prior to the study commencement. Third, different sources in The Gambia shown dissimilar figures for the number of health facilities currently functioning, and figures from the national HMIS are not always consistent with those provided by the MoH. We selected to use the latter given that these were more readily available to the study team. Lastly, we did not conduct any direct observations or patient interviews as these were out of the scope of this study. Future work may wish to explore the clinical experiences of patients and providers to better understand the provision of infertility services in the Gambian health system.

Conclusions

The availability of infertility services in The Gambia follows a trajectory that is similar to other SSA countries in which services are limited and obtainable mostly through the private sector. In The Gambia infertility services are limited and unequally split between public and private

sectors and this picture is even more distinct for the provision of infertility treatment. Furthermore, access to private care is expensive and geographically restricted, likely exacerbating existing inequalities to fertility care. Improving the availability of infertility services in the public sector requires systematically capturing data on infertility and investing in fertility training, medications, and equipment.

The Gambia Government, with the recent revision of its national health policy, laid the foundations to increase the availability of infertility services to its citizens. This may also be an opportunity to partner with the private healthcare sector as a possible option to limit the financial burden of out-of-pocket expenses on infertility services in particular among those most in need [65].

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12913-022-08514-0>.

Additional file 1. Survey questionnaire.

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Authors' contributions

AA, SD, AP, JB conceptualised the study. AA and HA carried out the investigations. AA performed the analysis; AA drafted the first version of the manuscript. All authors contributed to the revision and editing of the final version of the manuscript. The author(s) read and approved the final manuscript.

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Availability of data and materials

The datasets generated and analysed during the current study are not publicly available because they contain personal information regarding the participants but are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the Gambia Government and Medical Research Council Gambia (MRCG) at the London School of Hygiene and Tropical Medicine Joint Ethics Committee (Reference 22446) and The University of Sheffield – School of Health and Related Research (SchHARR) Research Ethics Committee (Reference 03785–038109). Written informed consent was obtained from all participants prior to filling in the survey having assured confidentiality of the data. All methods were performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki).

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

¹School of Health and Related Research – SchHARR, The University of Sheffield, Sheffield, UK. ²Medical Research Council – MRC The Gambia Unit, Fajara, The

Gambia. ³Research Centre Gender, Diversity and Intersectionality - RHEA, Vrije Universiteit Brussel, Ixelles, Belgium. ⁴The Gambia Ministry of Health, Banjul, The Gambia. ⁵School of Medicine and Allied Health Sciences, University of The Gambia, Banjul, The Gambia. ⁶Department of Oncology and Metabolism, The Medical School, The University of Sheffield, Sheffield, UK.

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6.1 Contributions to Thesis

The results from the cross-sectional survey have permitted, for the first time, to generate a comprehensive map concerning the availability of infertility services in public and private facilities in The Gambia, and has helped better understand of infertility data flow, how data are collected, and how they are shared within the health system. From a practical point of view, and considering that a mapping of infertility services has not being established previously, these results can help the current health leadership acknowledge which facilities, and which type of provider, are involved in the delivery of fertility care in the country and, by far, the challenges and opportunities in the provision of these services. Knowing '*who is doing what*' is pivotal for the strengthening of the health system, and may improve the establishment of human and material resources' priority. However, with the exception of the practical usability of the mapping exercise, it worth to highlight that this exercise remains 'temporary' because it could be that new clinics – probably private - would have arisen since the completion of the survey, increasing the pool of facilities currently delivering infertility services in The Gambia. Considering the research questions developed to respond to the quantitative research, the work in this chapter adds to the limited knowledge on infertility services availability and confirmed the weaknesses of the Gambian health information system that is currently incapable for collecting and reporting infertility data. Lastly, the results of the survey gave the opportunity to widen the qualitative investigation in exploring topics that would have been otherwise overlooked. In the next *Chapter 7*, as part of the qualitative research, the perspectives and views on fertility care implementation are explored.

Supplementary Information

Additional file 1. Infertility Health Facility Survey, The Gambia

Survey Flow

Block 1: Consent (1 question)

Block 2: Demographics (8 questions)

Block 3: RH and infertility services (13 questions)

Block 4: Clients (6 questions)

Block 5: Health management information system (3 questions)

Block 6: Ethics (4 questions)

Block 7: Integration of infertility services (2 questions)

Block 8: Follow-up for qualitative research (5 questions)

Start of Block: Consent

Consent Now that you have read the participant information sheet and given written consent, do you have any questions about the survey? Do I have your agreement to proceed with the questions?

- o YES, I Consent (1)
- o NO, I do not Consent (2)

Skip To: End of Survey If Now that you have read the participant information sheet and given written consent, do you have a... = NO, I do not Consent

Skip To: End of Block If Now that you have read the participant information sheet and given written consent, do you have a... = YES, I Consent

End of Block: Consent

Start of Block: Demographics

LGA Local Government Area

- o Basse (1)
- o Janjanbureh (2)
- o Kantaur (3)
- o Banjul (4)
- o Kanifing (5)
- o Brikama (6)
- o Kerewan (7)
- o Mansakonko (8)

Districts

Display This Choice:

If Local Government Area = Basse

- o Basse Fulladu East (1)

Display This Choice:

If Local Government Area = Basse

- o Jimara (2)

Display This Choice:

If Local Government Area = Basse

- o Kantora (3)

Display This Choice:

If Local Government Area = Basse

- o Sandu (4)

Display This Choice:

If Local Government Area = Basse

- o Tumana (5)

Display This Choice:

If Local Government Area = Basse

- o Wuli East (6)

Display This Choice:

If Local Government Area = Basse

- o Wuli West (7)

Display This Choice:

If Local Government Area = Janjanbureh

- o Upper Fulladu West (8)

Display This Choice:

If Local Government Area = Janjanbureh

- o Lower Fulladu West (9)

Display This Choice:

If Local Government Area = Janjanbureh

- o Janjanbureh (10)

Display This Choice:

If Local Government Area = Janjanbureh

- o Niamina Dankunku (11)

Display This Choice:

If Local Government Area = Janjanbureh

- o Niamina East (12)

Display This Choice:

If Local Government Area = Janjanbureh

- o Niamina West (13)

Display This Choice:

If Local Government Area = Kantaur

- o Lower Saloum (14)

Display This Choice:

If Local Government Area = Kantaur

- o Niani (15)

Display This Choice:

If Local Government Area = Kantaur

- o Nianija (16)

Display This Choice:

If Local Government Area = Kantaur

- o Sami (17)

Display This Choice:

If Local Government Area = Kantaur

- o Upper Saloum (18)

Display This Choice:

If Local Government Area = Banjul

- o Banjul Central (19)

Display This Choice:

If Local Government Area = Banjul

- o Banjul North (20)

Display This Choice:

If Local Government Area = Banjul

- o Banjul South (21)

Display This Choice:

If Local Government Area = Kanifing

- o Kanifing (22)

Display This Choice:

If Local Government Area = Brikama

- o Foni Bintang-Karenai (23)

Display This Choice:

If Local Government Area = Brikama

- o Foni Bondali (24)

Display This Choice:

If Local Government Area = Brikama

- o Foni Brefet (25)

Display This Choice:

If Local Government Area = Brikama

- o Foni Jarrol (26)

Display This Choice:

- If Local Government Area = Brikama*
- o Foni Kansala (27)
- Display This Choice:*
- If Local Government Area = Brikama*
- o Kombo Central (28)
- Display This Choice:*
- If Local Government Area = Brikama*
- o Kombo East (29)
- Display This Choice:*
- If Local Government Area = Brikama*
- o Kombo North (30)
- Display This Choice:*
- If Local Government Area = Brikama*
- o Kombo South (31)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Central Baddibu (32)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Illiasa (33)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Jokadu (34)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Lower Baddibu (35)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Lower Niumi (36)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Sabach Sanjal (37)
- Display This Choice:*
- If Local Government Area = Kerewan*
- o Upper Niumi (38)
- Display This Choice:*
- If Local Government Area = Mansakonko*
- o Jarra Central (39)
- Display This Choice:*
- If Local Government Area = Mansakonko*

- o Jarra East (40)

Display This Choice:

If Local Government Area = Mansakonko

- o Jarra West (41)

Display This Choice:

If Local Government Area = Mansakonko

- o Kiang Central (42)

Display This Choice:

If Local Government Area = Mansakonko

- o Kiang East (43)

Display This Choice:

If Local Government Area = Mansakonko

- o Kiang West (44)

Name of the Health Facility

Level of care

- o Primary
- o Secondary
- o Tertiary

Facility type

- o Minor Health Centre
- o Major Health Centre
- o District Hospital
- o General Hospital
- o Specialised Hospital
- o Teaching Hospital

Is this health facility...

- o Public
- o Private (for profit)
- o Private (non-for-profit / NGO)
- o Other _____

Facility catchment population (*as defined by the MoH*)

Gender of interviewee

- o Male
- o Female
- o Prefer not to say

End of Block: Demographics

Start of Block: Services

Which of the following sexual and reproductive health services are offered in this facility? (*Read all the options below and select all that apply*)

- a. Family planning
- b. STIs management
- c. Maternal, newborn and child care
- d. HIV/AIDS
- e. Prevention and management of gender-based violence (SGBV)
- f. Prevention of unsafe abortion and post-abortion care
- g. Andrology
- h. Urology
- i. Gynecology
- j. Obstetrics
- k. Adolescents sexual and reproductive health
- l. Early pregnancy/recurrent pregnancy loss clinic
- m. Genetic screening
- n. NONE OF THEM

Do you offer counselling regarding optimising natural fertility (lifestyle factors, prenatal nutrition and vitamins, the timing of intercourse – and other ovulation detection methods)?

- ☐ Yes
- ☐ No
- ☐ Do not know

Do you offer infertility services? (*Infertility service is a package of interventions to diagnose, prevent and treat infertility*)

- ☐ Yes
- ☐ No
- ☐ Do not know

Skip To: Types_infserv If Do you offer infertility services? (Infertility service is a package of interventions to diagnose... = Yes

Skip To: End of Block If Do you offer infertility services? (Infertility service is a package of interventions to diagnose... = No

Skip To: End of Block If Do you offer infertility services? (Infertility service is a package of interventions to diagnose... = Do not know

Which infertility services do you offer? (*Read all the options below and check the case if the service is mentioned*)

- a. Fertility history-taking
- b. Physical Examination (female)
- c. Physical Examination (male)
- d. Screening STI (female)
- e. Screening HIV (female)
- f. Screening TB (female)
- g. PAP/Smear test
- h. Visual inspection Acetic Acid
- i. Screening STI (male)
- j. Screening HIV (male)
- k. Screening TB (male)
- l. Ultrasound pelvic (female)
- m. Hormone balance (female)
- n. Sono-hysterosalpingogram
- o. Hysterosalpingogram
- p. Semen analysis
- q. Cytogenetics (male)

Do you offer any of the following female infertility treatments? (*Read all the options below and select all that apply*)

- a. Intrauterine Insemination -IUI
- b. Ovulation induction (Gonadotropins, Hormones & Clomiphene Citrate)
- c. Reversal tubal sterilisation
- d. Dilatation & Curettage (D&C)
- e. No treatment offered

Other treatment or surgeries for female infertility?

- ☐ Yes
- ☐ No

<p><i>Skip To: Q38 If Other treatment or surgeries for female infertility? = Yes</i></p> <p><i>Skip To: Treat_male If Other treatment or surgeries for female infertility? = No</i></p>

If Yes, which ones?

Do you offer any of the following male infertility treatments? (*Read all the options below and select all that apply*)

- a. Reversal vasectomy
- b. Surgical sperm retrieval
- c. Varicocele
- d. None of them

Which of the following Assisted Reproduction Technologies (ART) do you offer in this facility? (*Read all the options below and select all that apply*)

- a. In vitro Fertilization (IVF)
- b. Intracytoplasmic Sperm Injection (ICSI)
- c. Embryo cryopreservation
- d. Oocyte cryopreservation
- e. Sperm cryopreservation
- f. Pre-implantation genetic diagnosis/screening (PGD/PGS)
- g. Sex selection
- h. None of them

Who provides infertility services in this facility? (*Read all the options below and select all that apply*)

- a. Physicians
- b. Obstetrician/gynaecologists
- c. Endocrinologists
- d. Anesthetists
- e. Medical assistants
- f. Pharmacists & pharmacist assistants
- g. Nurses
- h. Midwives
- i. Embryologists
- j. Laboratory scientists & assistants
- k. Andrologists
- l. Psychologists or Counsellors
- m. Do not know

How frequently are infertility consultations offered? (*Read all the options below and select all that apply*)

- o Daily (Mon-Fri)
- o Weekly (once a week)
- o Monthly
- o On request
- o Do not know

Are infertility consultations stand-alone or integrated with other services?
(*Integrated = health service is organised so that people get the care they need when they need it; Stand-alone = vertical service provided separately from the health facility*)

- o Stand-alone
- o Integrated

Skip To: Integr_type If Are infertility consultations stand-alone or integrated with other services? (Integrated = health... = Integrated

Skip To: End of Block If Are infertility consultations stand-alone or integrated with other services? (Integrated = health... = Stand-alone

If INTEGRATED, within what service? (*Read all the options below and select all that apply*)

- a. Gynaecology clinic
- b. Family Planning clinic
- c. Maternal health clinic
- d. HIV clinic
- e. Other (please specify) _____

End of Block: Services

Start of Block: Clients

How many patients or clients per week, are seen at this clinic for infertility?

- ☐ 0 (zero)
 - ☐ Fewer than 5
 - ☐ Between 6 and 25
 - ☐ Between 26 and 50
 - ☐ Between 51 and 70
 - ☐ More than 70
 - ☐ Do not know
-

What is the percentage of the total time spent, by the health staff, providing infertility-related consultations at this clinic?

- ☐ 0-25%
 - ☐ 26-50%
 - ☐ 51-75%
 - ☐ 76-99%
 - ☐ 100%
 - ☐ Do not know
-

What percentage of all infertility consultations address female fertility issues?

- ☐ 0%
 - ☐ 1% - 25%
 - ☐ 26% - 50%
 - ☐ 51% - 75%
 - ☐ 76% - 99%
 - ☐ 100%
 - ☐ Do not know
-

What percentage of all infertility consultations address male infertility issues?

- ☐ 0%
- ☐ 1% - 25%
- ☐ 26% - 50%
- ☐ 51% - 75%
- ☐ 76% - 99%
- ☐ 100%
- ☐ Do not know

During the first visit for infertility, do couples attend together? (*Read all the options below and select all that apply*)

- ☐ Always
- ☐ Usually
- ☐ Often
- ☐ Occasionally
- ☐ Never

During follow-up visits for infertility, do couples attend together? (*Read all the options below and select all that apply*)

- ☐ Always
- ☐ Usually
- ☐ Often
- ☐ Occasionally
- ☐ Never

End of Block: Clients

Start of Block: Health Management Information System

Do you report data about infertility to the District Health Management Information System?

- ☐ Yes
- ☐ No
- ☐ Do not know

Skip To: Repor_tool If Do you report data about infertility to the District Health Management Information System? = Yes

Skip To: End of Block If Do you report data about infertility to the District Health Management Information System? = No

Skip To: End of Block If Do you report data about infertility to the District Health Management Information System? = Do not know

If YES, how do you report data concerning infertility? (*Please take a picture of the form, if available*)

- o DHMIS paper form
- o DHMIS electronic form
- o Data is added to the total number of outpatient consultations
- o Other formats (please specify)_____

How often do you report data concerning infertility consultations?

- o Weekly
- o Monthly
- o Bi-annually
- o On demand
- o This data is not reported

End of Block: Health Management Information System

Start of Block: Ethics

Does this health facility follow any specific ethical protocols when it comes to providing infertility treatment?

- o Yes
- o No
- o Don't know
- o Not applicable, the health facility does not provide infertility treatment

Skip To: Eth_tool If Does this health facility follow any specific ethical protocols when it comes to providing infert... = Yes

Skip To: Eth_board If Does this health facility follow any specific ethical protocols when it comes to providing infert... = No

Skip To: Eth_board If Does this health facility follow any specific ethical protocols when it comes to providing infert... = Don't know

Skip To: End of Block If Does this health facility follow any specific ethical protocols when it comes to providing infert... = Not applicable, the health facility does not provide infertility treatment

If YES, could you explain which ethical protocols are being followed? (*Please take a picture of the protocol, if available*)

- o Checklist or protocol developed by this health facility
- o National ethical guidelines regarding the provision of infertility services
- o Other (please specify) _____

Does this health facility have an ethical board meeting to discuss ethically sensitive requests regarding infertility treatment?

- o Yes
- o No
- o Do not know

Who usually makes the final decision when it comes to an ethically sensitive request for infertility treatment?

- o The woman wanting infertility treatment
- o The man wanting infertility treatment
- o Decisions are always made together by both man and woman wanting infertility treatment
- o Healthcare professional providing treatment
- o The ethical board of this health facility
- o Other (please specify) _____

End of Block: Ethics

Start of Block: Integration of infertility services

Could you say, for each factor, how much each barrier impede integration of infertility care? *(Read all the options below and select all that apply)*

	Not so much	Somehow	Very much	Unsure
Shortage of staff time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of staff training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inappropriate/insufficient staff supervision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low staff motivation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low staff desire to assist with fertility care due to stigmatisation toward those desiring biological children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low staff desire to assist with fertility care for at-risk populations (such as those with HIV, disabled people, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of fertility medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of equipment and supply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of space for offering privacy and confidentiality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low priority for infertility care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shortage of national guidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the case where infertility care is integrated with the existing services in your facility, would this lead to an increase or decrease of the following components?
(Read all the options below and select all that apply)

	Decrease	No change	Increase	Unsure
Cost of service (for the facility)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of service (for the client)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Efficiency of service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The workload of the staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time spent per client	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment, supplies, and drugs for infertility treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Integration of infertility services

Start of Block: Follow-up for qualitative research

Do you agree to be contacted for a qualitative interview in about 6-months' time?

Yes

No

Skip To: INT_NAM If Do you agree to be contacted for a qualitative interview in about 6-months time? = No

If NO, can you name a person, from this health facility, that may agree to be interviewed?

Contact
name_____

Role/Occupation_____

—

Contact
number_____

End of Block: Follow-up for qualitative research

7. Chapter: "*It's about time*": policymakers' and health practitioners' perspectives on implementing fertility care in The Gambian health system

Anna Afferri¹, Susan Dierickx², Haddijatou Allen³, Mustapha Bittaye⁴, Musa Marena⁴,
Allan Pacey⁵, Julie Balen^{1*}

¹ School of Health and Related Research (SchARR), The University of Sheffield, UK

² Research Centre Gender, Diversity and Intersectionality - RHEA, Vrije Universiteit Brussels, Belgium. Institute of Tropical Medicine, Antwerp, Belgium

³ Medical Research Council, (MRC) Unit The Gambia at LSHTM, The Gambia

⁴ The Gambia Ministry of Health, Banjul, The Gambia

⁵ Department of Oncology and Metabolism, The Medical School, The University of Sheffield, UK

*Corresponding author:

E-mail: j.balen@sheffield.ac.uk (JB)

ORCID: 000-0002-4736-8465

This chapter reports the qualitative findings from 46 semi-structured interviews conducted with policymakers, policy implementers, and health practitioners in The Gambia to assess challenges and opportunities for the implementation of fertility care within the health system. The findings reported below represent the last piece of the primary data collection of the MMR. The interviews were conducted between July and November 2021 using a hybrid model of video conferencing and face-to-face meetings, though a vast majority were the latter. All the interviews were facilitated and analysed by the author. The manuscript was submitted to *BMC Reproductive Health* in January 2023 and remains under peer-review at the time of the submission of this thesis.

