

Quality of Care in Family Planning Services in Ethiopia

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Abstract

Background

Annually approximately 303,000 maternal deaths occurred globally in 2015, of which 99% occurred in Low-and Middle-income countries (LMIC). Estimates suggest that Ethiopia is one of the ten countries that account for about 60% of these maternal deaths. Studies demonstrate that use of Family Planning (FP) can contribute to reducing maternal deaths. While a proportion of women are using FP services, more than 214 million reproductive aged women in LMIC who desired to avoid or postpone pregnancy are not using any modern contraceptive methods. This trend in the use of FP services is also found in Ethiopia. Along with socio-demographic and cultural factors, the quality of care in FP services has been shown to influence the use of FP services. However, few studies have been conducted on the quality of care in FP services in Africa, and little evidence has been reported on the factors determining quality of care in FP services. While a few small studies that have assessed quality of care in FP services in Ethiopia, no study has identified systematically the factors associated with quality of care or the influence of facility type on quality of care.

Aim

The overall aim of the study is to identify the determinants and differences in quality of care in FP services. The overall study consisted of four interrelated studies each with their own inter-related but specific aim. These were: to assess and explore factors associated with quality of care in FP services in Africa (Study 1); to identify the client and facility-level determinants of quality of care in FP services in Ethiopia (Study 2); to compare the quality of FP services in private and public primary health care facilities and users' characteristics of these facilities (Study 3), and since the use of FP guidelines was a factor in quality of care, the last study's aim was to understand provider perspectives on barriers to and facilitators for FP guidelines use in FP services (Study 4).

Methods

This study employed a mix of study designs using three different methods and analytic approaches. Firstly, informed by a published systematic review protocol, a systematic review was conducted to evaluate the best available evidence on factors affecting the quality of care in FP services in Africa (Study 1). The systematic review included studies published between 1990 and 2016 in English. Quantitative studies reporting on factors affecting quality of care and qualitative studies exploring

client and provider experiences and/or perceptions of the factors that determine quality of care in FP services were considered for inclusion in the review. For quantitative studies, client satisfaction was used as a measure of quality of care and was assessed in three ways: First, it was assessed using proxy questions reflecting client satisfaction on a range of issues such as waiting time, privacy for not being seen or heard by others, cleanliness of the facility, and costs of the services. Then clients' responses for these questions were aggregated into a single variable using principal component analyses to create a measure either as a continuous or binary outcome in terms of satisfied or not satisfied; Secondly, using a likert scale in ten categories with the higher scale indicating greater satisfaction and then creating a binary variable using the mean as a cutoff point (i.e those who scored below the mean regarded as less satisfied while those who scored equal to or above the mean regarded as highly satisfied). Thirdly, using client's overall satisfaction and then creating a binary outcome comprising satisfied or not satisfied. I performed separate synthesis of the two evidence types: the quantitative data were summarised in narrative and tables; the qualitative findings were synthesised using meta-aggregation.

Secondly, informed by the findings of the systematic review, I conducted a quantitative analysis of secondary data (Study 2 and 3). More specifically, for Study 2, a multilevel mixed-effects modelling was conducted using the Ethiopian Services Provision Assessment (ESPA+) 2014 data to identify the client and facility-level determinants of quality of care in FP services as measured by client satisfaction in Ethiopia. In the analysis, while client and facility-level variables were considered as independent variables, client satisfaction was considered as an outcome variable. Client satisfaction was measured using clients' exit interview responses to questions about the health service quality, assessed by the problems encountered by clients during their visit to health facilities for FP services. Clients' responses on eleven questions that reflect clients' perceptions of the quality of FP services were aggregated into an index using principal component analysis. Then, the aggregated index was dichotomised using the median score as cutoff point. Finally, a binary outcome of client satisfaction was devised as "more satisfied" if a score was greater or equal to the median cutoff point, and as "less satisfied" if a score was less than the median cutoff point.

For Study 3, a combination of facility-based data from the ESPA+ 2014 dataset and community-based data from the Ethiopian Demographic and Health Survey (EDHS) 2016 dataset were employed. In the analysis, structural variables that reflected the material structure such as facility's infrastructure (basic amenities) and availability of equipment and supplies and human resources such as health provider

availability and trained provider availability were compared in public versus private primary health care facilities. The structural variables that reflected organisational structure such as presence of a quality assurance system and supervision in the past six months, availability of FP guidelines/protocols, and availability of a range of modern contraceptive methods were also compared in public versus private primary health care facilities. Survey logistic regression analysis was conducted to compare the structural quality of services, and a chi-square test was used to compare the characteristics of clients'/users' who accessed FP services from these facilities.

In Study 4, qualitative method was used to understand health providers' perspectives on the use of FP guidelines in FP services. This study used in-depth interviews guided by a semi-structured interview guide. Twenty one participants were recruited from nine health facilities including two hospitals, five health centres, and two health posts in Gondar and Bahir Dar City administrations, Amhara region, Northwest Ethiopia. The audio-recorded interviews and notes taken were translated and transcribed into English by the lead author and entered into NVivo 11TM for data analysis and management. Thematic analysis according to the approach described by Braun and Clarke was employed for data analysis.