The paper in this chapter was written with 7 co-authors: Susan Dierickx, Haddijatou Allen Mustapha Bittaye, Musa Marena, Allan Pacey, and Julie Balen. Anna Afferri conceived the study, designed the data collection tool, conducted the data collection in The Gambia, transcribed, coded, and analysed the data, and produced the original draft of the manuscript. All co-authors reviewed the work and provided feedback on the manuscript.

7.1 Abstract

There has been an increased consideration of the role of health systems in improving global health and sustainable health interventions. However, this increased attention towards health systems research has not been translated within the field of fertility care practice, especially in resource-limited health systems. This study, based on qualitative research in The Gambia, West Africa, aims to understand which factors influence the operationalisation of fertility care policy. We conducted 46 semi-structured interviews with 49 policymakers, policy implementers, and health practitioners in the public and private sectors in The Gambia between July and November 2021. The study identified several challenges to a successful implementation of fertility care, including: (i) the absence of a specific budget allocated for fertility care; (ii) the not-routinely collection of infertility data; and (iii) gaps in fertility care training among health practitioners. Interestingly, in terms of providing a comprehensive package for fertility care, the private sector is seen both as an antagonist of the public health system and as a resource, currently providing the most comprehensive package for fertility care. Identifying and creating budget lines for fertility care, updating the health management information form, providing comprehensive fertility care training to health practitioners, and building stronger collaborations between the private and public sectors may contribute towards improved and more equitable access to fertility care for all.

7.2 Introduction

The 1994 International Conference on Population and Development (ICPD) recognised infertility prevention and management as a core component of Sexual and Reproductive Health and Rights (SRHR) (UNFPA, 1994). The ICPD Program of Action, which was adopted by 179 United Nations member states, recommended bringing infertility services closer to communities through primary health care. Over the years, this promise was reiterated by the international community, for example, at the World Summit (2005) and as part of the World Health Organisation (WHO) Global Health Strategy (2011). However, despite these international promises, very few concrete examples of interventions addressing infertility in the Global South have been documented to date (Inhorn and Patrizio, 2014; Afferri *et al.*, 2021; Dierickx *et al.*, 2021).

It can be argued, therefore, that fertility care represents an ‘orphan child’ of SRHR which has been de-prioritised since the ICPD, particularly in resource-limited settings, such as those across sub-Saharan Africa (SSA). Importantly, the drivers behind this apparent de-prioritisation remain highly contested (Gerrits *et al.*, 2017). They include, among others, a predominant discourse on over-population (Ombelet and Goossens, 2017), limited formal recognition of the impact of infertility on livelihood and wellbeing (Akinloye and Truter, 2011; Kroes *et al.*, 2019; Hiadzi, Boafo and Tetteh, 2021), and a lack of visibility in policy arenas (Afferri *et al.*, 2021). There are some recent signs, however, that infertility awareness among global health stakeholders is improving, with an increased focus on infertility research, policy and practice in some settings (Pedro *et al.*, 2018; Carneiro and França Ferreira, 2021).

Yet, including fertility care in national health agendas is challenging, since in many countries policies regarding sexual and reproductive health remain centred on more 'established' interventions such as those relating to maternal health and HIV/AIDS (Asemota and Klatsky, 2015; Morshed-Behbahani *et al.*, 2020). The high costs of assisted reproductive technology (ART) are also prohibitive in the context of many national health budgets, though other components of fertility care are less costly (Njagi *et al.*, 2020). Even when infertility is on the agenda, implementation of specific interventions and policies often increases inequities in access to fertility care including rural-urban, socio-economic and gender-based inequities (Ombelet, 2009). Turning policy intentions for comprehensive and equitable fertility care into a concrete package of actions and outcomes requires increased engagement with the health system and an improved understanding of power dynamics, views and positions of policy makers and health practitioners regarding infertility (Shiffman and Smith, 2007; Hudson, Hunter and Peckham, 2019).

In The Gambia, in West Africa (Figure 7.1), the Ministry of Health (MoH) recognises infertility as a burden for its citizens and has taken measures to include it in multiple health and family planning policies (Ministry of Health & Social Welfare, 2019a). This could be explained by many factors, including the resumption, after more than 15 years, of academic research on infertility (Sundby, 2014; Dierickx *et al.*, 2018; Dierickx, Oruko, *et al.*, 2021), the high estimated prevalence of infertility (Mascarenhas, Flaxman, *et al.*, 2012; Anyanwu and Idoko, 2017), ongoing local reproductive activism (Dierickx *et al.*, 2019), and an evidence-informed policy dialogue between the government and academic partners (Balen *et al.*, 2020). In addition, by means of a joint venture between the Merck Foundation and the

incumbent First Lady of The Gambia, Her Excellency Fatoumatta Bah Barrow, several Gambian gynaecologists were supported to attend ART training in India, and discussions regarding setting up a Fertility Association in The Gambia as well as developing the country's first Assisted Conception Unit are now also in progress.

Despite (i) the importance of implementing fertility care policy within health systems, and (ii) increased global attention on the role of health systems in scaling-up sustainable health interventions, very few studies in the Global South have been conducted on infertility from a health systems perspective (Chauhan *et al.*, 2018; Mirparsa and Mirzaei, 2021; Sripad *et al.*, 2021). Here, we aim to understand health system factors, including constraints and opportunities, that influence the operationalisation of fertility care in The Gambia drawing on the WHO's health system building block framework (WHO, 2010).

7.3 Methods

Study design and setting

A qualitative study was conducted between July and November 2021. The study formed part of ongoing mixed methods research on fertility care policy and practice in The Gambia (Afferri *et al.*, 2022), and it builds on earlier ethnographic research (Dierickx *et al.*, 2018; Dierickx *et al.*, 2019; Dierickx *et al.*, 2019, 2021). The study was carried out in all seven administrative regions of The Gambia, namely Upper River, Central River, Lower River, North Bank (West and East), and West Coast (1 and 2).

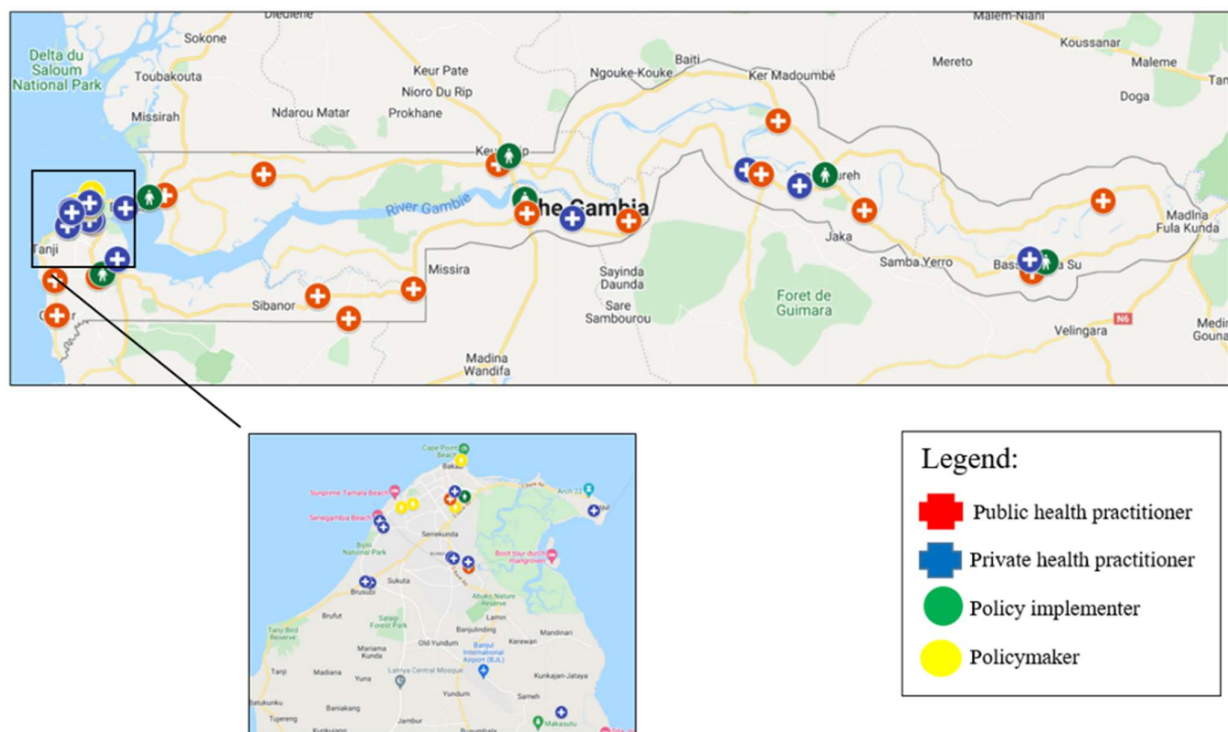


Figure 7.1: Map of The Gambia indicating Study Locations Throughout the Country (Greater Banjul Area is Magnified)

Sampling and recruitment

Participants were purposely recruited, implying their direct experience with health policy making and implementation and were thus well placed to offer specific insights about the operationalisation of fertility care. National-level policymakers and policy implementers were selected based on a stakeholders map analysis; healthcare practitioners were recruited from health facilities that were part of a related quantitative cross-sectional study (Afferri *et al.*, 2022). A total of 52 key informants were contacted, including the MoH at central and regional level, representatives of international cooperation agencies, civil society organisations, and healthcare providers. These informants were organised under three categories, specifically: (i) policy makers (including the MoH at central level and international cooperation agencies); (ii) policy implementers (including the regional level of the

MoH and civil societies); and (iii) health practitioners, largely in secondary or tertiary care facilities in both the public and private health sectors. Three out of 52 (two private health practitioners and one policy implementer) were unavailable for the interview. Recruitment of the remaining 49 participants was conducted over the phone and in-person by a Gambian field assistant. Interviews with health practitioners were conducted in both rural and urban facilities pertaining to the public and private sectors. Key characteristics of the study participants are shown in Table 7.1.

Table 7.1: Key Characteristics of the Study Participants

<i>Region</i>	<i>Participant's profession</i>	<i>Number of participants</i>	<i>Gender</i>
West Coast	Policymaker	5	5 male
	Policy implementer	2	2 female
	Public health practitioner	9	4 male; 5 female
	Private health practitioner	11	8 male; 3 female
<i>Sub-total</i>		27*	
Upper River	Policy implementer	1	1 male
	Public health practitioner	2	2 male
	Private health practitioner	1	1 male
<i>Sub-total</i>		4	
Lower River	Policy implementer	1	1 male
	Public health practitioner	2	2 male
	Private health practitioner	1	1 male
<i>Sub-total</i>		4	
Central River	Policy implementer	3	3 male
	Public health practitioner	3	3 male
	Private health practitioner	2	2 male
<i>Sub-total</i>		8	
North Bank	Policy implementer	2	2 male
	Public health practitioner	3	3 male
	Private health practitioner	1	1 female
<i>Sub-total</i>		6	
GRAND TOTAL		49	38 male; 11 female

* West Coast region is where a large number of the country public and private health facilities are based

Key informant interviews

Key informant interviews were conducted in English, The Gambia's official language, with the support of a local field assistant who took notes. Semi-structured interview guides (S1 File) were designed covering themes identified systematically during a qualitative evidence synthesis conducted in 2020 (Afferri *et al.*, 2021). Interviews were administered through Google Meet (n= 3) or in-person (n= 43) at a place of each interviewee's choice to avoid any interference with their regular duties. All interviews were audio and/or video recorded with interviewees' informed consent and permission, and lasted between 15 and 60 minutes (with an average of 30 minutes).

Data analysis

Interviews with key informants were transcribed *ad verbatim* prior to inductive analysis and according to the principles of thematic coding (Thomas and Harden, 2008). Coding was supported by use of QSR International's NVivo Pro qualitative software, version 1.6.1 (released in 2020). Themes arose inductively from the coding were then deductively categorised according to the WHO health systems building blocks framework, namely: (i) leadership and governance; (ii) health information system; (iii) health financing; (iv) service delivery; (v) medicines and technologies; and (vi) health workforce (Figure 7.2) (WHO, 2010; Manyazewal, 2017). Importantly, people block was considered as a core component of the system. The selection of this framework was driven by the purpose of identifying factors influencing implementation of fertility care in the Gambian health system " *to benefit public health through [a] more effective, efficient, equitable and acceptable system*" (Coker *et al.*, 2010, p. i24) and to test the readiness of the Gambian health system

to implement and scale-up fertility care in the country (Ministry of Health & Social Welfare, 2019a).

Ethical clearance

Ethical clearance for this study was obtained from the University of Sheffield – School of Health and Related Research (SchARR) Research Ethics Committee (Reference 03785-038109) Committee and from the Gambia Government and Medical Research Council (MRC) at the London School of Hygiene and Tropical Medicine Ethics Joint Committee (Reference 22446). Before starting each interview, each participant was given a written explanation of the study's aims and objectives, and written informed permission was acquired. All audio files, transcripts, and personal identification numbers were kept private. All methods were performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki).



Figure 7.2: Framework Guiding the Thematic Analysis⁵³

⁵³ Figure created by the author and adapted with permission from 'Systems thinking: for health systems strengthening', Don de Savigny and Taghreed Adam (Eds.). Alliance for health policy and systems research, WHO, 1-112, 2009.

7.4 Results

Leadership and governance

All respondents welcomed the decision of the MoH to pay attention to fertility care and the composition of the leadership team was identified as a key driving force behind this decision' "...It's about time [to include fertility care] and it's about having the people, the right people with the right mind at the right place..." (Male, public health practitioner - West Coast). However, despite of this recognition of the timeliness and importance of including fertility care in the National Health Policy, most respondents also identified potential threats to the implementation of the policy, particularly with respect to the fertility care component:

'It is not going to be an easy thing. It is going to cost a lot of energy to invest. Because it's quite a ladder, what you're naming here, from education to healthcare system, it is a lot' (Female, private health practitioner – West Coast)

Coordination among stakeholders involved in fertility care (public, private and international partners) was desired by respondents but criticised as missing at various levels. Private healthcare workers, in particular, felt that the MoH has not involved them in policy and/or decision-making processes and they expressed a wish for a closer collaboration:

'The Ministry of Health gives no help to this private clinic, therefore this private clinic gives no help to the Minister of Health. They have never visited this center. They have never called us for any policy decision. They have never consulted us in anyway. This is not politics but just courtesy' (Male, private health practitioner – West Coast)

'The coordination is done in all other areas with the Ministry of Health but [for infertility] they are not properly coordinated. The coordination should start from the Ministry as, it has an ownership role' (Male, policymaker – West Coast)

Similarly, the involvement of international partners was recognised as a key gap but also an area for improvement *'Many partners are here, if they are faced by the Ministry [of Health], I believe they will come in' (Male, policy implementer – Lower River).*

Fertility awareness activities, a factor influencing the perceived importance of infertility, were reported as rare. To this effect, respondents were unable to recall any major initiatives related to fertility except for a few events such as occasional television, radio shows and public marches aiming to increase awareness on infertility. This observation was even more pronounced in rural areas:

'But infertility is something that I have not seen been discussed openly. I have not seen any team come around to do any activities, programs, it's something that I have not seen around' (Male, public health practitioner — West Coast)

Health information system

Data on infertility are not routinely captured nor officially requested by the MoH. The majority of respondents reported that the current health management information system (HMIS) form lacks a dedicated space to collect information on infertility (Afferri *et al.*, 2022). Health practitioners noted that this resulted in them having to enter data of patients with infertility under unspecified categories which they found problematic:

'...infertility might not be reported or it is reported as 'Others'. Some of the conditions that are not reflecting in the DHMIS [district health management information system] are all gathered and reported as 'Others'. So in these others you may not be able to differentiate what is what" (Male, public health practitioner – North Bank)

'In the district health management information system [DHMIS] where the data is collected, there is no area

talking about infertility' (Female, policy implementer – West Coast)

'Usually what we are requesting [from the health facilities], we get. We have an electronic system where we can get the data we want, but for infertility there is none, we are not requesting that, so we are not getting it' (Male, policymaker – West Coast)

Health financing

The absence of any funding earmarked for fertility care was a serious concern for both policymakers and healthcare professionals. The general view was that the MoH should have a dedicated and detailed budgetary allocation to implement fertility care, and that should also interact more with in-country international development partners - and the private sector - to co-fund selected fertility care interventions:

'...the only thing we can say is that the Ministry of Health needs to put [fertility care] in the budget. Whether there will be money for it or not, that question is very difficult for us to answer' (Males, policy implementer - Central River)

'... [fertility care] would have budget implications, maybe to an extent the government might try to see how best to negotiate any help from partners' (Male, policy implementer, Upper River)

A few participants proposed the introduction of fertility care under the current health insurance scheme to help decrease out-of-pocket expenditures for fertility care:

'...if they can introduce in the policy a health insurance scheme, so who cannot afford to buy these drugs can use their health scheme card to pay in any pharmacy, I think that will help a lot' (Female, public health practitioner, West Coast)

Service delivery

In the public health facilities that provide infertility care, it has largely been integrated with other reproductive health services and delivered within family

planning or gynaecology clinics; a slightly different picture emerged from the private sector where standalone infertility services are available on designated days (for further details see (Afferri *et al.*, 2021). Barriers in health seeking and low engagement with diagnostic services, especially among men compared to women, were reported as major issues for successful implementation of fertility care interventions. A lack of men's involvement in infertility services was cited as one of the central challenges to the successful delivery of infertility services. Respondents suggested that better care for men with fertility concerns will require changes in attitudes and perceptions of male reproductive health in society:

'...the belief is that as long as the man is having a normal erection, has a normal intercourse, and can ejaculated, everything's fine. So since everything is fine, they think there is no problem. Sometimes it's challenging to make them understand' (Male, public health practitioner - West Coast)

'We also want the men to help contribute in the management of infertility, if you send your woman or your wife in the clinic and you are not there, that also is difficult, it hinders the treatment. So, you also must appeal to the men' (Male, public health practitioner – Central River)

Respondents noted that there is no fertility assessment tool currently in use in public or private facilities. When asked specifically about FertiStat (Bunting and Boivin, 2010; Kamel, 2010; Bayoumi, Koert, Van der Poel, *et al.*, 2021), a self-assessment fertility tool to rapidly evaluate fertility status, and counsel men and women toward the most appropriate course of actions, none of the participants had any knowledge of it:

'...I never had the opportunity to get access to it [FertiStat]...I have never used it before. I am not sure if it is a general guiding protocol from the Ministry of Health, but I never come across something like that ...' (Male, policy implementer – North Bank)

Respondents claimed that the private sector in The Gambia provides a broader range of infertility diagnostic investigations and treatments options, compared with those in public facilities '*Infertility care is provided more in the private clinics than in the public sector*' (Male, public health practitioner, West Coast). However, they also noted that the high costs of accessing private care, which are born by patients through out-of-pocket expenditures, pose an equity issue in terms of lack of affordability among many of those in need: '*Infertility for the Gambians is costly: they have to pay for consultation, they have to pay for scan, and they have to pay for medication*' (Male, private health practitioner – West Coast).

A partnership model between the public and private sectors for the delivery of fertility care is an option that was said to be not yet fully developed or utilised in The Gambia '*...the coordination with the private sector is not very strong like in other countries, that's not happening in The Gambia...*' (Male, policymaker– West Coast).

Medicines and technologies

Participants shared concerns about the implementation of fertility care in the public sector because of health system challenges such as shortage of medications and unavailability of certain equipment required for infertility investigations and treatment. Furthermore, the aforementioned ability of the private sector to respond better to fertility needs appears to have altered the referral system. In this regard, public health practitioners cited that despite having a preference to refer patients primarily within the public health system, the unavailability of fertility specialists and long waiting times, compel them to direct patients toward private care:

'...the drugs are not available, because the Ministry of Health is looking at what is called essential medicines and in these, infertility treatment is not captured. So, it means

patients have to go and buy them... (Male, policy implementer – Lower River)

'...I refer to Banjul [teaching hospital] but for infertility they refer here. Why? Because even the IUI is not there, the drugs for [ovarian] stimulation are not the better [ones], I have all of them' (Male, private health practitioner – West Coast)

Participants also recognised how expensive infertility investigations and treatment are, and how this may pose a problem of both access and discontinuation of care:

'...And financially, most of people don't have money. Poor people in the sub-region can't afford to do some of these tests. So the moment you add them, you won't see back again, we don't see them again...they just go...' (Male, public health practitioner – West Coast)

Health workforce

Only a few of the participants reported being trained in infertility management more generally, and specifically in ART. A majority of participants noted that the little information on infertility they received was obtained during their formative years (nursing schools or university) and/or during their clinical practice (i.e. on-the job training). Most of the health practitioners interviewed described that to safely and fully implement fertility care, they would require an appropriate training. This point was also highlighted as one of the challenges to implement fertility care within the context of the new National Health Policy:

'...I used to attend the infertility clinic in Banjul. Some of the [infertility] knowledge is captured from your colleagues, but other coming from your own reading and what you have learned from the medical school...' (Male, public health practitioner – North Bank)

'...Healthcare staff should be trained to identify infertility and also to be able to treat infertility even at public facility-level...' (Male, policy implementer -Lower River)

Furthermore, a limited number of health practitioners were trained in ART abroad, yet frustration levels were reportedly high among this cohort as they have been unable to capitalise on their training, since ART are not currently available in The Gambia:

'...It's really frustrating, because after the training in India, you come back with all that knowledge and all that skills to apply to help people here and you find nothing. And then the government is not encouraging. They don't provide the background as far as to do those things. We came back...but I'm applying the basic, basic skills...' (Male, public health practitioner – West Coast)

Lastly, respondents revealed that deployment and retention of human resources for health is a big concern for the implementation of fertility care. This divide was even bigger between health providers posted in rural facilities:

'...personnel and skills will be a challenge [to implement fertility care], especially in the rural Gambia because we are under staffed...we need a gynaecologist to take care of certain kind of things or a medical officer...' (Male, public health practitioner, Central River)

'...to address infertility, the Ministry of Health should also identify consultants [doctors] to work in the interior of the country because 95% of the people affected by infertility are from the rural communities. ...' (Male, private health practitioner – Upper River)

People-centred system

People are often listed as being at the core of a health system. The term 'people' is intended to represent individuals, families, communities, civil society, consumers, patients, and healthcare providers that through knowledge, attitudes, behaviours, and practices influence the demand and supply of services and the health system itself.

Despite an analysis of the demand for infertility services being out of the scope of this study, respondents frequently noted that infertility is seen as a highly

stigmatised 'female' problem that is deeply rooted in socio-cultural beliefs, especially gender norms and expectations, and that this 'bias' greatly impacts on the demand for infertility services. Childless women in The Gambia were said to face marital and familial discord as relatives frequently initiate gossip in the household and instigate the husband's decision to remarry in order to procreate:

'...Everybody will blame the woman for not having a child. That stigma is always there with the woman. When a woman don't have a child in the family, in the compound, you hear so many things. So many bad things from the family members, from your co-wives, from the in-laws, from everywhere...' (Female, private health practitioner – West Coast)

'...So an extent, some family members can try to get problem saying 'This one is not good to give us anything' suggesting the husband should take a second wife. They fail to understand that certain times the fault is not on the woman but on the man...' (Male, policy implementer – Upper River)

Informal medicine is practiced in The Gambia with traditional healers and *marabouts* often being the first point of care contact. Some childless couples undertake traditional treatment for years before reporting their fertility concerns at a health facility, and this delay in seeking formal care usually hampers their financial management as well as their reproductive health outcomes:

'...the first port of call would be the traditional healer...then the spiritual healer, sometimes they are asked to pay a lot in kind or in cash...Unfortunately, the flourishing of the traditional treatment in the country has affected a lot of reproductive health issues, notwithstanding infertility as well...' (Male, policymaker – West Coast)

'...first they go to traditional healers. Until they've exhausted all those places that is the time they normally come back [seeking help] in the facility...' (Male, public health practitioner, North Bank)

7.5 Discussion

This study illustrates the importance of the Gambian government having a clear implementation plan to support its infertility policy intentions and to help embed fertility care in the health system. Some of the implementation challenges expressed by study participants reflect wide barriers faced by the Gambian health system (Sine, Saint-Firmin and Williamson, 2019; Ministry of Health & Social Welfare, 2021), whilst others are specific to fertility care. These barriers should be carefully taken into account when planning and operationalising fertility care in The Gambia. While challenges were noted across each of the health system building blocks, some appear to be more mission critical than others, including: (i) updating of the health information form; (ii) ensuring financial protection for infertile patients and a service-specific budget; (iii) improving service delivery, private care and male involvement; and (iv) developing an infertility-responsive workforce

Updating of the health information form

Infertility data are at present not systematically captured nor transmitted within the Gambian health system and this was acknowledged by both policymakers and health practitioners. Data on infertility was said to be aggregated with other health conditions masking the actual number of patients demanding infertility services, and hindering an understanding of the prevalence of infertility and its potential causes. Collecting this information would help direct therapeutic interventions and importantly, assist in the prevention of infertility. Not having data on infertility is an important gap to be fulfilled both for statistical purposes as well as to attract international interest, research and funding for fertility care in the country (Duffy *et*

et al., 2020; Dierickx, Oruko *et al.*, 2021). A priority for Gambian policymakers should therefore be the revision of the health information system form with a space allocated to the collection of infertility data. Improving the capture of infertility data capture is particularly important in terms of any (future) introduction of ART. Drawing on ART registries from other African countries could, for example, assist the Gambian government in creating its own 'infertility records' system (Dyer *et al.*, 2020; Dyer *et al.*, 2020).

Ensuring financial protection for infertile patients and a service-specific budget

Health insurance coverage, providing a pathway towards universal health coverage (UHC) (WHO, 2013a), is very low in The Gambia. Recent research has estimated that only 4% of Gambians are protected by an insurance scheme (Sine, Saint-Firmin and Williamson, 2019) and currently, the government only subsidises civil servants. In November 2021, a national health insurance bill was passed with the intention of periodically reviewing the list of health conditions covered by the insurance scheme (Afferri *et al.*, 2022). It is unlikely that fertility care will be covered through the health scheme in the near future, but as suggested by study participants, this could be considered as an option in the longer-term to help reduce out-of-pocket expenditures. Such financial protection would reduce inequities in access to care that are based on patients' socio-economic status.

Allocation of a budget for health providers' fertility training, as well as necessary medication, and equipment is central in successful fertility care implementation and service delivery (Berhan *et al.*, 2022; Beza *et al.*, 2022). In this regard, medications such as clomiphene citrate, an inexpensive drug used to stimulate ovarian response (Davidson, Motan and Korownyk, 2016) is not currently

available in the public sector despite being listed on the MoH list of essential medicines. Patients in need of this medication are said to be directed toward private pharmacies where the drug is available on prescription. Ensuring its availability in the public sector may further decrease out-of-pocket expenditures for fertility care and could thereby also contribute towards improving fertility-equity in The Gambia.

Improving service delivery, private care and male involvement

The presence of private clinics providing fertility care has re-shaped the referral pathway of the Gambian health system. In fact, the main public referral hospital, Edward Francis Small Teaching Hospital (EFSTH) offers basic and not comprehensive testing and diagnostic services (Afferri *et al.*, 2022). As a result, some patients who can afford the cost of treatments prefer to be referred to private clinics or directly visit private health clinics by themselves. As in other countries (Hörbst, 2016; Hörbst and Gerrits, 2016), private care for infertility is an emerging market in The Gambia. This embodies the limited availability of infertility services in public facilities and a high demand for services that do not stop those in need from accessing costly treatments (Dyer *et al.*, 2013; Njagi *et al.*, 2020). For example, during the data collection period, we discovered two new private fertility clinics that appeared a few metres from each other. Both are intending to provide ART as soon as they can employ an embryologist, and both are now part of the referral system in the coastal area of the Western region. This proliferation of private clinics aiming to provide ART in The Gambia (in the near future), highlights the urgent need for consideration of international or national guideline adoption, in order to avoid the risks associated with unregulated provision.

Another issue emerging within the Gambian health system, is the absence of a comprehensive census of private clinics operating in the country. Mapping the private sector in all its aspects (services provision, distribution and geographic coverage) is required in order to maximise the resources currently available in the health system (Sine, Saint-Firmin and Williamson, 2019). Moreover, the interaction and collaboration between the public and private sectors is presently very limited, and in certain instances even conflictual. Care needs to be taken with regards to the intertwining of public health priorities and policies, and the objectives and drivers of the market-oriented private sector. Nevertheless, there is simultaneously a call for the involvement of the private sector in policymaking and implementation in a more cohesive way (Kamugumya and Olivier, 2016). This is because research has shown that the weakness of cooperative policy formulation and the lack of a common basis for problem-solving remains one of the main reasons for the challenges in subsequent implementation (Hudson, Hunter and Peckham, 2019). Perhaps it is premature for the Gambian health system to budget for the first public Assisted Conception Unit, but discussions should be initiated with the private sector where readiness for ART is much more advanced.

Sociocultural research on male infertility in SSA is still in its infancy but several scholars have started to look at it from multiple perspectives (Ibekwe *et al.*, 2021; Dierickx, Oruko, *et al.*, 2021). Increasing male involvement in infertility treatment is critical because the participation of men in the therapeutic journey has been shown to have an enormous impact on treatment outcomes (Dyer *et al.*, 2004; Umeora *et al.*, 2008; Gerrits and Shaw, 2010; Pallotti *et al.*, 2022), and it could also help

increase fertility awareness and challenge existing perceptions of masculinity (Parrott, 2014).

Developing an infertility responsive workforce

The Gambia faces with a chronic shortage of human resources for health (HRH) (Sine, Saint-Firmin and Williamson, 2019). Production of HRH is not the only issue that the Gambian health system is facing: both deployment and retention of health workforce, above all in rural areas, further affect health services delivery (Snow *et al.*, 2011), including the provision of infertility services. While over 40% of the Gambian health facilities offering infertility services are located in rural areas (Afferri *et al.*, 2022), living and school conditions in those settings are particularly difficult for health providers who prefer to work in urban areas where the management of work and family life is easier (Okoroafor *et al.*, 2021).

At the moment, specialised training in infertility management and embryology is provided through a scholarships requiring Gambian doctors to travel abroad (Ndovie, 2020). Further strengthening the Gambian Higher Education sector and seeking technical and long-term capacity strengthening partnerships with countries in the region (i.e. Nigeria, Senegal and Ghana) and elsewhere, may potentially expand the pool of health providers benefiting from training in fertility care. Lastly, the adoption of a tool for the assessment of fertility would assist health providers who have not been fully trained, and may provide the best chance for patients to find the most appropriate treatment for their fertility issues. For example, FertiStat, a self-assessment fertility tool (Bunting and Boivin, 2010; Bayoumi, Koert, Van der Poel, *et al.*, 2021; McCarey, Viviano and Yaron, 2021) can be adapted and

used by healthcare providers to evaluate the fertility status, and counsel men and women toward the most appropriate course of actions (McLachlan *et al.*, 2005).

Limitations

This qualitative study set out to provide an in-depth understanding of factors influencing fertility care implementation within the Gambian health system. Previous anthropological research in the rural and urban areas of the West Coast region, provided a holistic overview of the health-seeking behaviour of people living with infertility and for this reason we have omitted to collect this information (Dierickx *et al.*, 2019). Further, the views of the key participants of this study may not be representative of all fertility experts or broader health systems stakeholders because a few of them have not participated in the study or were unavailable at the time of the data collection.

Conclusion

The Gambian health system is not yet in a position to support a comprehensive fertility care package in its health facilities, but by including fertility care within its renewed health policy, it has laid the foundations for potentially improving infertility management in the future. This study has identified several aspects of the implementation of fertility care that must be considered before the operationalisation of the policy. First, a fertility care policy, implementation plan, and budget must be acknowledged within the different levels of the health system, thereby avoiding the tendency to develop a top-down approach without any discussion with policy implementers and health providers, who are the ultimate responsible of put in practice policy's interventions; second, infertility data should be collected, transmitted, and shared throughout the health system in a systematic

manner to permit evidence-informed policy making; third, the skills of health providers need to be updated in terms of specialised fertility care training and according to their level of care; fourth, a more robust partnership with the private sector must be built because, currently private clinics are the main providers of infertility services in the country; finally, fertility care needs a dedicated strategic plan in which vision, outputs, outcomes and funds for infertility are carefully considered and allocated. Given the increasing availability of ARTs in several countries in the SSA region and the tendency to locate these in the private sector, further research is needed to understand and identify the processes behind the implementation of fertility care and to foster better integration with the existing health system.

7.6 Contributions to Thesis

The qualitative appraisal was the last tassell of the overall picture that has been created on fertility care in The Gambia. The conceptual framework created during the qualitative evidence synthesis (*Chapter 3*) have been translated into research themes which have informed the development of the interview guides for each stakeholders group. This has permitted to gain greater understanding of what shaped fertility care policymaking and the challenges for the operationalisation of fertility care in The Gambia. The interviews guides have also evolved independently, and new elements were explored and collected following the participants insights. Collecting the perspectives of the actors involved directly or indirectly in fertility care, have enriched the investigation and have identified grey areas in need of further research. A few of them, such as the involvement and participation of men in infertility treatments and the need to increase operational research for fertility awareness, are developed further in the next chapters. Furthermore, some data collected with the cross-sectional survey (*Chapter 6*) have emerged and were confirmed also with the qualitative investigation. The need to identify indicators for infertility, collect data in a routinely matter, increase collaboration between public and private sectors, and the creation of financial protection schemes to limit OOP expenditures for fertility investigation and treatment, are also areas of interest for the Gambian health system. Research in these domains would benefit both social science than biomedical fields.

In the next chapter, *Chapter 8*, the results and findings from the quantitative and qualitative research are triangulated, interpreted, summarised, and recommendations are provided.

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Supplementary Material

Semi-structured Interview Guides

Interview guide for Policymakers

Could you please tell me about your position?

- a. For how long have you been in this post?
- b. In relation to sexual and reproductive health activities, what kind of support do you provide?
- c. What are the top five priorities of sexual and reproductive health in The Gambia?
- d. Do you think infertility is a health priority in The Gambia? Why (why not)?
- e. In the past and also now, there was an involvement from high cadres of the government in infertility issues. How do you think this has influenced fertility care and infertility services provision in the country?

8. Leadership & Governance

- a. In your opinion, how does the national reproductive health policy fulfil the needs of the infertile women? How for infertile men?
- b. Do you think it is necessary to include fertility care in the national reproductive health policy? Why (why not)?
If yes, what mechanism could facilitate the inclusion?

9. Service delivery/Partnership

- a. What is in place to facilitate patients' to access infertility services? (*Probe for regulations, policy, skilled providers, health insurance scheme, etc.*)
- b. Is there any difference between the infertility care provided by the public and private sector?
 - a. If Yes, which one?
 - b. How does this influence the provision of infertility care?
- c. How does the government interact with organizations/foundations/institutions/private sectors involved in infertility services? (*Probe for: coordination meetings, infertility awareness activities, annual workshops, etc.*)
- d. How WHO Gambia or other UNs agencies, involved in reproductive health, support the government concerning fertility care?
- e. What partnership, if any, concerning infertility services is in place between the public and private sector?
- f. What mechanisms are in place to ensure safe standard procedures and quality control for infertility treatments? (*probe also for private sector*)
- g. Is the Gambia member of any infertility care alliance/association (*Probe for: African Infertility Alliance, International Infertility Alliance*)?

10. Essential medicines

- a. How affordable are Assisted Reproduction Technologies (ART), in The Gambia? Please explain.
- b. What mechanisms are or should be put in place to allow infertile couples to benefit from ART?
- c. Which mechanism is established to ensure the provision of drugs, equipment

and commodities for the provision of infertility services? Could you explain?

11. Workforce

- a. In The Gambia, are there any health professionals who can provide infertility services?
If yes, what kinds of services does this include?
- b. Who are the health professionals involved in the provision of infertility services?
- c. How are these providers trained to manage infertility issues?

12. Financing

- a. What are the main sources of funding for fertility care? (*Probe for*)
Govt
International donors
Private sector
Faith-based organisations/Foundations
Out-of-pocket (family-patient contribution)
- b. Within the health budget, what is the proportion allocated for the provision of infertility care?
Do you think this proportion might change in the future? Why (why not)?

13. Health Information System

- a. What mechanisms are in place to report on infertility cases?
- b. Are those mechanisms different from the routine data collection?
- c. How frequently is infertility data reported? (*Probe for monthly, quarterly, annual*)
- d. What challenges the actual monitoring system has in reporting data on infertility?

14. Overall perspective in infertility care integration

What do you believe are some of the most important factors that might facilitate the inclusion of fertility care into the Gambian reproductive health policy?

- a. What are the major challenges and/or constraints to include fertility care into the reproductive health policy in the Gambia?
- b. Do you think it is necessary to include fertility care in the national reproductive health policy? Why (why not)?

Do you have any other information, concerning fertility care and infertility services, you would like to share with me?

Interview guide for Policy Implementers

Patients' organisations/associations

Could you tell me about your position?

- a. For how long have you been in this post?
- b. In relation to sexual and reproductive health, what kind of support your organisation provides? (*Probe for infertility awareness, infertility counselling, media information, community sensitisations, etc.*)

I would like to ask you some questions about infertility in The Gambia.