Results

In Study 1, the systematic review found few studies (eight quantitative studies and three qualitative studies) had been undertaken in a small proportion of African countries. While the quantitative studies were undertaken in Egypt, Kenya, Senegal, Ethiopia, Ghana, Tanzania, Namibia, the qualitative studies were undertaken in Kenya and Uganda. The studies were performed between 1995 and 2016. The limited evidence, assessed as being moderate to high quality suggested that quality of care in FP services was influenced by a range of client, provider and facility factors, as well as structural and process aspects of the facilities. Amongst the process factors, shorter client waiting time, presence of competent healthcare providers, provision/prescription of injectable methods, maintenance of privacy, and confidentiality were the most commonly identified factors positively associated with quality of care in FP services. For factors related to structure, good quality of stock was the most commonly identified factor positively associated with quality of care in FP services. In terms of the facility related factors, quality of care was associated with facility ownership in that privately-owned facilities and availability of FP guidelines were positively associated with better quality of care. The qualitative component of the systematic review pointed to additional factors associated with quality of care in FP

services including access related factors such as ‘pre-requisites to be fulfilled by the clients and cost of services, provider workload, and providers’ behaviour.

In Study 2, while both client and facility-level factors were shown to be associated with quality of care in FP services in Ethiopia, nearly one-third (32.8%) of the differences in the quality of care were attributed to the health facility level factors. At the client-level; provision of information on potential side effects of contraceptive method and number of history and physical assessments performed were positively associated with client satisfaction, long client waiting times (between 30 minutes to two hours) was negatively associated with client satisfaction. At the facility-level; facilities being in an urban location, and having FP guidelines/protocols for their providers were positively associated with client satisfaction.

In Study 3, private health facilities appear relatively more deficient in terms of some important aspects of structural aspects of quality of services such as availability of trained staff, access to FP guidelines/protocols and access to a range of contraceptives than public health facilities. Private health facilities are better equipped with basic infrastructure component of the structural quality of services such as functional cell phones and water supply and equipment than public health facilities. Women who accessed FP services from private facilities were different from those who accessed these services in public facilities. They were more likely to reside in an urban area, to be Muslim, have a job, and have no or fewer number of children than women accessing FP services from public health facilities.

In Study 4, healthcare providers identified a number of barriers affecting use of FP guideline. These included: lack of knowledge and lack of or inadequate access to guideline; lack of up-to-date information in the guideline, providers’ behaviour including limited reading of literature including clinical guidelines and religious beliefs/values against FP services provision; lack of support and supervision from managers; insufficient health workforce; and lack of or inadequate training about FP guideline. Healthcare providers also identified a few facilitators to FP guideline use including ease of access; managers who championed their use; and provision of training about FP guideline.

Conclusion

Overall, the findings showed that quality of care in FP services was influenced by multiple factors related to FP services clients, healthcare providers, and the health facility characteristics. In Ethiopia, the factors affecting quality of care in FP services were related to structure and process of care provision. The findings have also indicated that the structural quality of services in FP services were

different between public and private health facilities. Moreover, the findings demonstrated the characteristics of women accessing FP services in private facilities were different from the characteristics of women accessing FP services in public facilities. The findings have also pointed to a set of factors affecting use of FP guidelines including lack of knowledge and lack of or insufficient access to the guidelines, providers' personal religious beliefs, relying on prior knowledge and tradition rather than protocols and guidelines, insufficient health workforce, and lack of support from managers, and inadequate training on use of guidelines.

These results provide important evidence for policy makers and stakeholders to develop effective strategies to help to further improve the quality of care in FP services in Ethiopia and thereby improve the uptake of FP services in that country. Moreover, the results showed that actions are needed at different levels targeting health systems and health facilities. Further studies are also required to explore the healthcare providers' and managers' views of factors affecting quality of care in FP services.

Strengths of the study

The thesis has a number of strengths. The thesis employed multiple but interrelated study designs including systematic reviews, secondary data analysis, and qualitative interviews. The thesis examines determinants of quality of care from broader (Africa-level) to specific geographic locations (Amhara region). The thesis uses nationally representative datasets obtained from surveys conducted using standardised methodologies and data collection instruments. The qualitative study explored the barriers and facilitators of FP guidelines use for the first time in Ethiopia.

Unique contributions of the thesis

The findings of this thesis have several contributions for policy and further research. In terms of policy implications, the thesis suggests that improving quality of care in FP services in Ethiopia and other LMIC requires improving structural and process components of quality of care. Moreover, it was found that structural components of quality of care could influence not only the outcome of quality of care but also the process of care provision in FP services. The thesis also suggests that, with its limitations, the Donabedian model of quality of care can serve as a lens through which quality of care in FP services could be measured. In terms of further research, the thesis indicates that: 1) exploring factors affecting quality of care from health providers and health managers' viewpoint as it is useful to identify additional factors related to the healthcare system, 2) further studies are needed to explore how

structural and process components of quality of care affecting long term outcomes of quality of care such as reduction in fertility and maternal mortality.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Signed
Gizachew Assefa Tessema (PhD Candidate)

Date 18 Oct 2018

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Dedication

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Journal articles reporting this thesis