1. In your opinion, do you think infertility is a health priority in The Gambia? Why (why not)?
2. In the past and also now, there was an involvement from high cadres of the government in infertility issues. How do you think this has influenced fertility care and infertility services provision in the country?
3. How do people with infertility access infertility services?
 - a. Which barriers the patients encounter to access infertility services? (*Probe for gender, costs, etc.*)
 - b. What is in place to facilitate patients' to access infertility care? (*Probe for regulations, policy, skilled providers, health insurance scheme, etc.*)
4. Is there any difference between the infertility care provided by the public and private sector?
 - a. If Yes, which one?
 - b. How does this influence the provision of infertility services?
5. How affordable are Assisted Reproduction Technologies (ART), in The Gambia? Please explain.
 - a. What mechanisms are or should be put in place to allow infertile couples to benefit from ART?
6. Do you receive any support from national or international organisations when it comes to fertility care? Explain a little bit more about the kind of support received, if any.
7. How would you describe the interaction between the Government and your organization concerning fertility?
8. What do you believe are some of the most important factors that might facilitate the inclusion of fertility care into the Gambian reproductive health policy?
 - a. What are the major challenges and/or constraints to include fertility care into the reproductive health policy in the Gambia?
 - b. Do you think it is necessary to include fertility care in the national reproductive health policy? Why (why not)?
9. How do you see the future of your organization in the provision of fertility support to the Gambian citizens?

Do you have any other information, concerning infertility, you would like to share with me?

National and international for profit and non-for-profit organisations

Could you tell me about your position?

- a. For how long have you been in this post?
- b. In relation to sexual and reproductive health, what kind of support your organisation provides? (*Probe for infertility care including ART, infertility awareness, media information, community sensitisations, infertility counselling, etc.*)
- c. What are the top five priorities of sexual and reproductive health in The Gambia?

I would like to ask you some questions about infertility in The Gambia.

1. In your opinion, do you think infertility is a health priority in The Gambia? Why (why not)?
2. In the past and also now, there was an involvement from high cadres of the government in infertility issues. How do you think this has influenced fertility care and infertility services provision in the country?
3. To the best of your knowledge, how infertile couples get access to infertility services?
 - a. Which difference exists between women and men getting access to infertility services in The Gambia?
 - b. What is in place to facilitate patients' to access infertility services? (*Probe for regulations, policy, skilled providers, health insurance scheme, etc.*)
4. Is there any difference between the infertility care provided by the public and private sector?
 - c. If Yes, which one?
 - d. How does this influence the provision of infertility care?
5. How affordable are Assisted Reproduction Technologies (ART), in The Gambia? Please explain.
 - b. What mechanisms are or should be put in place to allow infertile couples to benefit from ART?
6. (*When relevant*) In your opinion, does the current national reproductive health policy fulfil the needs of the Gambian infertile citizens?
 - a. Do you think it is necessary to include fertility care in the national reproductive health policy? Why (why not)?
 - b. If yes, what mechanism could facilitate the inclusion?
7. How would you describe the interaction between the Government and your organization concerning infertility?

- a. What partnership, *if any*, concerning infertility services is in place between your organisation and the Government?
 - b. What are your tasks in this partnership?
 - c. What are the Government tasks?
 - d. How is this different for the public or private sector?
8. Is there a technical/coordination working group on infertility? If Yes,
 - a. Who is part of it?
 - b. What are the responsibilities of this working group?
 - c. How often do you meet?
 - d. Who is leading the group?
9. Do you receive any national or international support when it comes to fertility care? Explain a little bit more about the kind of support received, if any.
10. What do you believe are some of the most important enabling factors that might facilitate the inclusion of fertility care into the Gambian reproductive health policy?
 - a. What are the major challenges and/or constraints to include fertility care into the reproductive health policy in the Gambia?

Do you have any other information, concerning infertility, you would like to share with me?

Interview guide for Health Practitioners

Please tell me about your position in this facility.

- a. For how long have you been in this post?
- b. In relation to sexual and reproductive health activities, what kind of support do you provide?
1. Do you think the provision of infertility services is a priority for your facility and the catchment population? Tell me more about it.
2. Concerning the delivery of infertility services in your facility, what are your thoughts about infertility be integrated with other reproductive health services?
3. Overall, where would be the best place to position infertility services in the sexual and reproductive health programme? (*Probe for*)
 - a. *Maternal and newborn care programmes*
 - b. *Fertility clinic*
 - c. *Ob/Gyn clinic*
 - d. *Andrology clinic*
 - e. *Urology clinic*
 - f. *Family planning/contraception clinic*
 - g. *STIs clinic*
 - h. *HIV clinic*
 - i. *Community health interventions*
4. What issues are you facing with trying to help patients living with infertility?
5. Which training the health staff (you) received in fertility care?
6. Do you have any partnership/support to carry out fertility care in this facility? Tell me about it. (*Probe for MoH support, private organisations, community groups, etc.*)
 - a. If yes, how does the MoH support the provision of infertility services in this facility?
7. How the referral pathways are organised, for infertile patients, between levels of care? (*Probe from primary to secondary to tertiary AND public to private or vice versa*)
8. Where infertile patients are referred to and from? (*Probe for*)
 - a. *Pharmacy Providers*
 - b. *Complementary medicine providers*
 - c. *Traditional healers or herbalists*
 - d. *Public specialised medical diagnostic and treatment services*
 - e. *Private specialised medical diagnostic and treatment services*
 - f. *Mental health and psychological support services*
9. What kind of linkages are available with the public (or private) clinics concerning infertility services?
10. Is this facility registered as part of Africa Network and Registry for Assisted Reproductive Technology - ANARA?

- a. Is this facility registered with any ART monitoring organisation (*Probe for ICMART*)?
- 11. What difference exists between the public and private sector in the provision of infertility care in your country?
- 12. In your opinion, what are some of the most important factors that might facilitate the inclusion of fertility care into the Gambian reproductive health policy?
 - a) What are the major challenges and/or constraints to include fertility care into the reproductive health policy in the Gambia?
 - b) Do you think it is necessary to include fertility care in the national reproductive health policy? Why (why not)?
- 13. (*Optional*) What would you see done differently in the way infertility services are delivered in your facility?

Do you have other information concerning infertility services, you would like to share with me?

Thematic Analysis Codebook

<i>Codes</i>	<i>Files</i>	<i>References</i>
DIFFERENCES PUBLIC - PRIVATE	24	90
Availability of drugs	5	5
Availability of equipment	7	11
Availability of infertility services	11	13
Brain drain from public to private	1	1
Confidentiality	1	1
Cost of services	11	15
Provision of infertility services	8	11
Public-Private Partnership	7	8
Staff qualification	4	6
Utilisation of services	2	3
FACILITATORS TO FERTILITY CARE	7	10
FACTORS INFLUENCING FERTILITY CARE	43	191
Availability of services	12	15
Confidentiality	7	9
Costly treatments	6	6
Drugs, equipment and supplies	13	26
Duration- results of treatment	2	2
Follow-up	1	1
Geographic distance	5	7
Human resources	4	5
Infertility awareness	4	7
Infrastructure	1	1
Lack of standards and guidelines	7	8
Limited public sector	1	1

<i>Codes</i>	<i>Files</i>	<i>References</i>
Men participation in investigation and treatment	17	36
Providers workload	2	3
Repro travel	3	5
Systematic data collection	9	16
Training	9	13
Unaffordable private care	8	10
Unavailable ART	8	19
Cost	6	9
Financial support to individuals	1	1
In private	1	2
Insurance scheme	1	2
Equipment	1	1
Human resources	1	2
FERTILITY AWARENESS	37	145
Advocacy	13	16
FertiStat tool	7	9
Importance of sensitisation	16	25
Not implemented	16	26
FERTILITY POLICY DIALOGUE WORKSHOP	20	34
Missed attendance	15	18
Missed objectives	3	8
GOVERNMENT INTERACTION WITH ORGANISATIONS	14	69
Coordination-collaboration among stakeholders	7	16
Creation of advocacy and awareness	3	4
First Lady office	5	11

<i>Codes</i>	<i>Files</i>	<i>References</i>
Merck Foundation - MTM project	1	1
International partners	8	12
NGOs	2	4
Policymaking	1	4
Private care	2	4
UN agencies	4	14
HEALTH INFORMATION SYSTEM	36	181
Capturing infertility data	35	127
Data captured	6	7
Data not captured	26	45
Infertility reported as Other or Infection	9	13
Reporting infertility data	16	22
Data reported	1	1
Data not reported	9	10
INFERTILITY ALLIANCES	4	6
National fertility society	3	5
Patients' associations	1	1
Infertile men and women	2	3
Kanyalengs	3	7
INTEGRATION OF INFERTILITY WITHIN RH SERVICES	14	22
Family Planning clinic	4	6
Gyn clinic	4	5
Maternal Health clinic	2	3
Standalone	3	3
LESSONS LEARNED FROM OTHER COUNTRIES	3	6

<i>Codes</i>	<i>Files</i>	<i>References</i>
INFLUENCE OF POLICY CONTEXT	45	357
Involvement of former government	10	25
New health policy	45	330
Benefits of inclusion	27	43
Challenges of implementation	42	210
Compelling health priorities	4	5
Cost - Funds	17	28
Insurance scheme	1	1
Drugs	10	14
Education-Awareness	5	5
Equipment and Supplies (including lab)	26	35
Fertility training for staff	24	36
Human resources (availability, retention, deployment)	23	46
Infrastructures	4	4
Integration with other services	1	1
Leadership	1	4
Set up ART	2	3
Sustainability	2	11
Treatment	1	1
Other available policies	1	2
MECHANISMS OF FUNDING FERTILITY CARE	9	38
Govt	6	12
International partners	7	14
Private	2	7
PERCEIVED CAUSES OF INFERTILITY	38	204

<i>Codes</i>	<i>Files</i>	<i>References</i>
Artificial infertility	9	14
Family planning-related	7	13
Gyne-related issues	10	12
Infertility-related myths	2	4
Jujus - evil forces	4	5
Male factor	9	14
Maternal age	2	4
Other causes	3	3
STI-FGM	30	49
Traditional concoctions	5	7
PERCEIVED IMPORTANCE OF INFERTILITY	28	99
For health providers (in their communities)	9	12
Big problem	23	40
Lesser problem	13	27
For policy implementers	1	1
For policymakers	16	49
Important	5	5
Not so important	13	19
For women and men	16	24
Other competing factors	3	10
REFERRALS	39	148
To private	18	22
To public	29	58
To traditional medicine (referred by health provider)	17	22
To traditional medicine (self-referral)	13	18
SOCIAL ISSUES OF INFERTILITY	33	112

<i>Codes</i>	<i>Files</i>	<i>References</i>
Cultural issues	16	26
Community - society	11	17
Family	5	13
Religion	3	3
Spousal issues	17	20
Female problem, stigma and blame	26	44
Women empowerment	4	7
Male dominance-acknowledgment of infertility	19	38
SUPPORT PROVIDED BY THE HEALTH FACILITY	41	212
Health services provided	27	57
Infertility investigations	21	47
Infertility services	14	32
Unhealthy practices	1	1
Infertility treatment	19	46
SUPPORT RECEIVED FROM GOVERNMENT	12	26
Other support	7	15
TOP PRIORITIES OF RH	10	33
Men involvement in RH	1	2
Position of infertility among RH priorities	7	10
High priority	3	4
Low priority	5	6
TRAINING OF HEALTH PROVIDERS	19	47
Deployment of trained staff	1	2
Fertility management training	10	18
Not received	18	21

<i>Codes</i>	<i>Files</i>	<i>References</i>
Received (notions of infertility)	16	32
Formal training (University or nursing school)	10	21
On-job training	9	11
Other training - Capacity building	5	7
USE OF TRADITIONAL MEDICINE FOR INFERTILITY	11	24
Other health issues	4	8

PART III

8. Chapter: Discussion and Recommendations

The overarching aim of this PhD was to explore the existing availability of fertility care and infertility services in the health facilities and investigate factors predicting the successful implementation of fertility care in the Gambian health system. To contribute toward this aim, the following research questions were explored:

- i. What factors enable or inhibit the inclusion of fertility care in reproductive health policies in Africa?
- ii. What infertility services are available in the public and private health facilities in The Gambia and how data on infertility are collected and shared within the Gambian health system? How do the current health policies assist the implementation of fertility care and align with the requirements of the health system?
- iii. How do the current health policies assist the implementation of fertility care and align with the requirements of the health system?

The main findings of the thesis are summarised below together with their contributions to the body of knowledge and potential limitations. Moreover, the triangulation process that has preceded the interpretation of the quantitative and qualitative datasets (*Chapter 5*) has generated a set of recommendations that may be helpful for Gambian policymakers and other infertility stakeholders (Dierickx et al., 2019). Lastly, a conclusion section is presented, reiterating the key outcomes and overarching lessons learned from this study, and how these apply to broader health system research.

8.1 Main Findings

In *Chapter 3*, which responds to research question (i), the systematic review of qualitative evidence showed that the inclusion of fertility care in reproductive health policies in Africa is driven by factors influencing the perception of the importance of infertility, the policy context, the availability and access to resources, and the quality of care. These factors could act as barriers or facilitators. Additionally, some of the evidence extracted supports the assumption that the general view on fertility care policymaking prioritisation in African health systems is overlooked by issues that are believed to be more pressing health issues. This is also supported by a lack of routine collection of data on infertility and limited fertility awareness interventions in these settings.

In the research question (ii), addressed in *Chapter 6*, the analysis of the availability of infertility services in the public and private health facilities identified four overarching results: (i) screening capacity for infertility is similar in both public and private sectors; (ii) diagnostic and treatment capacity is mostly provided by the private healthcare sector; (iii) ART are not currently offered in the country; and (iv) the Gambia health system does not currently has any mechanism in place of collecting and reporting data on infertility. Other results included the scarce participation of the male partner during the initial stages of the fertility assessment, unmet needs in terms of fertility care training for health providers, and the shortage of national guidance for fertility care.

Finally, research question (iii) answered in *Chapter 7*, has explored challenges and opportunities for the implementation of the fertility care strategic plan in The Gambia. The qualitative interviews have confirmed what was found in the survey

(*Chapter 6*) specific to healthcare providers training to assess, diagnose and treat infertility and the limited involvement of men in fertility care, and by large in sexual and reproductive health. However, new elements were identified, particularly the need to strengthen the partnership between public and private health sectors and the creation of a specific national budget to manage fertility care-based interventions.

The quality and limitations of the research were assessed during the data analysis (Mays and Pope, 2000)(Glasziou, Vandenbroucke and Chalmers, 2004) and reported specifically in *Chapters 3, 6* and *7*. For example, researcher's biases were mitigated with a double-reviewer procedure for the systematic review of the literature, the random selection of private facilities in the cross-sectional survey, and the testing and revision of the interview guides as part of the piloting phase. The triangulation process aimed to improve the reliability and credibility of the findings and to increase understanding of the topic both in terms of depth and breadth (Olsen, 2004; Bekhet and Zauszniewski, 2012).

Lastly, the findings from the triangulation were interpreted using a convergence coding matrix (*Chapter 5*) created to summarise similarities and differences between datasets. Thirteen themes were identified inductively across the quantitative and qualitative datasets and in relation with the findings from the survey and the interviews. Specifically, 6 out of 13 themes show convergence of findings between the two datasets, while 3 out of 13 show complementarity, and 4 out of 13 were silent. No dissonance of findings was identified. To show linkages with the themes, an additional column was added to the matrix (Table 8.1).

Table 8.1: Convergence Coding Matrix

Theme	Health facility survey (quant)	Semi-structured interviews (QUAL)	Convergence assessment	Links with overall discussion
Perceived importance of infertility for policymakers	66% of health facilities cited low priority for infertility and fertility care matters for policymakers	Both health providers and policymakers/implementers are aware about infertility as a medical and social issue in The Gambia. However, infertility is not perceived as important compared with other health conditions.	<i>Complementarity:</i> Other health priorities in The Gambia were seen as more important than infertility. A strategic plan to implement fertility care is needed	Establishing and maintaining Political Commitment and National Priority for Fertility Care
Mechanisms of funding fertility care		The allocation of finance to support fertility care a serious concern for both policymakers and health providers. At the time of data collection, The Ministry of Health had not yet dedicated a budget to implement fertility care, nor international development partners or the private sector are involved to support fertility care interventions. Health insurance scheme mentioned as potential way to decrease out-of-pocket expenditure for fertility care	<i>Silence:</i> funding mechanisms not discussed in the quantitative investigation	
Attending infertility consultations	82% of the facilities reported that both members of the couple <i>never</i> or <i>occasionally</i> attend initial infertility visit together; 58% of the facilities reported that both members of the couple <i>often</i> or <i>usually</i> attend follow-up visits together	Participants acknowledged that the limited involvement of men in investigation and treatment for infertility-related issues could hamper successful treatment options for both members of the couple	<i>Convergence:</i> in The Gambia, men' participation in the diagnostic and curative journey for infertility is very limited	Create Awareness and Men as Partners
Fertility awareness		Participants have little recollection of any fertility awareness activity promoted by the government or any other institution, with a few exception of radio and TV talks. No specific fertility awareness plan implemented or available	<i>Silence:</i> Fertility awareness not discussed in the quantitative investigation	
Health information system	74% of the health providers do not collect nor transmit data on infertility OR do not know if data is collected and/or transmitted	Participants' views on infertility data collection and reporting confirm that consultations for infertility are not captured nor reported due to an absence of infertility focus on the collection forms. If reported, data on infertility is aggregated with	<i>Convergence:</i> current data collection form lacks a dedicated space to capture infertility data. Infertility data are not requested by the MoH. When reported, data	Ensuring Data-Driven Health Policymaking

<i>Theme</i>	<i>Health facility survey (quant)</i>	<i>Semi-structured interviews (QUAL)</i>	<i>Convergence assessment</i>	<i>Links with overall discussion</i>
		other conditions. The MoH does not formally request data concerning infertility	on infertility are merged with other health conditions	
Availability of ART	100 % of the health facilities reported unavailability of ART	Participants cited that ART are not available in the country	<i>Convergence:</i> ART not currently available in The Gambia	Offering Affordable IVF Alternatives and Regulation of Standards
Fertility care guidelines	82% of facilities noted that not having a national guidance concerning fertility care is a barrier to full integration of services into existing reproductive health programmes		<i>Silence:</i> issue not explored in qualitative research	
Training on fertility care	84% of the facilities cited that a lack of specialised fertility care training for health providers impacts the full integration of infertility services	Participants reported not being fully trained in infertility management and specifically in ART. The little information they had on infertility was received in nursing schools or universities, and/or during on-job training. A few medical doctors benefited of a scholarship from a private foundation to be train abroad on IVF	<i>Convergence:</i> fertility care and infertility management training is scarce	
Infertility services availability	66% of the health facilities declared infertility services availability. 65% of public facilities and 67% of private clinics offer screening and diagnostic services for infertility. Treatments for infertility is mostly available in private clinics	Respondents recognised that fertility care provided by private clinics has a wider range of available investigations and treatments compared with public facilities	<i>Complementarity:</i> Basic investigations for infertility are available in the public sector but majority of technologically advanced diagnostic and treatment services are delivered by the private sector	Improving Knowledge of and Means for Fertility Care Provision
Integration of infertility within RH services	88% of the facilities providing infertility services have integrated them into existing reproductive health services, mainly within gynaecology and family planning clinics. Three <i>for-profit</i> private clinics provide a standalone service dedicated solely to fertility care	The majority of public facilities that provide infertility services have managed to integrate them in the current delivery of reproductive health services. These services were mostly delivered in family planning or gynaecology clinics. In private clinics, infertility services often standalone	<i>Convergence:</i> Health facilities providing infertility services managed to integrate them into current reproductive health programmes. In the private sector, fertility care is provided as standalone service	

<i>Theme</i>	<i>Health facility survey (quant)</i>	<i>Semi-structured interviews (QUAL)</i>	<i>Convergence assessment</i>	<i>Links with overall discussion</i>
Medicines and supplies for fertility care	79% and 74% respectively of the health facilities reported shortage of equipment, supply and medication as a barrier for infertility services provision. 65% of the public health facilities and 67% of the private clinics reported availability of screening and diagnostic services for infertility. Treatment for infertility mostly available in the private sector	Participants shared concerns about the ability of the MoH to fully commit to and support infertility-related activities due to shortage in medicines and unavailability of equipment dedicated to infertility investigations and treatment	<i>Convergence:</i> medicines and technology for fertility care not systematically available in the public health facilities. Some more availability of infertility services in the private care	
Collaboration among fertility care actors		Participants from health facilities confirm little interaction with the Ministry of Health regarding fertility care directives. Collaboration between public and private sectors is scant and the same is with UN agencies and international development partners	<i>Silence:</i> Collaboration not discussed in the quantitative investigation, however reported as missing in different levels of interaction	Enhancing Collaboration among Stakeholders and Building Links with Private Healthcare Sector
Private care	67% of the clinics with available infertility services were private	Comprehensive census of private clinics operating in the country is missing, but it is reported that the majority of infertility services are available in the private sector. Cost of these services is one of the main causes impeding access to fertility care	<i>Complementarity:</i> the private sector is the most comprehensive provider of fertility care in The Gambia. The health system lacks an updated census of the private clinics delivering fertility care	

Implication of the research findings and transferability of the results to other contexts

Based on the links showing the level of convergence during the triangulation phase, recommendations are issued and presented, including the extent of the research generalisability to other policies settings and groups.

Generalisability of findings is important considering that the outcomes from research studies, and particularly systematic reviews, are typically not well taken into account in public health policy and practice (Ahmad *et al.*, 2010). Given that policy creation processes for fertility care varies by context and it is not solely linked to the country income levels (Morshed-Behbahani *et al.*, 2020), it could be argued that the QES framework (*Chapter 3*) could serve in non-African settings.

In fact, the framework could provide insights into the potential factors that influence the development of policies related to fertility care. While the drivers may be specific to the African context, they could still be relevant and applicable to other settings, particularly in LMIC. To determine the generalisability of the framework, an examination of the similarities and differences between the African context and the contexts of other countries is needed. The framework, for example, was used recently in a systematic review in South Asia (unpublished data)⁵⁴. In the African systematic review was found that political will, data, and funding are critical factors in the policymaking process for fertility care, and these factors may also be significant in other regions or countries. However, it's important to note that policymaking is context-dependent, and factors that influence policy development in one region may not necessarily be the same in another. Therefore, in generalising the drivers to include fertility care in policies, consideration of the unique political,

⁵⁴ Master's student dissertation co-supervised by the PhD candidate

social, economic, and cultural contexts of each region must be applied (Afferri *et al.*, 2021). The findings issued from the primary research can be generalised in countries where fertility care is neglected in health policy and practice or where the willingness to commit to a specific health condition, such as infertility, is hard to achieve (Fox *et al.*, 2015; Mhazo and Maponga, 2022). Moreover, these results could be extended to African settings in which the prevalence of infertility is similar.

Based on the triangulation process, this research formulates some suggestions to overcome challenges in the implementation of fertility care in The Gambia. These suggestions are grounded in the interpretation of the research data as well as the broader literature, and follows the pragmatic paradigm as explained in *Chapter 5*.

Consequently, the next recommendations are based on this theoretical philosophy:

8.1.1 Establishing and Maintaining Political Commitment and National Priority for Fertility Care

Fox *et al.* (2011) explained that the measure of political commitment can be described using three perspectives: (i) 'expressed commitment' or the verbal support on a health issue by policymakers and leadership; (ii) 'institutional commitment' or the creation of policies and national guidelines to support and implement a health issue; and (iii) 'budgetary commitment' or the allocation of a dedicated budget to a specific health issue. The expression of engagement, without policy, action plan and budgetary apportionment, is not a credible commitment and is seen as 'rhetorical' (Fox *et al.*, 2011). At the moment, the engagement of The Gambia government toward fertility care appears very much aligned with the institutional commitment because of the recent creation (Dec 2022) of a specific and

dedicated strategic plan to challenge infertility, as part of a broader strategy on RH.

This engagement requests to be maintained and supported.

In terms of maintaining fertility care as a health priority, Shiffman and Smith's theoretical framework (2007) could be used as a measure to understand how important fertility care is in the overall health agenda of Gambian policymakers.

Particularly, the framework appraises that a health concern is raised and sustained on the policy agenda by assessing actor influence, ideas, political environment, and the issue-specific characteristics (Shiffman and Smith, 2007).

In this regard, if applied to the Gambian context, this framework may help to focus on factors that require support to enable fertility care to become institutionalised as a health priority.

Table 8.2 shows how priority for fertility care is currently ranked. A rating score was assigned to each one of the categories (low, medium and high) to point-out areas of improvement. With particular attention to the framework, areas for progress are identified as following: (i) policy community cohesion; (ii) guiding institutions; (iii) global governance structure; (iv) credible indicators; and (v) severity of infertility (Table 8.2). These areas confirm those that arose from this research as shown in the findings in *Chapter 6* and *7*. Specifically, for *Chapter 6* the creation of indicators to measure infertility and the burden of infertility, and for *Chapter 7*, the cohesion and collaboration of the organisations involved in SRH toward fertility care and a collective action on infertility.

Table 8.2: Priority-setting Framework for Fertility Care in The Gambia

<i>Category</i>	<i>Description</i>	<i>Factor shaping political priority</i>	<i>Rating</i>
Actor power	The strength of the individuals and organisations concerned with infertility	1. Policy community cohesion: the degree of coalescence among the network of individuals and organisations that are centrally involved with fertility care at national level	Low
		2. Leadership: the presence of individuals capable of uniting the policy community and acknowledged as particularly strong champions for fertility care	Medium-High
		3. Guiding institutions: the effectiveness of organisations or coordinating mechanisms with a mandate to lead fertility care initiatives	Low
		4. Civil society mobilisation: the extent to which grassroots organisations, and academia have been mobilised to press international and national political authorities to address the infertility at the global level	Medium
Ideas	The ways those involved with infertility understand and portray it	5. Internal frame: the degree to which the policy community agrees on the definition of, causes of, and solutions to infertility	Medium-Low
		6. External frame: public portrayals of infertility in ways that resonate with external audiences, especially to political leaders controlling resources	Medium-Low
Political context	The environment in which the actors operate	7. Policy windows: political moments when global conditions align favourably for an issue, presenting opportunities for advocates to influence decision-makers	Medium
Issue characteristics	Features of infertility	8. Global governance structure: the degree to which norms and institutions operating in the Gambian health sector provide a platform for collective action on infertility	Low
		9. Credible indicators: clear measures that show the severity of infertility and that can be used to monitor infertility rates	Low
		10. Severity: the size of the burden relative to other problems, as indicated by objective measures	Low
		11. Effective interventions: the extent to which proposed means of addressing the problem are clearly explained, cost effective, backed by scientific evidence, simple to implement, and inexpensive	Medium-Low

Table created by the author and adapted from Shiffman and Smith, The Lancet, 2007, p. 1371.

To push infertility forward in the global health agenda discussions, political willingness, commitment, social value, and technical expertise should be considered. At an international level, there are multiple examples, from African countries, of how government leadership has taken on board the responsibility to engage in health-related matters and, by consequence, a favourable ground for policymaking was created (Donnelly, 2011; Curry *et al.*, 2012; Oleribe *et al.*, 2019). The partnership between the Ministry of Finances and other ministries in Uganda made it easier for the national health insurance to gain and maintain political influence (Basaza, O'Connell and Chapčáková, 2013); in Ethiopia, when community-based health insurance was expanded, the political elite's influence, long-term vision, and communal interests were crucial drivers for policy reform (Lavers, 2019).

It is important to reiterate that political will is not always the sole driver impeding prioritisation and policy creation and/or reform, and other factors exist that can have equal or stronger influence, such social and religious values, and the desire of politicians to stay in power (Mhazo and Maponga, 2022). Those drivers work with or against the political will and can influence policy making and reform.

Fertility care interest could follow a similar trajectory, and in the case of The Gambia, the involvement, coordination, and collaboration of the multiple national and international stakeholders working to enhance SRH outcomes could generate (and maintain) interest on infertility and push forward for a more holistic implementation of fertility care. To establish and maintain political commitment and national priority for fertility care, links between the health systems and financing processes should also be considered. Such health systems need to be appropriately structured with sound policies and supported by financial protection mechanisms –

such as health insurance schemes, ensuring that UHC principles of equity, accessibility, effectiveness, inclusivity, availability guide policy creation (WHO, 2010). In particular, health insurance schemes, community health insurance, and conditional cash transfers typically identified as a "*demand-side model*" (Gupta, Joe and Rudra, 2010), are being promoted by the World Bank and other international organisations to replace the "*supply-side model*", in which health services are mostly free. Recommendations from the WHO have shown that in order to move toward UHC, domestic funding must be used to finance health (Jowett and Kutzin, 2012) but also building stronger contracts with private providers (Mathauer *et al.*, 2019).

The Gambia has demonstrated its commitment to upholding the UHC standards by passing "The National Health Insurance Bill, 2021" and by preparing to launch a National Health Insurance Scheme (NHIS) that would pay for its members' medical care expenses. Additionally, the MoH⁵⁵ pledged that both public and private health facilities will have access to the NHIS. Despite the positive signals generated by the bill, and the popular support of the NHIS programme, a recent study, revealed that the programme's viability might be threatened by the high poverty and unemployment rates (Njie *et al.*, 2022) and this will impact any tentative plan to include fertility care, partially or totally, in the health insurance mechanisms.

One pressing question concerns how long the current health leadership will remain in power, and what will happen to fertility care priority when a new health political leadership will emerge. In view of the current political landscape in The Gambia, a few scenarios can be described. First, the new health leadership will

⁵⁵ <https://grts.gm/news-article-details/health/national-health-insurance-authority-develop-health-benefit-package-for-the-national-health-insurance-scheme>

honour the engagements made previously and will support the 'inertial force' produced in recent years toward fertility care. Since both a strategic plan and budget for fertility care are now available, the new leadership could adhere to the current policies and implement them within its mandate. The second, is that the new leadership would not consider fertility care as a priority for the country, and will dismiss any previous commitments. This could be the case of new leaders with little interest in infertility matters or those who are unaware of broader aspects in reproductive health. Finally, a third scenario is imaginable that includes the creation of a public-private partnership for fertility care assisted by a national insurance scheme. This would, theoretically, exist beyond any change in the leadership as it generates both access to and profit from any service related to fertility care.

It is important to reiterate, however, that in all these scenarios, challenges for the operationalisation of fertility care will still exist and the translation from policy into practice might be reversed if the government is unable to sustain priority for fertility care with a dedicated budget and specific activities. Nevertheless, from these early signals and the ongoing research and partnership building, a more inclusive and equal provision of SRHR, and fertility care in particular, is expected. This could, eventually, be seen in the next years with the birth of the first assisted conception unit in the country and the creation of the national fertility society, and some level of confidence is guaranteed because it is believed that the infertility services in public facilities will still be available due to the fact these services are mostly integrated, even if in a basic form, with existing reproductive health services (Afferri *et al.*, 2022).

Strategic Framing

As mentioned in the previous section, establishing and maintaining political commitment is important for fertility care. One way to do this is the application of “strategic framing”. Strategic framing is often used in order to raise interest in public topics that are frequently divisive or are not enough prioritised by the government (Rein and Schon, 1993). Strategic framing can be used to bring SRHR concerns to the attention of the government and international agendas and influence decision-making processes. The power of the framing approach is to build on the story and values of a specific topic from a social perspective. Through open and inclusive dialogue, views are challenged and changed (Mukherjee, Ramirez and Cuthbertson, 2020). Serving as an example, to gain support to include gender mainstream in the health agendas, various African governments purposefully presented gender analysis as a crucial component of a better and more efficient healthcare system rather than an aspect of achieving gender equality and rights (Oronje *et al.*, 2011; Hudson, Hunter and Peckham, 2019). Another example is given by Ghana, where anti-microbial resistance was framed as a multi-sectoral danger rather than a health issue, which strengthened stakeholder cooperation and helped to establish and maintain the topic agenda under the One Health Approach (Koduah *et al.*, 2021). For infertility, commitment and priority could be achieved by influencing health policy audiences and involving stakeholders through public health research on fertility care, among other. When public health research addresses national priorities and recommendations take into account the context, such as funding and service delivery, they are more likely to be adopted at the

national level because research is used to influence policy (Wolfe, Stevens and Xaba, 2011; The Health Foundation, 2017).

As mentioned in *Chapter 4*, through the Fertility Care Network in the Global South, this and related academic research has actively engaged policymakers throughout the study process, leveraging their input to formulate the initial research questions and involving them as members of the research team, in the effort to sustain the creation of the fertility care policy. This has resulted in the creation of key interventions for infertility embedded in the new reproductive health strategic plan (Appendix 7). This research, particularly, has supported policy creation. In fact, 6 out of the 7 key interventions identified in the Gambian RH strategic plan to address infertility were informed by this thesis. Furthermore, some of the co-authors of the papers arising from this research occupy relevant positions in the higher levels of the MoH hierarchy, they are sensitised to fertility issues having been medically trained in Obstetrics and Gynaecology, and they were involved, since the beginning in all the discussions on fertility care.

Financial Engagement

Having a distinct policy vision and using data to inform decisions, might win the political engagement of high cadres of the governments and increase the involvement of the international community to support national health policies without losing sight of national ownership. Once national health priorities have been identified, those could be funded by public assets and eventually supported by international development agencies. However, for fertility care, a financial engagement primarily coming from public funds appears mandatory.

In this regard, a promising body of knowledge has explored the links between social development derived from public financing of ART with the economic benefits generated by the return on investment (Connolly *et al.*, 2021). This is further supported by studies in which infertility-related policies were assessed for effects on female infertility prevalence. Zhang *et al.* (2022) reported that policies where infertility is covered by insurance schemes and where economic rewards are delivered (e.g., baby bonus, second child reward), played an important role in the reduction of female infertility. To clarify, the research discovered that women with an insurance coverage had a higher likelihood of undergoing several IVF treatments, which may potentially raise the cumulative birth rate in comparison to one IVF cycle, the most common option in patients who paid for IVF personally (Zhang *et al.*, 2022). These findings support those of Issanov *et al.* (2022) mentioned below. Another study by Insogna and Ginsburg (2018), cited how the lack of health insurance coverage for infertility is causing further health disparities for marginalised people and leaves many women and men unable to fulfil their reproductive desires (Insogna and Ginsburg, 2018). Intimately linked with the implementation of fertility care, mechanisms to fund infertility interventions other than with public funds can be explored. Those might include coverage of some or all fertility care services through partnerships with the private sector, and international cooperation subsidised projects.

8.1.2 Creating Awareness and Men as Partners

People with infertility fear discrimination and stigma, and this is one of the main reasons for keeping their status hidden (Fledderjohann and Roberts, 2018). There is a sort of duplicity in this view because by not publicly exposing their concerns, the

infertile make their status less visible to the public and to policymakers. In The Gambia one exception is represented by the *Kanyalengs*, a group of women who publicly and explicitly share their childless status (Hough, 2006, 2010). Members of these groups shared reproductive setbacks through dances, rituals and prayers, and help women socially, emotionally, and occasionally financially. While an anthropological study of these groups is out of the scope of this work, further details can be read via the research conducted in The Gambia by Sundby, Hough and Dierickx. Moreover, in The Gambia operates the Safe Haven Foundation (SHF)⁵⁶, a local non-governmental organisation which supports women and men through their fertility journey focusing on providing psychological help to deal with infertility, miscarriages and other fertility-related issues. However, like many local civil societies in the Global South, the organisation relies on funds and support from international development funders or private contributions. The presence of both SHF and the *Kanyalengs* is of great importance for men and women living with infertility but a more concentrated effort is needed to sustain this kind of organisations and include them more holistically in the discussions about fertility care.

Positive infertility and the power of mass media

The Gambia can further expand the prevention of infertility with interventions addressing education to seek conventional healthcare in time, remaining cautious of services provided by the informal medicine sector. These kind of interventions have been shown to decrease the stigmatisation and misery of childless people, and increased social acceptance by communities, media, and governments (Ombelet,

⁵⁶ <https://www.facebook.com/foundationssafehaven/>

2011). A suggested approach hereby is framing infertility in a positive way (and applying the strategic framing approach mentioned above), which might help the processes of fertility care policymaking and implementation. In Kenya, for example, people's experiences and stories of sexual violence were used to draw attention to sexual crimes (and consequently stimulated a bill on sexual offences). In this particular case, activists focused the attention on the rape of young people and elderly women rather than sexual offences to women, and so succeeded in focusing on the protection of daughters, sons, wives and mothers, people who are loved by everyone, even by those who were opposed to the new law (Association for Women's Rights in Development, 2007). Another suggestion is to make use of the media. The use of the mass media such as radio, TV, and mobile phones has the potential to create agendas attracting attention to important health concerns, including sexual and reproductive health ones (Oronje *et al.*, 2011; Nalwanga *et al.*, 2021). For instance, new evidence showed that the use of mobile phones, in settings such as SSA, was very effective in promoting reproductive health outcomes, specifically increasing the intake of modern contraception by 2%, mainly within marginalised women from the lowest socioeconomic quintiles. However, it is worth noting that education, occupation, and how frequently women visit a medical center continue to be the most reliable indicators of women and partners' adoption of reproductive health practises (Iacoella, Gassmann and Tirivayi, 2022). Similar experiences and strategies that include using the media, could be employed to reduce stigma, reinforce advocacy and awareness for infertility in The Gambia, and to educate young generations on positive behaviours such as STI prevention and prompt treatment. Further, a project using mobile phones to engage men in

screening their fertility (home-testing of semen), is currently on going in The Gambia, and outcomes from this project may be used in future interventions targeting fertility awareness.