- Tessema GA, Laurence CO, Mahmood MA, Gomersall JS. Factors of quality of care in family planning service in Africa: Systematic review. *JBI Database System Reviews and Implementation Reports* 2016; 14(8): 103-14.
- Tessema GA, Gomersall JS, Mahmood MA, Laurence CO. Factors determining quality of care in family planning services in Africa: A systematic review of mixed evidence *PLoS One* 2016; 11(11): e0165627.
- Tessema GA, Mahmood MA, Gomersall JS, Laurence CO. Client and facility level determinants of quality of care in family planning services in Ethiopia: Multilevel modelling. *PLoS One* 2017; 12(6): e0179167.
- Tessema GA, Mahmood MA, Gomersall JS, Laurence CO: Quality and use of family planning services in primary health care facilities in Ethiopia: How do public and private health facilities compare? *Under review in BMJ Global Health*
- Tessema GA, Gomersall JS, Laurence CO, Mahmood MA: Health providers' perspectives on use of family planning guidelines in family planning services in Amhara region, Ethiopia. *Under revision in BMJ Open*.

Conference presentations from this thesis

- Tessema GA, Laurence CO, Mahmood MA, Gomersall JS.
10th Florey Conference, University of Adelaide, Adelaide, September 2016.

Poster presentation: *Factors of quality of care in family planning services in Africa: Systematic review*

- Tessema GA, Laurence CO, Mahmood MA, Gomersall JS.
15th Global Public Health Congress Melbourne, Australia, April 2017.

Oral Presentation: *Factors of quality of care in family planning service in Africa: Systematic review*

- Tessema GA, Gomersall JS, Mahmood MA, Laurence CO.
15th Global Public health Congress Melbourne, Australia, April 2017.

Oral Presentation: *What matters in the provisions of quality of care in family planning services in Ethiopia?*

- Tessema GA, Mahmood MA, Gomersall JS, Laurence CO.
9th Concertum of Universities for Global Health (CUGH), New York, USA, March 2018.

Poster Presentation: *Is there a difference in the quality of services in Private and Public Health facilities in Ethiopia?*

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Abbreviations

AAAQ	Available, Accessible, Acceptable, and good Quality
AIC	Akaike Information Criterion
AIM	African Index Medicus
ANC	Antenatal Care
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPR	Contraceptive Prevalence Rate
CSA	Central Statistics Agency
DHS	Demographic and Health Survey
EPHI	Ethiopian Public Health Institute
ESPA+	Ethiopian Services provision Assessment Plus
FGAE	Family Guidance Association
FP	Family Planning
HEP	Health Extension Program
HEW	Health Extension Worker
HIV	Human Immunodeficiency Virus
HREC	Human Research and Ethics Committee
HREC	Human Research Ethics Committee
HSTP	Health Sector Transformation Plan
ICC	Intra-Class Correlation
ICPD	International Conference on Population and Development
IPPF	International Planned Parenthood Federation
IRB	Institutional Review Board
IUD	Intrauterine Device
JBI	Joanna Briggs Institute
LAM	Lactational Ammenorrhea Method
LMIC	Low-and Middle-Income Countries
LR	Likelihood Ratio
MDG	Millennium Development Goal
MLE	Measurement, Learning and Evaluation Project
MMR	Maternal Mortality Ratio

NGO	Non-Governmental Organisation
OPA	Office of Population Affairs
OR	Odds Ratio
PHCU	Primary Health Care Unit
PMTCT	Prevention of Mother-To-Child Transmission
PNC	Postnatal Care
POPLINE	Population Information Online
PMA2020	Performance Monitoring and Accountability 2020
PSU	Primary Sampling Unit
QIQ	Quick Investigation of Quality
SARA	Service Availability and Readiness Assessment
SDG	Sustainable Development Goal
SDI	Service Delivery Indicator
SERC	Scientific and Ethical Review Committee
SNNPR	Southern Nations Nationalities People Region
SPA	Service Provision Assessment
SRH	Sexual and Reproductive Health
TFR	Total Fertility Rate
UN	United Nations
UNCESCR	United Nations Committee on Economic, Social and Cultural Rights
UNFPA	United Nations Population Fund
US	United States
USAID	United States Agency for International Development
VIF	Variance Inflation Factor
WHO	World Health Organization

Chapter 1

Introduction

1.1 Background

Ethiopia is situated in the horn of Africa, and is the second most populous country in Africa with a population of 105 million in 2016 and an annual population growth rate of 2.6% ⁽¹⁻³⁾. The population is mainly rurally based, dependent on subsistence agriculture ^(1, 3).

According to a 2015 estimate, 303,000 women were dying globally from causes related to pregnancy and childbirth, which corresponds with a Maternal Mortality Ratio (MMR) of 216 per 100,000 live births. Although this ratio represents a 43% decrease in global MMR since 1990, the rate of mortality is still higher than what was aspired to achieve as part of the Millennium Development Goal (MDG) 5 of reducing the MMR by 75% between 1990 and 2015 ⁽⁴⁾. While 99% of the deaths occurred in Low-and Middle-Income Countries (LMIC), two-thirds (66%) of these deaths occurred in sub-Saharan Africa alone. This estimate shows Ethiopia is one of the ten countries that account for 59% of the maternal deaths globally ⁽⁵⁾. In 2016 in Ethiopia, the MMR was 412 per 100,000 live births, with an under five mortality rate of 67 per 1000 live births ⁽⁶⁾.