The involvement and participation of men in SRH

Another element that emerged from the triangulation of the datasets is the involvement and participation of men in the discussions, diagnosis and treatment of infertility. In general terms, male participation in SRH has historically suffered from conceptual uncertainty (Inhorn, 2003b; Horbst, 2010; Fledderjohann and Roberts, 2018) and the emergence of the definitions such as ‘men as clients, men as partners, and men as agents of social change’ brought another perspective about men’s involvement in the SRH matters of their own and of women (Wittmeyer, 2013; Starrs *et al.*, 2018). The Men as Partner (MAP) approach might serve as a framework and be effectively used to address infertility in The Gambia in a similar way it is used to increase men’s involvement in family planning, sexual and reproductive health, and to end gender-based violence in other SSA countries (Mehta, Peacock and Bernal, 2004). MAP is a multidimensional intervention intended to encourage male involvement in issues of gender justice and sexual and reproductive health care. Its goal is to inspire men to actively participate in SRH by challenging their attitudes, values, and behaviours (EngenderHealth, 2001; Peacock and Levack, 2004; Greene *et al.*, 2006; Shand and Marcell, 2021). It does not frame men as the problem, but as part of the solution.

The role of men in SRH is pivotal to their capacity to impact care-seeking (e.g., through financial control), influencing fertility decisions, and to provide proactive support for partners. Further, testing men for infertility is cheaper and less invasive

(WHO, 2021). Although men are frequently not the main target of SRH interventions (Shand and Marcell, 2021), they often control decisions such as the size of the family, and the choice and the use of their female partners' contraceptives. Additionally, unfair gender dynamics and attitudes of men toward fertility issues, can influence male behaviour in a manner that is harmful to the sexual and reproductive rights of women, perpetuate gender inequalities, such as intimate partner violence, and leads to poor SRH results (Hook *et al.*, 2021). Therefore, given the role that males play in their participation of reproductive health, outside their role of fathers and husbands, the contribution of men to fertility care is both pertinent and essential, but through a range of modalities that differ from those used to involved women (Kura, Vince and Crouch-Chivers, 2013). For this reason, there is an urgent need to build health systems that also centre on men's SRH needs and particularly on fertility awareness.

Despite neither genders have a good understanding of fertility, as reported in a UK-based study and according to some health providers, women seem to be more conscious of their fertility than males, and they also tend to be more open and involved in health conversations (Grace *et al.*, 2019). This highlights how fertility awareness, despite addressing both partners, should inform men about reproductive health, and could stimulate the adoption of health policies that take men's reproductive health needs into account (Pedro *et al.*, 2018). Operational research on infertility awareness carried out recently in The Gambia (Allen *et al.*, unpublished) shown the scarce participation of men in sensitisation campaigns and illustrates, once again, how gender-based health education on (in)fertility is needed and may influence care seeking behaviour (Dierickx, Oruko, *et al.*, 2021). MAP

approach for fertility care can be explored in settings such as The Gambia, at the same level as it was used in other countries to address men's involvement in abortion care (Strong, 2022).

8.1.3 Ensuring Data-Driven Health Policymaking

As reported in *Chapter 2*, uneven representation and disagreement in defining infertility have been reported as one of the challenges in measuring it (Gurunath *et al.*, 2011; Jacobson *et al.*, 2018; Maung, 2019). A core list of indicators is yet to be identified, despite preliminary exercises were carried out by the WHO to map what is available and what is reported at the country level (Nabhan *et al.*, 2022). The lack of agreement on these indicators, and the subsequent data collection using these indicators, plays a relevant role in the limited prioritisation and implementation of fertility care programmes (Dancet *et al.*, 2013). In The Gambia, insufficient financial and logistical assistance, an inadequate referral system, insufficient funding for IT infrastructures, and insufficient human resources all contribute to the operational challenges of the health management information system (Lin and Kofi Kujabi, 2022). This, coupled with the absence of infertility data routinely collected, does not help to advocate for international support, nor enable comparisons across countries. Moreover, policies that have been developed based on health conditions that really impact the life of the population – and for which data exist - are those that have shown the better outcomes under UHC (Esty and Rushing, 2007).

As shown in *Chapter 4* and *6*, The Gambia is in a position where despite reasonable importance being given by policies to involuntarily childlessness, the systematic and routine collection of data is missing and indicators to monitor infertility services have not been established. This affects the real estimates of both

the number of people demanding for and accessing fertility care, and also the real extent of infertility (Afferri *et al.*, 2022). In fact, the official national estimates for infertility rely on a 2010 study (Mascarenhas *et al.*, 2012) that was supported by another small study in 2017, limited to women accessing infertility services in the teaching hospital (Anyanwu and Idoko, 2017). Considering that policy formulation begins with the creation of priority areas and continues with robust data to sustain and justify selected health interventions (Esty and Rushing, 2007), the establishment of indicators and careful monitoring of those would help Gambian policymakers in developing effective responses to address infertility and may support tailored interventions to meet the health needs of the citizens. In The Gambia, fertility care indicators are limited or non-existent, reflecting a lost opportunity to compare data at country level (among facilities), and at regional level (with neighbouring countries). Facility-level data can be disaggregated by geographic area, level of care, and type of provider (public, private or *not-for-profit*) (Barot *et al.*, 2015). Finally, it is worth mentioning that a part of the data on infertility will be always 'lost', such as those pertaining to the informal health sector. In this sector, data are barely collected and shared with the public health system despite indigenous medicine represents the primary point of contact for many people with infertility issues (Dierickx *et al.*, 2019).

Although the data collected from fragile systems are often criticised as being over-explained (leading to unjustified conclusions) or rejected (for reasons of incompleteness and unreliability), excluding them entirely diminish the efforts to make changes. It should be recognised that, although these data cannot fully capture the complexity of health systems they represent, they can still expose the

problems to be investigated and act as tools for developing knowledge and set priorities (Wolpert and Rutter, 2018).

8.1.4 Offering Affordable IVF Alternatives and Regulations of Standards

Within this research, it has been shown that The Gambia has not yet introduced ART in its health system nor are any high-end techniques to assist infertile couples broadly available (Afferri *et al.*, 2022). This offers a window of opportunity to the current health leadership as they are approaching the operationalisation of fertility care. To this effect, different low-cost IVF procedures are presented in this section which are potential solutions, yet careful consideration must be taken into account because studies on the long-term safety of these affordable procedures is still limited (Chiware *et al.*, 2020; Ombelet *et al.*, 2023). As mentioned previously, OOP expenses are usually the norm when payment for infertility treatment is accounted for. Reducing them through, for example, the establishment of a variety of prepayment methods applied in combination with other elements of health system strengthening, such as health insurance and financing for medical treatment that is both tax-based and non-tax-based, may support the achievement of the UHC goal and reduce inequalities (Kutzin, 2013). Research conducted in Kazakhstan, a middle-income economy, has shown that women with sub-fertility who received publicly funded IVF treatments were associated with higher clinical pregnancy rates than self-paying sub-fertile women (Issanov *et al.*, 2022). The simple explanation is that infertility treatments funded with public money, allowed these women to have multiple IVF cycles, and by consequence, increased the chance of achieving a pregnancy.

Table 9.3 offers a summary of the so-called low-cost IVF procedures currently available. Some of these have been used in The Walking Egg (TWE) fertility centres and pioneered in African settings (Ombelet *et al.*, 2010; Ombelet, 2013). In a country such as The Gambia where 48% of the population live in poverty and the annual GDP income is less than US\$ 900 (The World Bank, 2022), affording ART – when available – would be a difficult task for most Gambian couples. For this reason, in addition to low-cost ART, partnerships between public and private sectors, transnational cooperation, and ‘second-hand’ laboratory equipment (still functioning and purchased from fertility clinics updating their own equipment stock) could help to create opportunities to reduce costs and increase access to fertility care (Gerrits, 2012). Hammarberg et al. (2018) proposed schemes that involved free treatments (*pro bono*), for example offering one free IVF cycle to the poorest infertile patient group for every eight fee-paying patients. Matsaseng and Kruger (2014) explored a prototype model to make ART more accessible in a state hospital in South Africa intended for the “*helpless and marginalised childless couples*” (Matsaseng and Kruger, 2014, p. 34). Although these initiative are laudable, they should consider that the concept of vulnerability presents multiple layers of interpretation that include not just financial aspects but also geography, ethnicity, disability, institutional discrimination, and social interpretation of who is more vulnerable (Hall and Hanekom, 2019; Rahmalia *et al.*, 2021). In countries of the Global South where publicly funded ART are available (most likely in middle-income nations), priority should be given to those of lower socioeconomic class, who are unable to pay. To do so, Hall and Hanekom proposed an inter-disciplinary model in which social workers, placed side by side with infertility specialists, assess and evaluate the social

and economic conditions of the couples requesting infertility treatment. This could also be explored as an alternative solution in The Gambia by the time ART and IVF become available.

Table 8.3: Low-cost IVF Procedures Currently Available

<i>Procedure</i>	<i>Description</i>	<i>Author</i>
Intravaginal culture (IVC) with INVOcell® ⁵⁷	Alternative to standard incubator-based IVF using a hermetically sealed tube placed in the woman's vagina for 3 days containing oocytes with sperm	(Ranoux <i>et al.</i> , 1988; Jellerette-Nolan <i>et al.</i> , 2021)
Mild stimulation protocols	Stimulation protocols using cheaper medicines (Clomiphene citrate, Letrozole, Indomethacin) and minimised laboratory handling procedures (single embryo transfer)	(Mukherjee, Sharma and Chakravarty, 2012; Nargund, Datta and Fauser, 2017)
Simplified (t) WE ⁵⁸ lab and culture	Production of CO2 from simple chemical reaction (acid-base), using reduced number of sperms and high culture media volume. Closed system intended to enable fertilisation and embryo development to occur in the same tube	(Ombelet <i>et al.</i> , 2014, 2023; Van Blerkom <i>et al.</i> , 2014; Boshoff, Ombelet and Huyser, 2016)
Manual suction egg retrieval	Manually created negative pressure for oocyte aspiration through a syringe	(Kalampokas and Maheswari, 2015)

Table created by the author and adapted from (Allahbadia, 2013; Paulson et al., 2016; Chiware et al., 2020)

National Standards

Whatever formula is adopted to cover or to contribute to the cost for ART, such technologies must be medically and ethically regulated based on international guidelines, protocols, and evidence-based research. It is better if regulations are in place before the implementation of ART. In fact, some authors mentioned that the regulatory component for assisted reproduction is often overlooked or missing

⁵⁷ INVO Bioscience Inc., Lakewood Ranch, FL is the current and only Food and Drug Administration (FDA) cleared device used for IVC

⁵⁸ The Walking Egg Project

despite the provision of ART (Aboulghar, Serour and Mansour, 2007; López *et al.*, 2021). This may contribute to inequality in access, and to professional liberty with medical protocols that are not always in line with evidence-based standards or adapted to the needs of patients. Moreover, ART clinics usually adopt or develop their own rules, which leads to different standards of care (Fadare and Adeniyi, 2015). Therefore, regulations must be enacted that enable all social groups to experience safe and ethically-based clinical practices (López *et al.*, 2021). Patients must be informed in advance about the likelihood of a single cycle failure, which for IVF is generally high, and they should be supported in planning their fertility journey carefully (Boivin *et al.*, 2022). In the case of The Gambia, considering that ART are not yet available, there is the opportunity to “start from scratch” with both the regulations and ART implemented at the same time. Adoption, and creation of national protocols for ART should follow international guidelines and recommendations and should include equitable access to treatments (Dyer, 2008; Dancet *et al.*, 2013). Despite the fact that ART is still in its infancy in many sub-Saharan African nations, there are legislation, laws, and biomedical best-practices in place for reproductive care in countries of Europe and in the USA, and these could be used as reference for the creation of national standards in The Gambia (Hörbst, 2016).

The establishment of a national fertility society in The Gambia, and involvement with the African Federation of Fertility Societies (AFFS) may facilitate exchange and collaboration among society members, with the adoption of protocols and guidelines in alignment with those already existing in African

countries that have included ART in their national policies (National Department of Health, 2020).

Until affordable ART are available, integrated, accessible, and equitable for most of the Gambians in need, health policymakers can capitalise on opportunities to improve basic screening and diagnostics for infertility in a consistent way, to reduce the disparities between facilities at the same level of care and between providers (public – private). The Gambia might not be able to adopt, in the immediate future, comprehensive ART to assist its patients with infertility, but in order to comply with the UHC and to strengthen its health system, it should ensure a minimum package of care for individuals and couples with fertility concerns.

8.1.5 Improving Knowledge of, and Means for Fertility Care

As with most health interventions, fertility care needs skilled providers and resources to ensure a fair and comprehensive implementation. This research has evidenced that health workforce is lacking a specialised fertility care training. Moreover, the high medical education curricula needs to be comprehensive not only focusing on the clinical practice but to provide fertility care in a holistic way. For instance, psychological support and counselling are overlooked and needed in the educational curricula (Afferri *et al.*, 2022; Boivin *et al.*, 2022). Further, fertility clinics staff needs to learn how to manage patients' expectations and any gaps in adherence to treatments, because even in those settings where three or more IVF cycles are subsidised or liberally reimbursed, such as the case in many European countries, drop-out from infertility treatment is recorded as high. This is explained by a number of reasons such as the burden of the treatments, spontaneous pregnancy, failure of IVF or changing health facility (Peddie, van Teijlingen and

Bhattacharya, 2005; Gameiro *et al.*, 2012; Copp *et al.*, 2020; De Neubourg *et al.*, 2021).

The Fertility Life Counselling Aid (FELICIA) tool was designed and established in Nigeria to use cognitive behavioural therapy techniques to alleviate the emotional and mental stressors related to infertility (Aiyenigba, 2018). FELICIA is a tool that community health workers and other healthcare professionals may use to deliver step-by-step instructions for infertility counselling. This is particularly beneficial in communities where specialists, like psychologists, are unavailable, such is the case in The Gambia. Specifically, FELICIA uses stories and analogies to narrative methods. It also provides the necessary psychotherapy for patients with infertility with task-shifting from specialists (psychiatrist and psychologist) to community health workers and nurses (Aiyenigba, Weeks and Rahman, 2019). FELICIA is based on the WHO Thinking Healthy Programme (THP)⁵⁹.

Specialised Fertility Care Training

In terms of skills development for fertility care, in The Gambia, there are currently some initiatives for training on infertility management, mainly provided by the Merck Foundation through its programme More than a Mother⁶⁰. The aim of the programme is to tackle infertility stigma in Africa through a diverse range of activities that include, among others, fashion, music and poetry. This initiative, which mainly supports the educational development of medical doctors in fertility, embryology, and sexual and reproductive medicine is, however, limited to this professional category and other health providers such as nurses and midwives, are

⁵⁹ <https://www.who.int/publications/i/item/WHO-MSD-MER-15.1>

⁶⁰ <https://merckmorethanamother.com/Programs/Merck-Foundation-Fertility-and-Embryology-Training-Program>

currently excluded from the training. Considering that most of secondary health facilities providing infertility services are managed by nurses and/or midwives, there is a substantial portion of the Gambian HRH lacking specialised training for fertility care. Due to this, this study has led to a collaboration between the University of Gambia and the Fertility Care Network in The Global South to train medical students and early career researchers on fertility care (Appendix 8). If successful, the same course would be delivered in Ghana at the beginning of 2023, in collaboration with lecturers from the local University. Moreover, to the best of knowledge, no training or any other information on infertility prevention and awareness is provided to first line healthcare providers, namely CHW and CBC. This is thought to be important due to the social stigma caused by infertility that often starts at household and community levels (Dierickx *et al.*, 2018; Naab, Lawali and Donkor, 2019; Ofosu-Budu and Hanninen, 2020), and the importance of early referrals to initiate treatment as soon as possible. CHW are the first contact between clients and the public health system and they can play a significant role in some of the preventative aspects of infertility (Uwimana *et al.*, 2012; Smith *et al.*, 2015).

Lastly, considering the cautious attention to fertility care within a still fragile health system, it is predictable that the Gambian public health facilities have very basic medical equipment and drugs at their disposal in their provision of infertility services. In a health system embracing fertility care, infrastructure accessibility and maintenance should be considered, a constant flow of consumables should be guaranteed, and adequate numbers of well-trained and adequately paid health providers should be available (Akbari, Ramezankhani and Pazargadi, 2013). Human

capital, infrastructure, medicines and technologies are ultimately fundamental for the functioning of the health system.

8.1.6 Enhancing Collaboration among Stakeholders and Building Links with the Private Sector

Findings from this research corroborate that collaboration between government and health facilities providing fertility care is missing. This has resulted in an uneven distribution of infertility services among public health facilities, easing the rise of the private sector as the main provider of fertility care in the country, and exacerbated the restrictive access to, and the high cost of, infertility treatment (Sundby, 1997; Sundby, Mboge and Sonko, 1998; Dierickx *et al.*, 2019). Further, international development agencies currently supporting multiple SRH interventions in the country, have no targets to address infertility in The Gambia (Afferri *et al.*, 2023).

There are, however, a few considerations that explain this lack of coordination. First, (in)fertility care is not a priority in the agenda of international cooperation agencies. For this reason, the support of those agencies that are currently assisting the Gambian government, overlooks infertility and concentrate on addressing reproductive health matters considered to be of utmost importance (Duffy *et al.*, 2020). Second, the private sector is unregulated, in the sense that the government, which indeed authorises the opening and functioning of private clinics, fails to control what is delivered in terms of health services, including the costs for those services. In this regard, the public sector appears disjointed from the private and vice versa. Third, there are no mechanisms allowing the exchange of information between stakeholders, for example, thematic meetings or workgroups on infertility. Even the Merck Foundation programme 'More than a

Mother' appears very much to be a bi-lateral and personal relationship between two people, namely the First Lady of The Gambia and the CEO of Merck Foundation, instead of integrated within the MoH's plans. The role of the Merck Foundation, considering its attachment to the pharmaceutical firm Merck and the position of the latter in the production of specific drugs for infertility treatment (Gonal F® and Ovitrelle®) is crucial and at the same time ambiguous, particularly for future ART opportunities and development in the country. These drugs, in fact, are extremely expensive and do not adjust nor align within the low-cost initiatives mentioned above. These low-cost initiatives are highly praised in contexts where resources are limited. It appears necessary to better understand the intention of this foundation and its links with the pharmaceutical industry in stimulating the demand for fertility care and how this will impact the availability and provision of ART. Further, anecdotal evidence noted that Merck Foundation has received some level of criticism in the way it conveys information on infertility, for example encouraging young women to procreate as soon as possible to increase their chances of becoming pregnant or providing mini-grants to women with infertility to start small businesses and pay, in return, for infertility treatments.

It is recognised that the pharmaceutical industry is essential particularly in the development, manufacturing, and distribution of safe and effective drugs to treat infertility but its role is not without challenges. These, among others, can be identified into two categories: (i) infrastructure development; and (ii) cost-containment measures (which lower the cost of medications so that patients can pay for their own treatments) (D'Hooghe, 2017). First, healthcare infrastructures across much of Africa are inadequate, particularly in rural areas. Second, access to

safe and effective drugs is limited in many African countries due to regulatory barriers and high costs. The pharmaceutical industry for infertility treatment has made great progress in terms of innovation but more could be done in terms of advocacy to enhance access and affordability to safe and effective infertility drugs for all.

Finally, infertility awareness activities promoted by the Merck Foundation through social media channels are scantily acknowledged by the health providers and the population, above all in rural areas of the country (Afferri *et al.*, under review).

Availability of Infertility Services in Private Care

Despite the unavailability of ART in The Gambia, the private sector is largely providing the most comprehensive care for infertility with services often not accessible to all people in need, but only those who can afford them. This picture is not far from that in many other countries of SSA, where infertility services and particularly ART are largely delivered by private clinics with little or no collaboration with the public health sector. In the few instances where fertility care is available in public hospitals (e.g., South Africa), this system requires large capital venture and investments in infrastructure and human resources (Dyer *et al.*, 2013). Collaborative efforts in fertility care services, such as public-private partnership (PPP) may eventually reduce overhead costs through shared responsibilities (Matsaseng and Kruger, 2014). This collaboration may start with a PPP that specifically support laboratory supply and equipment provision (Obajimi, Saanu and Ilesanmi, 2021). In Africa, the institutional arrangements for health care are often promoted by international partners that contribute to improving prevention, treatment, and

infrastructure through donating products and services (Sablah *et al.*, 2013; Palaia *et al.*, 2019). However, as PPP may increase the cost for patients, this approach should be considered carefully before implementation (Shrivastava *et al.*, 2019; Anakwenze *et al.*, 2021).

Decentralise Fertility Care

Another form of cooperative institutional arrangement among stakeholders, can be explored by applying the “hub and spoke” model (Okelo *et al.*, 2022; Ong *et al.*, 2022). This model illustrates a network system in which a central health centre, or the hub, offers a complete range of fertility care services while supporting outlying secondary service units, or the spokes, which offer more restricted services. This configuration enables the spokes to primarily serve less complicated infertile patients, while more complex cases are referred and managed in the hub. This kind of partnership between the hub and its spokes, which might be employed in a PPP, can ensure uniformity across services in terms of effectiveness and care quality while also improving access to fertility care services (Elrod and Fortenberry, 2017).

In the Gambia, a pilot PPP between the government and a NGO working to improve eyesight care was used to strengthen the health system with positive results (Bowser *et al.*, 2021). In the case of fertility care, the hub and spoke model might include, for example, a private ART hub with public facilities spokes (Figure 8.1).

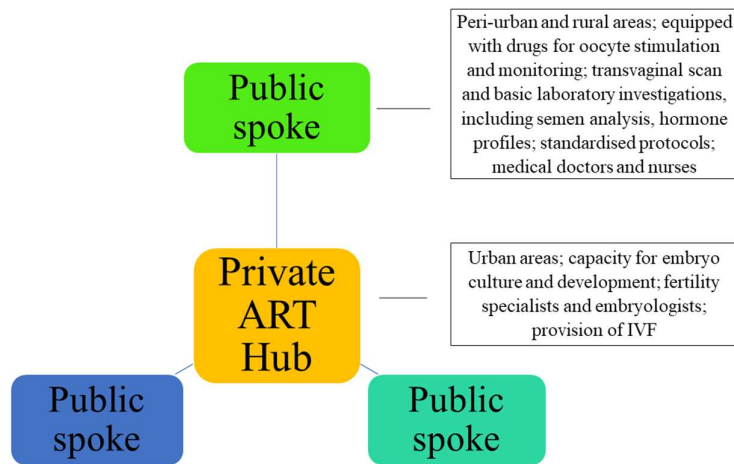


Figure 8.1: Hub and Spoke Model for Infertility Care

The above section summarises the key outcomes and recommendations from this research. Particularly: (i) establishing and maintaining political commitment and national priority for fertility care; (ii) creating awareness and the involvement of men in SRH; (iii) ensuring data-driven health policymaking; (iv) offering and regulate affordable IVF alternatives; (v) improving knowledge of and means for fertility care provision; and (vi) enhancing the collaboration among stakeholders, and building links with the private healthcare sector. In the following sections, considerations on the limitations of this research and the exploration for further research are given.

8.2 Study Limitations

The results of this study must be seen in the context of specific limitations.

Unavailability of key people. Despite an in-depth stakeholder analysis having been carried out prior to the data collection, the qualitative component of the research has missed some of the institutional actors who could have enriched the findings with their contribution. Specifically, it was not possible to reach out and interview representatives from the Women's Bureau, which assists the government in creating laws, programmes, and policies for women; representatives from The Gambia

Medical Dental Council, the regulatory body for doctors in the country; and the First Lady's Office, deeply involved with the Merck Foundation programme "More than a Mother". The perspectives from these actors would have further contributed to the findings about fertility care from a policymaking and implementation point of view.

Informal health system. The traditional medicine's perspectives on fertility care were not captured in this research. However, the qualitative data analysis showed the significant role of the informal health system in the management of infertility, because the influence of herbalists and *marabouts* in treating infertility. Not involving the informal health system was a conscious decision to focus on the formal health sector as previous ethnographic research conducted in the country (Sundby, Mboge and Sonko, 1998; Dierickx *et al.*, 2019; S Dierickx, Oruko, *et al.*, 2021) already provided in-depth knowledge of the health seeking processes taken by infertile women and men to solve their childlessness, while systematic data collection on the formal health sector from a health systems perspective was still lacking.

Regional comparisons. The Gambian health system was the target of this research and all investigations carried out are specific to this country. Regional comparisons with neighbouring countries are challenging due to the diversity of health systems and populations. Nonetheless, it is acknowledged that views, experiences and management of infertility in countries of the West Africa region show some level of similarity (Hörbst, 2016; Hess, Ross and Gililand Jr, 2018; Dierickx, 2020; Van Rooij *et al.*, 2021). First, sophisticated and advanced infertility care, such as ART and IVF, is mainly provided by the private sector, with only Nigeria having some government-owned IVF clinics, but in which patients pay the entirety of their

treatments (Gerrits, 2016; Hörbst, 2016; Adewumi, 2017); second, involuntary infertility has equivalent emotional and social effects to those in The Gambia, with couples, but mainly women, stigmatised if childless (Hiadzi, 2022); lastly, male-factor infertility is still of little interest for research, and male participation in investigations and treatment is reported to be constrained (Okonofua *et al.*, 2022).

Service-users perspectives. The research has explored only a one-sided perspective of the inclusion and implementation of fertility care, that of policymakers, policy implementers and health practitioners, without any view from the service-users, namely the patients. The demand for and utilisation of fertility care was not investigated in this research despite both having been described in the qualitative interviews. Service-users' perspectives are central in the holistic way of strengthening the health system, and they would have enriched and solidified the findings of both the survey and the interviews.

Research methodology. MMR design involves the combination and integration of qualitative and quantitative data in a single study. This methodology was judged the most appropriate for this research and following the paradigm choice but it recognises some shortcomings in terms of depth of each method (Alasmari, 2020), although the benefits are compensated by the breadth and the triangulation process. Perhaps the largest obstacle in implementing a MMR design is having the necessary knowledge and abilities for both qualitative and quantitative data gathering, analysis, and interpretation. In this study, the researcher had indeed expertise in qualitative methods but less in quantitative appraisal. This could have limited the development of the quantitative data collection tool and the data

analysis, despite a specific training was undertaken by the researcher to learn how to use data analysis software.

8.3 Further Research

As noted in the sections above, the research presented in this thesis illustrates the opportunities and current constraints of including and implementing fertility care in an African country, namely The Gambia. It has also identified several areas that could be addressed in further studies, which are described in the section below.

Male-factor infertility and participation in infertility management. The findings exposed in *Chapter 7* have emphasised how male-factor infertility, and more broadly, men's participation in the investigations and treatments for infertility are yet to be fully explored in The Gambia. This also applies to other settings in the Global South. Findings from this research have resulted in a considerable amount of acknowledgement of how interventions targeting men, which range from fertility awareness to biomedical management of infertility, are missing in the broader literature on infertility and specifically in The Gambia. There are multiple reasons why little attention has been dedicated to men with fertility issues but the most common are related to both sociocultural and gender biases that weight enormously on the decision to seek help in case of diminished fertility. Research on male-factor infertility and access to fertility care by men is needed in African contexts, and particularly in The Gambia. Research could be developed taking in account different layers such as evaluating men's knowledge and awareness concerning fertility, testing semen samples to identify factors and prevalence of male infertility, and mechanisms for seeking healthcare in case of diminished

fertility. The latter is currently ongoing in The Gambia as a research and preliminary results will be shared mid-2023.

Operational research. The creation of the conceptual policymaking framework in *Chapter 3* has generated the opportunity to identify factors for the inclusion of fertility care but has also stimulated reflections for its operationalisation. From this, it has emerged the need to take into consideration operational research to monitor, evaluate, and make improvements, in the way fertility care is delivered. Operational research can be applied as a comparative study – or how fertility care was implemented in similar setting than The Gambia and with what results, but as well as a monitoring tool (Kumar, 2019). Operational research should include the private care sector because much of what is currently provided in term of fertility care is delivered by this system. This would allow following the implementation of fertility care and studying solutions, learning lessons and enabling decision-makers to make better choices. Findings from the operational research will assist The Gambia in addressing challenges and opportunities in its context, and eventually create insights to scale up fertility care in similar settings (Walley *et al.*, 2018)

Informal medicine. Similarly to other settings (James *et al.*, 2018), the use of allopathic medicine and herbal concoctions is very frequent in The Gambia, and further studies are required to determine the role of the informal health sector, and particularly the involvement of traditional doctors in infertility treatment and early referrals. Additionally, tradi-practitioners should be included in discussions on infertility and their awareness increased through education on infertility's causes.

Educational curricula. Untrained personnel and a limited labour capacity significantly increase the barriers to fertility care as showed in findings from this

research, specifically those in *Chapter 3, 6 and 7*. Emphasis on infertility should address the importance of having skilled health professionals appropriately trained in fertility care, not just as clinicians, but also as fertility counsellors. Currently, in The Gambia, infertility and fertility care matters are addressed as part of the medical and nursing high educational curricula at the University of the Gambia (MM, personal communication). The degree of how infertility is integrated in this curricula is currently unknown. Further research focusing on, for example, measuring the impact of how medical academic training influences the management of infertility could be explored and could help in identifying grey areas in the educational curricula in need to be scrutinised and deepened.

Conclusion

This research found that addressing fertility care requires a comprehensive public health framework, the first of which is to develop a national fertility care strategic plan that details the why, who, and how for such intervention. The Gambian government has released multiple health policies that included the management of infertility, but it has struggled to outline its intention to put fertility care into practice. While approaches for implementation could be discussed, a plan (and budget) for implementing fertility care are important conditions to move from written policies into action. Further research, in The Gambia and elsewhere in SSA, may provide insight into the long-term effects of the implementation of fertility care in the country. However, taken as a whole, this research suggests that fertility care implementation is seen as risky from the health practitioners and implementers' perspectives but feasible from policymakers' views. This because of the current state of SRHR's availability and disenchantment of governmental policies. Further, stakeholders, including policymakers, international agencies, medical professionals, and activists need to make a concerted effort to tackle the stigma associated with infertility and improve healthcare seeking behaviour. This is even more important for men, whose perceptions of infertility are mediated by secular patriarchy and the roles of masculinity on reproductive health issues, and will enable couples and individuals to make free choices regarding their reproductive life. It is part of the public health and reproductive rights mandate to work towards fulfilling the sexual and reproductive health for all people. We need to bring (in)fertility care back on the global health agenda as recommended in 1994, not only for Gambian couples but for every one who, in the Global South, live a miserable life due to infertility.

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Appendices

Appendix 1: Co-authors permission to use papers and manuscripts in the thesis

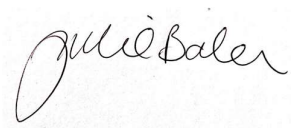
Authors Permission

I confirm that as a co-author of the following papers/manuscripts, I authorise the first author Anna Afferri to include them as chapters in her Ph.D. thesis. These papers were led by Anna as part of her PhD research.

1. Afferri A., Allen H., Booth A., Dierickx S., Pacey A., Balen J. (2021). Barriers and facilitators for the inclusion of fertility care into reproductive health policies in Africa: a qualitative evidence synthesis. *Human Reproduction Update*, 28(2):190-199
2. Afferri A., Allen H., Dierickx S., Bittaye M., Marena M., Pacey A., Balen J. (2022). Availability of services for the diagnosis and treatment of infertility in The Gambia's public and private health facilities: a cross-sectional survey. *BMC Health Services Research*, 22:1127
3. Afferri A., Dierickx S., Allen H., Bittaye M., Musa M., Pacey A., Balen J. (2023). "It's about time": policymakers' and health practitioners' perspectives on implementing fertility care in The Gambian health system. Under review in *BMC Reproductive Health*

Date 23 November 2022

Dr Julie Balen



Dr Susan Dierickx



Prof Andrew Booth

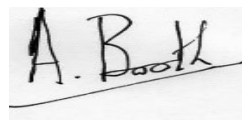
Dr Mustapha Bittaye (email)

Authorise: Mustapha Bittaye

Miss Haddijatou Allen



Prof Allan Pacey



Dr Musa Marena (email)

Authorise: Musa Marena

Appendix 2: Ethics clearance – ScHARR



Downloaded: 28/01/2021
Approved: 28/01/2021

Anna Afferri
Registration number: 190195124
School of Health and Related Research
Programme: PhD - ScHARR

Dear Anna

PROJECT TITLE: Inclusion of fertility care into reproductive health policy and practice in The Gambia
APPLICATION: Reference Number 037850

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 28/01/2021 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 037850 (form submission date: 27/01/2021); (expected project end date: 30/10/2021).
- Participant information sheet 1086004 version 3 (21/01/2021).
- Participant information sheet 1086003 version 4 (27/01/2021).
- Participant consent form 1086005 version 4 (27/01/2021).

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Jennifer Burr
Ethics Administrator
School of Health and Related Research

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy:
<https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure>
- The project must abide by the University's Good Research & Innovation Practices Policy:
https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.



Downloaded: 10/02/2021
Approved: 10/02/2021

Anna Afferri
Registration number: 190195124
School of Health and Related Research
Programme: ScHARR

Dear Anna

PROJECT TITLE: Infertility services provision in public and private health facilities in The Gambia
APPLICATION: Reference Number 038109

This letter confirms that you have signed a University Research Ethics Committee-approved self-declaration to confirm that your research will involve only existing research, clinical or other data that has been robustly anonymised. You have judged it to be unlikely that this project would cause offence to those who originally provided the data, should they become aware of it.

As such, on behalf of the University Research Ethics Committee, I can confirm that your project can go ahead on the basis of this self-declaration.

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since full ethical review may be required.

Yours sincerely

Jonathan Woodward
Departmental Ethics Administrator

Appendix 3: Ethics clearance – LSHTM

London School of Hygiene & Tropical Medicine

Keppel Street, London WC1E 7HT
United Kingdom
Switchboard: +44 (0)20 7636 8636
www.lshtm.ac.uk

LONDON
SCHOOL of
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& TROPICAL
MEDICINE



Observational / Interventions Research Ethics Committee

Ms Anna Afferri
LSHTM

2 March 2021

Dear Ms Anna Afferri

Study Title: Inclusion of fertility care into the reproductive health policy and practice in the Gambia

LSHTM Ethics Ref: 22446

Thank you for your application for the above research project which has now been considered by the Observational Committee via Chair's Action.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

Approval is dependent on local ethical approval having been received, where relevant.

Approved documents

The final list of documents reviewed and approved is as follows:

Document Type	File Name	Date	Version
Investigator CV	CV AFFERRI Anna MCHN	02/06/2020	V.1
Other	Certificate Epygeum Core course AFFERRI	02/06/2020	V.1
Covering Letter	LEO 22446 SCC Cover Letter	16/11/2020	1.0
Protocol / Proposal	171120 Qualitative interview guide - Health facility delegates AA V2.0	17/11/2020	2.0
Protocol / Proposal	171120 Qualitative interview guide - Policy implementers AA V2.0	17/11/2020	2.0
Protocol / Proposal	171120 Qualitative interview guide - Policymakers AA V2.0	17/11/2020	2.0
Protocol / Proposal	171120 Quantitative Health Facility AA V2.0	17/11/2020	2.0
Covering Letter	LEO 22446 SCC Cover Letter - 181120	18/11/2020	2.0
Information Sheet	LEO 22446 Qualitative Participant Info Sheet - Policymakers & implementers AA V3	22/12/2020	V3
Information Sheet	LEO 22446 Quantitative Participant Info Sheet - Health facility AA V3	22/12/2020	V3
Protocol / Proposal	LEO 22446 Study protocol AA V2	22/12/2020	V2
Covering Letter	LEO 22446 SCC Cover Letter - 221220	22/12/2020	3.0

After ethical review

The Chief Investigator (CI) or delegate is responsible for informing the ethics committee of any subsequent changes to the application. These must be submitted to the committee for review using an Amendment form. Amendments must not be initiated before receipt of written favourable opinion from the committee.

The CI or delegate is also required to notify the ethics committee of any protocol violations and/or Suspected Unexpected Serious Adverse Reactions (SUSARs) which occur during the project by submitting a Serious Adverse Event form.

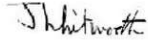
An annual report should be submitted to the committee using an Annual Report form on the anniversary of the approval of the study during the lifetime of the study.

At the end of the study, the CI or delegate must notify the committee using the End of Study form.

All aforementioned forms are available on the ethics online applications website and can only be submitted to the committee via the website at: <http://leo.lshtm.ac.uk/>

Further information is available at: www.lshtm.ac.uk/ethics.

Yours sincerely,



Professor Jimmy Whitworth
Chair

ethics@lshtm.ac.uk
<http://www.lshtm.ac.uk/ethics/>

Improving health worldwide

Appendix 4: Informed Consent



Participant Consent Form

Inclusion of Fertility Care into Reproductive Health Policy in the Gambia Consent Form

<i>Please tick the appropriate boxes</i>	Yes	No
Taking Part in the Project		
I have read and understood the project information sheet dated(DD/MM/YYYY) and it has been fully explained to me. (If you will answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)	<input type="checkbox"/>	<input type="checkbox"/>
I have been given the opportunity to ask questions about the project.	<input type="checkbox"/>	<input type="checkbox"/>
I agree to take part in the project. I understand that taking part in the project will include completing a survey, being interviewed, being recorded via audio tool, participating in a focus group discussion, or being observed during my duties.	<input type="checkbox"/>	<input type="checkbox"/>
I understand that my taking part is voluntary and that I can withdraw from the study at any time. I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.	<input type="checkbox"/>	<input type="checkbox"/>
How my information will be used during and after the project		
I understand my personal details such as name, phone number, address and email address etc. will not be revealed to people outside the project.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that my words may be quoted in publications, reports, web pages, and other research outputs. I understand that I will not be named in these outputs unless I specifically request this.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that other authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that other authorised researchers may use my data in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	<input type="checkbox"/>	<input type="checkbox"/>
I give permission my answers that I provide, to be deposited in the University of Sheffield X: drive and ORDA so it can be used for future research and learning	<input type="checkbox"/>	<input type="checkbox"/>
So that the Information you provide can be used legally by the researchers		
I agree to assign the copyright I hold in any materials generated as part of this project to The University of Sheffield.	<input type="checkbox"/>	<input type="checkbox"/>

Name of participant [printed]

Signature

Date

Name of Researcher [printed]

Signature

Date

Project contact details for further information:

Anna Afferri, SCHARR, University of Sheffield, aafferri1@sheffield.ac.uk

Dr Julie Balen, SCHARR University of Sheffield, j.balen@sheffield.ac.uk

Save 2 copies of the consent form: 1 paper copy for the participant, 1 copy for the research data file

Appendix 5: Participant Information Sheets – Stakeholders

1. Research Project Title:

Inclusion of fertility care into the Gambian Health Policy

2. Invitation paragraph

Good day!