One of the fundamental elements in improving maternal and child health is Family Planning (FP) ⁽⁷⁾. The contribution of FP in reducing maternal mortality is due to its crucial effect in preventing unintended pregnancy and complications such as abortions and preventing teenage pregnancy ^(8, 9). Moreover, when an adequate interval between successive pregnancies is achieved through the use of FP methods, adverse neonatal outcomes such as preterm and low birth weight can be prevented and thereby help reduce child mortality ^(10, 11). Evidence shows that effective FP services can reduce maternal mortality by up to 40% ^(12, 13), infant mortality by 10%, and childhood mortality by 21% ⁽¹³⁾. FP has also plays an important role in poverty reduction, women's empowerment, and human development ⁽¹⁴⁾. This occurs as women who use FP methods tend to have fewer children and eventually have more opportunities for education and employment, boosting their household income levels ⁽¹⁵⁾. The importance of FP in LMIC was recognised in 1994 at the International Conference on Population and Development (ICPD) which placed FP as a priority agenda to meet reproductive health

needs for the couples and families. This conference called for global leaders to ensure the provision of quality FP services ⁽¹⁶⁾.

In 2000, the MDGs reaffirmed the importance of FP in reducing maternal mortality. FP was found to be crucial to help achieve other MDGs such as achieving universal primary education, reducing child mortality, and ensuring environmental sustainability ⁽¹⁷⁾. As part of the MDGs, Ethiopia aspired to achieve a Contraceptive Prevalence Rate (CPR)¹ of 69% in 2015, and 73% in 2020 ^(1, 18, 19).

In 2012, following the 2012 London Summit on FP, another global partnership to support FP, known as Family Planning 2020 (FP2020), aimed to expand access to FP services to an additional 120 million women and girls in 69 of the world's poorest countries by 2020. In this regard, more than 20 countries, including Ethiopia, made commitments in addressing the policy, financing, delivery and socio-cultural barriers to women accessing contraceptive information, services and supplies ^(20, 21). In line with FP2020 partnership, the Ethiopian government committed to increasing the budget allocation for FP on a yearly basis ⁽²²⁾.

More recently, the Sustainable Development Goals (SDGs), which are a continuation of the MDGs, put FP as one of the key priority towards achieving its Goal 3 on health and Goal 5 on gender equality and women empowerment ⁽²⁰⁾. FP services are important in achieving these two SDGs, and investing on FP will also help accelerate the achievement of almost every goal in the 17 SDGs ⁽²³⁾.

At present, despite Ethiopia being part of several global and local commitments towards improving access to FP, the CPR is still low, although a significant improvement has been observed in the past 16 years (8% in 2000, 14.7% in 2005, 28.6% in 2011, and 35% in 2016). Consequently, while the Total Fertility Rate (TFR) shows a reduction, it remains high (5.5 in 2000, 5.4 in 2005, 4.8 in 2011, and 4.6 in 2016) ^(6, 24-26). A reduction in MMR has also been observed from 871 per 100,000 live births in 2000 to 412 deaths per 100,000 live births in 2016, although it was far from the MDG target of 267 per 100,000 live births in 2015 ^(6, 26, 27). This reduction in fertility and maternal mortality has been partly attributed to the increase in contraceptive use of women ⁽²⁸⁾. The increase in FP use in Ethiopia in the last two decades is the result of political support, donor funding, non-governmental and public-private partnerships in promoting contraceptive use, procuring commodities and providing services, and the

¹ Contraceptive Prevalence Rate (CPR) is defined as the proportion of women who are using contraceptive methods among those women who are married or in sexual union.

government's Health Extension Program (HEP) which help to provide access to FP services in neglected areas of the country ⁽²⁹⁾.

Despite the improvements in FP use in Ethiopia, the issue of contraceptive discontinuation is of concern. According to the recent Ethiopian Demographic and Health Survey (EDHS) 2016 report, more than one third (35%) of Ethiopian women who commence contraception discontinue use within 12 months of initiation and the discontinuation rates vary by the method of contraception. The discontinuation rates were particularly high for oral contraceptive pills (70%), injectables (38%) and Intrauterine Device (IUD) (13%) ⁽⁶⁾. Moreover, another study based on a secondary analysis of the EDHS 2011 data showed a contraceptive discontinuation as high as 56% ⁽³⁰⁾. According to this study, quality of care related issues such as lack of or fear of compromising confidentiality for clients in FP services, negative personal experience of contraceptive methods, and rumours about other women's negative experiences in using contraceptive methods were some of the reasons for contraceptive discontinuation ⁽³⁰⁾. Three different studies conducted in different parts of Ethiopia found that implanon² discontinuation was associated with lack of counselling prior to the method's insertion, lack of follow-up, and being not satisfied by the services provided ⁽³¹⁻³³⁾. Similarly, several studies from LMIC have linked poor quality of FP services to high rates of discontinuation, reduced utilisation, non-compliance, and high unintended fertility ⁽³⁴⁻³⁸⁾. Therefore, provision of quality FP services is necessary if the government in Ethiopia want to increase the FP uptake of women and thereby improve the maternal and child health by reducing maternal and child mortality, improve women empowerment and country's economic development. However, the factors affecting the quality of care in FP services have not been adequately explored in Ethiopia. Identifying these factors may help inform future policies and programs that improve quality of care in FP services.

² A long acting family planning method

1.2 Thesis outline

This thesis has eight chapters, including this chapter (Chapter 1), each preceded by a preface to introduce its contents.

Chapter 2 presents the findings of the literature review performed to inform this thesis. This chapter describes the global and national (Ethiopian) context surrounding FP services in Ethiopia. Moreover, the factors affecting FP use are provided in this chapter. The Ethiopian health care system and FP services provision are presented. I also described why quality of care is important in FP use. The most widely used models/frameworks and tools used to assess quality of care in health services, including in FP services, that informed this work are also provided. Finally, the gaps in the empirical evidence in assessing the determinants of quality of care in FP services in Ethiopia are provided in this Chapter.

Chapter 3 describes the overall study design and presents the four inter-related yet distinct studies undertaken to answer each of the research questions: Study 1: What are the factors affecting quality of care in FP services in Africa? Study 2: What are the client and facility-level factors affecting quality of care in FP services in Ethiopia? Study 3: How does the quality and use of FP services compare in public and private facilities in Ethiopia? Study 4: What are the barriers to and facilitators of FP guidelines use in FP services in Ethiopia? This chapter also introduces the methods used in each of the the four studies which are then described in more detail in the journal articles summarising the findings of each study, which are presented in Chapter 4 to 7. Studies 1 and 2 (Chapter 4 and 5) have been published in peer- reviewed journals. Studies 3 and 4 are currently under review in peer-reviewed journals. Chapter 3 also describes the data sources used in the thesis which also included their limitations.

Chapter 4 presents the results of Study 1, the systematic review of mixed evidence conducted to identify factors affecting quality of care in FP services in Africa. Chapter 5 presents the findings of Study 2, the quantitative study assessing the client-level and facility-level factors affecting quality of care in FP services in Ethiopia. Chapter 6 presents the results of Study 3, the comparison between private and public health care facilities in the structural quality of FP services and in characteristics of women accessing FP services. Chapter 7 presents the results of Study 4, the qualitative study about providers' experiences of barriers to and facilitates of FP guidelines.

Chapter 8, the closing chapter of the thesis, summarises the overall findings of the research and significance of the research, discusses the strengths and limitations, points to areas requiring future research, and concludes.

Chapter 2

Literature review

This chapter provides a global and national context in FP services provision with an emphasis on its historical development. It highlights the past and present international and national government commitments to support the provision of FP services. It presents the results of the literature review undertaken to inform the study aims and design. It describes the most commonly used models/frameworks and tools for assessing quality of care in FP services and highlights the limited evidence base and the gap in the existing body of knowledge in informing determinants of quality of care in FP in Ethiopia in 2016, when the study design for this research was developed. It also provides the research aims for each studies in the research.

2.1 Global context of family planning services

The early 1950s marks the beginning of FP services in LMIC. These services have successfully reduced fertility rates in many LMIC in the world, most notably in Asia, Latin America, and North Africa ⁽³⁹⁾. From the 1970s to the mid-1990s, FP services received attention globally, and governments in LMIC mainly Asian and Latin American countries, began prioritising support for voluntary FP services ⁽⁴⁰⁾. During much of the 1960s and 1970s, the motivation behind FP services and programs were mainly related to the demographic perspective (rationale) where FP use was widely advocated for reducing the rapid population growth. In the 1980s, driven by consequences of high fertility in increasing maternal, infant, and child mortality, a shift towards the health rationale predominated in FP services. Later, since the early 1990s, particularly after the 1994 ICPD, the human rights rationale became predominant, with a more comprehensive, client-oriented approach where quality of care in FP services was prioritised ^(41, 42). In the last two decades, there was an overall positive change in the use of FP services worldwide. Globally, contraceptive prevalence rose from 55% in 1990, to 64% in 2015. However, contraceptive use was much lower in LMIC with an average CPR of 40% and was particularly low in Africa, having an average CPR of 33%. In comparison, the corresponding average CPRs for Oceanian and Northern American countries were 59% and 75%, respectively ⁽⁴³⁾. The unmet need for FP has remained high in LMIC ⁽⁴⁴⁾. Recent estimates by WHO indicated that 214 million reproductive aged women in LMIC who desired to avoid or delay pregnancy are not using any modern contraceptive methods ⁽⁴⁵⁾.

2.2 Family planning services context in Ethiopia

Little is known about FP in Ethiopia before the mid-1960s, when the Family Guidance Association of Ethiopia (FGAE) was established in 1966. The FGAE was formed by health and social workers who were concerned with the high rates maternal and neonatal mortality ^(46, 47). The Association became an associate member of the International Planned Parenthood Federation (IPPF) ³ in 1970 and a full member in 1975. FGAE's only FP service was provided from a single-room clinic run by one nurse at St Paul hospital in Addis Ababa ⁽⁴⁶⁻⁴⁸⁾. In 1980, the Ministry of Health included FP in its maternal and child health program and since then, the Ministry of Health has expanded the provision of FP services with cyclic country support programs by the United Nations Fund for Population Agency (UNFPA) and other stakeholders ⁽⁴⁷⁾.