You are being invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

This project is part of my doctoral degree at the University of Sheffield, based in the United Kingdom. I am aware that infertility is a serious health issues Gambian women and men and I would like to understand how the health system would include and implement fertility care in the national health policy. My research started at the end of 2019 and the data collection will last until March 2022.

4. Why have I been chosen?

You have been selected for your position and relevance as policymaker and/or policy implementer. You are the person with whom I will speak today. However, if you think that other people in your team/department/organisation may have more information about fertility care, feel free to indicate them to me at the end of this interview.

The interview will be held in English and I will use an interview guide to help me with the questions. The qualitative interview aims to explore your thoughts concerning fertility care and is based on open-ended questions.

5. Do I have to take part?

Your participation in this research is entirely voluntary and if you wish do not take part, you are free to do so. There will be no direct or indirect consequences for you. If you consent to take part to the research but you change your mind in due course, you will be able to do so too. You can withdraw at any time without giving any justification or reason. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you wish to withdraw from the research, please contact me. Please take in mind that if you express your willingness to withdraw from this project AFTER the data been coded, these data will be not removed and they will be analysed.

6. What will happen to me if I take part? What do I have to do?

You will be asked to participate in one interview only. This means that your contribution will be required only once. However, if you wish to add more information, you are free to contact me. The interview will take approximately 1 hour. There are no incentives or motivation for

your participation in this research. The data collected from you will be relevant for achieving the research's objectives.

Please be free to indicate if there will be any lifestyle restrictions, such as prayers, collection of children from school, household tasks, etc. as a result of participating.

7. What are the possible disadvantages and risks of taking part?

There are not direct or indirect risks or disadvantages concerning your participation to this research. However, there is a potential disruption of your daily schedule if you have set up other meetings.

8. What are the possible benefits of taking part?

Whilst there are no immediate benefits for the people participating in the research, it is hoped that this work will identify factors that enable or inhibit the Gambian health system to prioritise fertility care into its health policy.

9. Will my taking part in this project be kept confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential and will only be accessible to members of the research team. You will not be identified in any reports or publications. Your name or contact, and the name of this location will be not disclosed.

If you agree to us sharing the information you provide with other researchers, your personal details will not be included unless you explicitly request this.

10. What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that "processing is necessary for the performance of a task carried out in the public interest" (Article 6(1)(e)). Further information can be found in the University of Sheffield's Privacy Notice

<https://www.sheffield.ac.uk/govern/data-protection/privacy/general>.

11. What will happen to the data collected, and the results of the research project?

The data collected from this research will be anonymised and stored in the University of Sheffield repository. Access to this data will be granted to my supervisors only. I will be in direct charge for the transcription and analysis of the data using appropriate qualitative software. All the data from this research will be kept for two years after the end of my doctoral study and destroyed as soon as possible once it is clear that this will not affect the research purpose. Due to the nature of this research, it is very likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be shared in this way.

12. Who is organising and funding the research?

This is a self-funded research. However, the University of Sheffield and the Medical Research Council have arranged some of the travels and lodgings during my stay in the Gambia.

13. Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

14. Who has ethically reviewed the project?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the School of Health And Related Research (ScHARR) department (Reference 03785-038109). The University's Research Ethics Committee monitors the application and delivery of the University's Ethics Review Procedure across the University. Further, it has been cleared by the Medical Research Council (MRC) at the London School of Hygiene and Tropical Medicine Ethics Joint Committee (Reference 22446)

15. Contact for further information

In case they wish to obtain further information about the project, please feel free to contact Anna Afferri aafferri1@sheffield.ac.uk or Dr Julie Balen j.balen@sheffield.ac.uk (in case of unavailability of Anna Afferri). In case of complaints, please contact Mr Luke Thompson, Head of Data Protection & Legal Services luke.thompson@sheffield.ac.uk.

You are entitled to receive a copy of this information sheet and a signed consent form to keep, if you wish.

Thank you so much for your participation in the project! I really appreciated your time and insights. Please be free to contact me for further information.

Appendix 6: Participant Information Sheets – Health Facilities

1. Research Project Title:

Inclusion of fertility care into the Gambian Health Policy

2. Invitation paragraph

Good day!

You are being invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others, if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

This project is part of my doctoral degree at the University of Sheffield, based in the United Kingdom. I am aware that infertility is a serious health issues for Gambian women and men and I would like to understand how the health system manages infertility services in the public and private health facilities in the country. My research started at the end of 2019 and the data collection will last until November 2021.

4. Why have I been chosen?

Your health facility have been selected from a group of public and private health facilities in The Gambia. You are the person with whom I will speak today. However, if you think other people in this facility may have more information about infertility services, feel free to indicate them to me at the end of this interview.

The interview will be held in English and comprises two parts. First, I will ask you concerning the infertility services delivered by this facility; secondly, I would listen from you concerning fertility care in the Gambia. I will use a survey and an interview guide to help me with the questions.

5. Do I have to take part?

Your participation in this research is entirely voluntary and if you wish do not take part, you are free to do so. There will be no direct or indirect consequences for you. If you consent to take part to the research but you change your mind in due course, you will be able to do so too. You can withdraw at any time without giving any justification or reason. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you wish to withdraw from the research, please contact me. Please take in mind that if you express your willingness to withdraw from this project AFTER the data been coded and analysed, these data will be not removed and they will be analysed.

6. What will happen to me if I take part? What do I have to do?

You will be asked to participate in once. However, if you wish to add more information, you are free to contact me. The survey in this facility and your interview will take approximately 2 hours. There are no incentives or motivation for your participation in this research. The data collected from your will be relevant for achieving the research's objectives.

I expect your availability for both the survey and an interview. Please be free to indicate if there will be any lifestyle restrictions, such as prayers, collecting children from school, household tasks, etc. as a result of participating.

Concerning the survey, I aim to collect data resulting from the infertility services delivered by your health facility. This survey is a close-ended questionnaire (Yes/No). On other hand, the interview aims to explore your thoughts concerning fertility care and is based on open-ended questions.

7. What are the possible disadvantages and risks of taking part?

There are not direct or indirect risks or disadvantages concerning your participation to this research. However, there is a potential disruption of the health services delivery if you are the only person in charge in this facility.

8. What are the possible benefits of taking part?

Whilst there are no immediate benefits for the people participating in the research, it is hoped that this work will identify factors that enable or inhibit the Gambian health system to prioritise infertility services into its health policy.

9. Will my taking part in this project be kept confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential and will only be accessible to members of the research team. You will not be identified in any reports or publications. Your name or contact, the name of this location and of the facility will be not disclosed. If you agree to us sharing the information you provide with other researchers, your personal details will not be included unless you explicitly request this.

10. What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that “processing is necessary for the performance of a task carried out in the public interest” (Article 6(1)(e)). Further information can be found in the University of Sheffield’s Privacy Notice <https://www.sheffield.ac.uk/govern/data-protection/privacy/general>.

11. What will happen to the data collected, and the results of the research project?

The data collected from this research will be anonymised and stored in the University of Sheffield repository. Access to this data will be granted to my supervisors only. I will be in direct charge for the transcription and analysis of the data using appropriate qualitative and quantitative software. All the data from this research will be keep for two years after the end of my doctoral study and destroyed as soon as possible once it is clear that this will not affect the research purpose. Due to the nature of this research, it is very likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be shared in this way.

12. Who is organising and funding the research?

This is a self-funded research. However, the University of Sheffield and the Medical Research Council have arranged some of the travels and lodgings during my stay in the Gambia.

13. Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

14. Who has ethically reviewed the project?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the School of Health And Related Research (ScHARR) department (Reference 03785-038109). The University's Research Ethics Committee monitors the application and delivery of the University's Ethics Review Procedure across the University. Further, it has been cleared by the Medical Research Council (MRC) at the London School of Hygiene and Tropical Medicine Ethics Joint Committee (Reference 22446)

15. Contact for further information

In case they wish to obtain further information about the project, please feel free to contact Anna Afferri aafferri1@sheffield.ac.uk or Dr Julie Balen j.balen@sheffield.ac.uk (in case of unavailability of Anna Afferri). In case of complaints, please contact Mr Luke Thompson, Head of Data Protection & Legal Services luke.thompson@sheffield.ac.uk.

You are entitled to receive a copy of this information sheet and a signed consent form to keep, if you wish.

Thank you so much for your participation in the project! I really appreciated your time and insights. Please be free to contact me for further information.

Appendix 7: Reproductive Health Strategic Plan – The Gambia (Key priorities and interventions for infertility only)

PRIORITY 1: IMPROVING FAMILY PLANNING SERVICES			
STRATEGY	KEY INTERVENTION	ACTIVITIES	COST
STRATEGIC OBJECTIVE 1: TO REDUCE THE MAGNITUDE OF UNWANTED AND UNPLANNED PREGNANCIES AND UNMET NEED FOR CONTRACEPTIVES			
Provide quality services for the prevention, investigation and treatment of infertility and menopausal and post-menopausal issues	2.1 Provide appropriate information and counseling to raise awareness of the general community on risk factors, methods of prevention and the existence of diagnosis and treatment of infertility.	2.1 A retreat meeting with health communication unit to review and update SBCC material on infertility 2.2 Training of 1000 health journalist on information dissemination of infertility services 1.1.39 Training of 10,000 community health workers (VHWs, CBCs, CBDs, Kabilo Baama and male action group) and traditional communicators (TC) on infertility message composition and dissemination 1.1.40 Conduct sensitization meeting with men in the reproductive age bracket on infertility 1.1.41 Printing 1500 copies of communication material on infertility services 1.1.42 Distribute printed communication materials on infertility to all the parties	
	3 Develop a national guideline for the prevention, investigation and treatment of couples with infertility.	1.1.45 Conduct retreat to develop national guideline on the prevention, investigation and	

		<p>treatment of couples with infertility</p> <p>1.1.46 To print 1500 copies of the national guideline on the prevention, investigation and treatment of couples with infertility</p> <p>1.1.47 To distribute the national guideline on the prevention, investigation and treatment of couples with infertility</p>	
4	Strengthen the capacity of facilities (laboratories, equipment, necessary drugs and supplies) for the provisions of quality investigation, early diagnosis and treatment of infertility.	<p>1.1.48 Procure required equipment for the provisions of quality investigation, early diagnosis and treatment of infertility</p> <p>1.1.49 Procure drugs for the provisions of early treatment of infertility</p> <p>1.1.50 Procure supplies for the provisions of quality investigation, early diagnosis and treatment of infertility</p>	
5	Build the capacity of selected health workers by providing further training on investigation and treatment of infertility.	<p>1.1.51 Train 6500 service providers on counselling and referral of infertile couples</p> <p>1.1.52 Train 6500 service providers on infertility prevention and management</p> <p>1.1.53 Train 6500 service providers on fertility assessment</p>	
6	Establish evidence-based research to assess the status of infertility and its associated risk factors in the Gambian context.	1.1.54 Conduct research to assess the status of infertility and its associated risk factors in the Gambian context.	
7	Strengthen partnership, particularly Public-Private Partnership (PPP), Public-NGOs partnership for the multi-sectoral response for the comprehensive	1.1.55 Conduct biannual advocacy meetings with partners and stakeholders	

	prevention, investigation and treatment of infertility.	1.1.56 Sensitize 500 communities to reduce gender biasness towards infertility	
	8 Establish data recording and reporting system on infertility	1.1.57 Develop infertility data collection tools 1.1.58 Validate the developed infertility data collection tools 1.1.59 Incorporate infertility data collection tools into the routine HMIS tool 1.1.60 Build infertility data collection tools into the DHIS2 database 1.1.61 Train 1000 service providers, 450 data entry clerks and 100 data managers on how to collect and report infertility data	

Appendix 8: Draft of the Fertility Care Short Course



University of The Gambia Fertility Care Short Course *DRAFT*

A. Programme aim

The programme aim is to enable students from the University of Gambia to strengthen their knowledge on fertility care management, and to positioning infertility in the agenda of the future Gambian health leadership.

B. What the programme will cover

- i. An introduction to normal reproductive physiology
 - a. The concept of normal fertilisation
 - b. A brief overview of embryo development
 - c. Fecundity and fecundability
- ii. Overview of infertility prevalence and causes in SSA, specifically in The Gambia
 - Why infertility is a neglected reproductive health problem? (Dr Julie Balen)
 - Estimate prevalence of infertility in West Africa and The Gambia (Dr Idoko and/or Dr Anyanwu)
- iii. Interdimensional infertility
 - Biomedical, prevention, investigation, treatment, linkages with informal medicine (lecturers from UTG) Dr Hassadez and Dr Firas
 - FertiStat (Prof Cooke (*online*))
 - Socio-cultural and psychological aspects of infertility (Dr Dierickx and Dr Hiadzi (*online*))
 - Male infertility and gendered infertility (Prof Allan Pacey and Mr Kelvin Okono (*online*))
 - Ethics and regulations of fertility care (Dr David Benbow (*online*) and Dr Bonji Shoji (*online*))
- iv. Fertility care
 - Awareness – Education – Patients' perspectives (Miss Sainey Ceesay and Miss Haddijatou Allen)
 - Policymaking and implementation (Dr Bittaye, Dr Marena, Prof Samuel Ramsewak (*online*), Ms Anna Afferri)

C. What the programme will not cover



The programme will not cover the following:

- a. Infertility lab techniques for assisted reproductive technologies such as IVF, ICSI, embryo selection, embryo freezing, gametes donation, etc.

The facilitators will use real life examples during the sessions.

D. Format of the programme

The programme will be held as follows:

- Day 1: Date TBC – UTG conference room 9 AM – 12.00 PM
- Day 2: Date TBC – UTG conference room 9 AM – 12.30 PM (wrap-up and closure)

Participants will be provided with appropriate learning materials. Each session will be delivered in a hybrid form through Zoom/Google Meet and face-to-face. All sessions will be conducted in English. For the face-to-face attendance, the location is the meeting hall at the University of The Gambia.

E. Expenses

The WR Network on Fertility Care in the Global South does not provide funding for participants but it can facilitate internet services for participants unable to attend face-to-face. Nor do we reimburse you or your institution for any other expenses associated with the training or any form of payment.

F. Our expectations of participants

Inputs

You MUST:

- Commit to all online and face-to-face sessions for the full duration of the short course. These sessions are interactive and will require your active participation.
- Dedicate time after the three-days period to write a reflective piece of 500 words about the course and how you see yourself involved in fertility care in the future
- Have access to good bandwidth and a computer or laptop that is set up to use the Zoom platform

G. Outputs



You will be expected to participate in the course final evaluation survey and you will receive a participation certificate after the survey being completed and the reflective piece being submitted.

H. Scope

The WR Network welcomes applications for this course from students who are interested in (in)fertility care management.

I. Eligibility

To be eligible, you need to provide evidence that:

- You are a student of the University of Gambia in the following faculties-disciplines:
 - Medicine/Public health/Health policy and systems research
 - Nursing and Midwifery
 - Social sciences and/or anthropology
 - Psychology
- You are in the early stages of your academic career (undergraduate, master, PhD students)

J. Diversity and inclusivity

To ensure equity, no more than two participants will be selected with the aim to maintain a gender-balanced selection across faculties/disciplines.

K. How to apply

Applications will be considered for participants registered via the online application form.

L. Key dates

Deadline for your application: 31st January 2023

M. Contact

If you have any enquiries, contact The White Rose Network lead Dr. Julie Balen j.balen@sheffield.ac.uk or Ms Anna Afferri at aafferri1@sheffield.ac.uk



Time (GMT)	Title	Facilitator
Date TBC		
8.30 - 8.45	Zoom meeting room open for audio/video testing	
8.45 - 9.00	Welcome, housekeeping & introductions	<i>Dr Julie Balen Dr Ramatou Njie</i>
9.05	GROUP PHOTO	
9.10 - 9.30	Day 1 - Session 1 Why infertility is a neglected reproductive health problem? SRHR: Life-course approach	<i>Dr Julie Balen (UK)</i>
9.30 - 9.50	Introduction to normal reproductive physiology a. The concept of normal fertilisation b. A brief overview of embryo development c. Fecundity and fecundability	<i>Dr Matthew Anyanwu (The Gambia)</i>
9.50 - 10.10	Estimated prevalence of infertility in West Africa and in The Gambia	<i>Dr Patrick Idoko (The Gambia)</i>
10.10 - 10.30	Biomedical Infertility: prevention, investigation, treatment and linkages with informal medicine	<i>Dr Hassadez Dr Firas</i>
10.30 - 10.40	BREAK	
10.40 - 11.00	Day 1 -Session 2 Opportunities for improved fertility care practices in The Gambia	<i>Prof Ian Cooke (UK) online attendance</i>
11.00 - 11.15	Socio-cultural and psychological aspects of infertility: findings from The Gambia	<i>Dr Susan Dierickx (Belgium)</i>
11.15 - 11.30	Socio-cultural and psychological aspects of infertility: findings from Ghana	<i>Dr Rose Hiadzi (Ghana) online attendance</i>
11.30 - 12.00	Recap and end of the day	<i>Dr Julie Balen (UK)</i>
Date TBC		
9.00 - 9.30	Day 2 - Session 1 Male infertility and gendered infertility	<i>Prof Allan Pacey (UK) Mr Kelvin Oruko (Kenya) online attendance</i>



9.30 – 9.50	Ethics and regulations for fertility care	<i>Dr David Benbow (UK, online attendance Dr Bonji Shoji (USA) online attendance</i>
9.50 - 10.20	Fertility awareness, education and patients' perspectives	<i>Miss Sainey Ceesay (The Gambia) Miss Haddijatou Allen (The Gambia)</i>
10.20 - 10.50	Fertility care policymaking	<i>Dr Mustapha Bittaye (The Gambia,</i>
10.50 – 11.00	BREAK	
11.00 – 11.20	Day 2 – Session 2 Fertility care implementation: experience from Trinidad & Tobago	<i>Prof Samuel Ramsewak (Trinidad & Tobago) online attendance</i>
11.20 – 11.35	Infertility services and fertility care implementation: findings from The Gambia	<i>Dr Musa Marena (The Gambia) Ms Anna Afferri (UK)</i>
11.35 - 12.00	Discussion, reflection and evaluation	<i>Dr Julie Balen (UK)</i>
12.00 - 12.15	Concluding remarks	<i>Dr Julie Balen (UK) Dr Ramatou Njie (The Gambia,</i>

Online presenters:

Prof Ian Cooke

Prof Samuel Ramsewak

Prof Allan Pacey

Prof Susan Dierickx

Dr Rose Hiadzi

Dr David Benbow

Dr Bonji Shoji

Mr Kelvin Oruko