Starting from the 1990s, Ethiopia has ratified a number of supportive policies and strategies for creating a conducive environment for the expansion of FP services ^(1, 47, 49, 50). The National Health Policy developed in 1993 stated the need for improving the coverage and quality of FP services in the country ⁽⁵¹⁾. The National Policy of Women, which was also developed in 1993, acknowledged the need to ensure women's access to FP and other reproductive health services as one of the strategies to empower Ethiopian women ⁽⁵²⁾. In 2003, the government of Ethiopia launched the Health Extension Program (HEP) which was an innovative approach to accelerate the expansion of primary health care coverage and to ensure equitable access to health services ^(53, 54). Under this program, Health Extension Workers (HEWs) were assigned as salaried government employees at *kebele* (the smallest administration unit in Ethiopia) level. HEWs spent 75% of their time visiting families in their homes and performing outreach activities in the community ^(55, 56). Although the HEP was initially implemented in rural areas, in 2006, it was expanded further to be provide tailored services to pastoralist communities and in 2010 to urban communities ⁽⁵⁷⁾. In 2006, the Ministry of Health developed the National Reproductive Health Strategy (2006-2015) and this national document identified FP services as one of the six priority areas ⁽⁵⁸⁾. During this period, the Ministry of Health also revised the national FP guidelines, which was initially developed in 1996, with the aim of expanding and improving the quality of FP services ⁽⁴⁷⁾. More recently, the revised National Reproductive Health Strategy (2016-2020) ⁽⁵⁹⁾ and the Health Sector Transformation Plan (2016-2020) ⁽⁵⁰⁾ sought to increase

³IPPF is an international charity organisation founded by eight national family planning associations in 1952. Its mission is to improve the quality of life of individuals by providing and campaigning for sexual and reproductive health and rights (SRHR) through advocacy and services, especially for poor and vulnerable people.

the CPR to 55% by 2020 and reduce the unmet need for FP to 10%. The government has also planned to expand the choices of FP methods at the services delivery points in that all facilities providing FP services would have at least five modern FP methods, which includes both short and long acting FP methods.

In Ethiopia, modern FP services are available through community and facility based approaches. Modern FP methods include the oral contraceptive pill, IUD, injectables, implants, male and female condoms, Lactational Amenorrhea Method (LAM), emergency contraception, female and male sterilisation, and standard day method ^(6, 24). Modern FP methods are provided both in public and private facilities. According to the Ethiopian Services Provision Assessment Plus (ESPA+) report in 2015, about 99% of health facilities excluding health posts, and 79% of health posts offer FP services at least five days per week ⁽⁶⁰⁾.

In spite of the success of Ethiopia in terms of increasing rates of contraceptive use in the last three decades (a CPR increase from 5% in 1990 to 35% in 2016 and total fertility rate fall from 7.0 in 1990 to 4.6 in 2016) ^(6, 61), studies have shown that there are still high rates of unintended pregnancies ⁽⁶²⁻⁶⁴⁾. The distribution of contraceptive utilisation is not uniform across Ethiopia, varying from region to region. In Addis Ababa, the prevalence rate is about 50% but is only 1% in Somali and 12% in Afar regions. The difference observed is also related to wealth status in which nearly one in two (47%) married women in the richest category were using FP methods compared with one in five (20%) married women in the poorest category were using FP methods ⁽⁶⁾.

2.3 The Ethiopian health care system

In order to understand how FP services are provided in Ethiopia, it is important to understand how the overall health care system operates. The health care system of Ethiopia has three tiers comprising different levels of health facilities ^(1, 59) (Figure 1). The lowest level of the health system is a Primary Health Care Unit (PHCU) which consist of one primary hospital, one health centre, and five satellite health posts. A health post is staffed by two HEWs who are in charge of providing services to village communities, mostly for rural population. A health post serves approximately 1,000 households or 3,000-5,000 people. With a total of 16 health extension packages that cover maternal and child health services, environmental health and sanitation, FP services are one of the core services in the health post. Health centres, the next level up from health posts, are staffed with a health professional team comprising mainly mid-level health professionals. A health centre provides a range of health care

services that include health education for health promotion and disease prevention, curative and rehabilitative services. FP services are widely provided as part of maternal and child health services in these centres. A health centre provides services for about 15,000-25,000 people in rural areas and up to 40,000 people in urban areas. The top level of the PHCU is the primary hospital which is the highest health facility at a *woreda* (district) level and provides services for about 60,000-100,000 people (Figure 1). The hospital has a FP unit providing FP services and provides an inpatient services with a capacity of admitting 25-50 patients at a time (Figure 1).

The secondary level of healthcare delivery is the general hospital which provides various health services to one and half million people (Figure 1). The FP services at general hospitals are part of the Obstetrics and Gynecology Unit and includes FP counselling and provision of various contraceptive commodities. In the third tier (highest level) of the health system there is a specialised hospital which provide services to approximately five million people. These hospitals provide all ranges of FP services in a FP unit under the Obstetrics and Gynecology department ^(1, 55).

In addition to the health services provided through the government, private-for-profit and Non-Governmental Organisation (NGO) sectors are playing a significant role in health service provision in Ethiopia. Through partnerships with the government, they expand the coverage and utilisation of health services ⁽⁶⁵⁾. According to the EDHS 2016 report about 14% of those women who used FP services were accessing FP methods from the private health facilities ⁽⁶⁾.

According to the Ethiopian Health and Health Related Indicators report in 2015, there were 234 public hospitals, 3,586 health centres, 16,447 health posts that are providing various services to the population. In addition, there were about 75 private/NGO hospitals and 15 specialty centres, 420 specialty clinics, 1,387 medium clinics, and 5,388 primary clinics ⁽⁶⁶⁾.

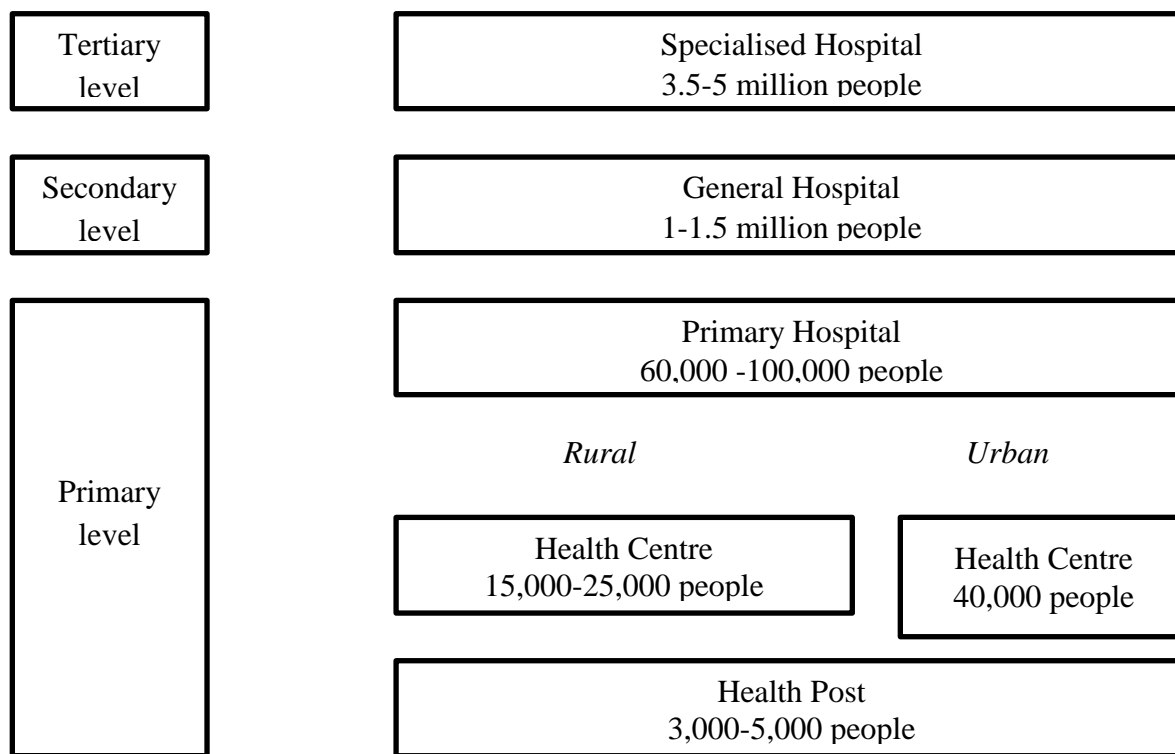


Figure 1 The Ethiopian health care system

Source: Adapted from Federal Ministry of Health (FMOH). Health sector development programme IV (2010/11- 2014/15). Addis Ababa, Ethiopia: FMOH; 2010.

2.4 Family planning services provision in Ethiopia

Most Ethiopian women access FP services from the PHCU facilities ⁽⁶⁾. In the national FP guidelines, the recommended FP services delivery modalities include community-based, facility-based, social marketing and mobile outreach approaches ⁽⁴⁷⁾. The HEWs are assigned at the health post in order to provide preventive and some curative services to the village communities, which includes provision of FP services ^(55, 56). A social marketing strategy is employed to promote, distribute and sell contraceptive methods at an affordable price through governmental and non-governmental subsidies⁽⁴⁷⁾. Also mobile outreach services provide FP services, including the provision of long term contraceptive methods, in rural and hard-to-reach communities in Ethiopia ^(47, 67).

2.5 Determinants of family planning use

Research has identified a number of factors including poor quality of care, that hinder FP use, many of which are relevant in Ethiopia.

Socio-demographic factors: Several studies have shown that FP utilisation is widely determined by socio-demographic factors. These factors included place of residence, marital status, age, religion, ethnic background, number of children, and servical status of children. Use of FP services is affected by where a women lives ⁽⁶⁸⁻⁷¹⁾ and whether they are married/in sexual union or not ⁽⁷²⁻⁷⁴⁾. In terms of women's age, it was found that older women were less likely to use FP services ^(72, 75, 76). The religious background of women were also found to influence their FP use. For example, studies conducted in Ethiopia and Kenya have shown that Muslim women/men were less likely to use FP methods ^(74, 76, 77). Studies have also shown that women's ethnic background influence their contraceptive behaviour ^(78, 79). The number of children that couples had also associated with FP utilisation, with having more number of children were associated with less use of FP services ^(68, 80). On the contrary, a study by Ngome et al. ⁽⁸¹⁾ and Mohammed et al. ⁽⁸⁰⁾ showed that women with one or two children were more likely to use FP services than adolescent women with no children. In addition, survival status of children is found to be associated with FP use in such a way that a woman experiencing a child's death is not likely to use FP ^(75, 82).

Socioeconomic and cultural factors: Education and income levels are known to affect FP service use. Women with higher education levels practising FP in several African and Asian countries ^(68, 69, 83-88). Furthermore, women with higher socioeconomic status ^(69, 74, 89, 90) or who are working ^(71, 75, 91, 92) are more likely to use FP. In some studies, the fertility norms of the community and expectations around family size were associated with women's use of FP ^(93, 94). For example, in some communities there is strong social pressure to prove couple's fertility as soon as possible after marriage and a societal norm towards son preference ⁽⁹⁵⁾ which reduces their likelihood of using FP. Perceived fear of infertility due to side effects of contraceptive methods ⁽⁹⁶⁾ and other potential health consequences are also associated with low contraceptive use ⁽⁹⁷⁾.

Male partner's involvement and women's decision making power: It has been shown that when women are able to make decisions on FP issues or when they receive full support from their partner, they are more likely to use FP ^(98, 99). Other studies also suggested that discussion of FP issues with one's partner is associated with FP use ^(80, 83, 100-102). Women's decision making power in visiting health facilities to obtain health services including FP services affect their FP use ^(95, 103). Another study also showed that those women who experienced intimate partner violence in their marital relationship had negatively influenced their FP use ⁽¹⁰⁴⁾. It has also been found that, in relation to that women's FP use was related to their husband's positive attitude towards FP methods. A mixed methods study conducted

in Ethiopia showed that women discontinued FP use when their husbands discovered they were using FP methods due to their husbands' disapproval of contraception in that husbands associated their partners' use with infidelity to the relationship ⁽³⁰⁾.

Availability and Accessibility: Another variables that do affect FP use are access and availability to FP methods. The number of available contraceptive methods ⁽¹⁰⁵⁻¹⁰⁷⁾ and the continued supply of FP methods ⁽⁸³⁾ are also linked with FP utilisation. Women's limited financial resources to cover transportation to travel to a health facilities that provide FP services are also factors that hinder women in using FP methods ⁽⁹⁵⁾. The presence of favourable opening hours in the clinic and distance to the clinic are associated with FP utilisation in that women who can access to health facilities within walking distance are more likely to use their services ^(69, 83, 85, 107-109).

FP information exposure and perception on FP methods: Media exposure to FP information can also enhance contraceptive use by creating demand for services and promoting behavioural change ^(74, 87, 110, 111). Knowledge of modern contraceptive methods has been cited as one of the major factor associated with for the contraception use ^(73, 112, 113). Women perception about FP methods in that when they perceive FP methods would result a health impact, it was influenced women's FP use ⁽¹¹⁴⁾. For example, a study conducted in Malawi showed that women's do not use FP methods due to their perception in that use of contraceptive methods cause prolonged menstruation, weight gain or loss, impotence and genital sores in men, and subsequent infertility ⁽¹¹⁵⁾. Another study conducted in Ethiopia has shown that FP use was influenced by various misconceptions about the contraceptive methods ⁽⁷³⁾. In this regard, this study reported that women considered "menstruation as a sign of being healthy" and at times when a menses flow decreases or disappears because of their use of FP methods, it means that "the dirty blood would accumulate and can cause cancer" ^{(73)P6}.

Health service factors: Women's use of maternal health services including antenatal, postnatal, and institutional delivery services were associated with FP use. Those women who receive maternal care during antenatal and postnatal period are more likely to practice modern contraception following childbirth ⁽¹¹⁶⁻¹²¹⁾. Factors related to a health provider's behaviour have been found to be negatively associated with contraceptive use. Provider's bias in preferring women to use certain FP methods and age restrictions for the use of some methods have found to impede women's FP use ^(122, 123). Moreover, those women having bad experiences in their previous encounter at FP clinics such as long waiting times or getting unsupportive providers, they are less likely to practise FP later on ⁽¹²⁴⁾.

Quality of care in FP services: The provision of good quality of care in FP services has been shown to positively affect FP services use. A study in Peru showed that good quality of care in FP services contributed to improving overall contraceptive practice ⁽¹²⁵⁾. An Egyptian study found that service quality is an important determinant of Intrauterine Device (IUD) use ^(38, 126). A systematic review that included randomised control trial studies also suggested good quality of care in terms of providing enhanced counselling and provision of health information improved adherence to, or continuation of, hormonal contraceptives ⁽¹²⁷⁾. Analysis of data from LMIC including Ethiopia, Uganda, Burkina Faso, and Kenya showed that, although variations were observed by type of facility, quality of care in FP services is an important factor affecting FP use ⁽¹²⁸⁾. A range of other studies conducted in different LMIC such as Kenya ⁽¹²⁹⁾, Tanzania ⁽¹³⁰⁾, and Nepal ⁽¹³¹⁾, and the Philippines ⁽¹³²⁾ showed that good quality of care in FP services has positively influenced FP utilisation.

2.6 Why quality of care in FP services is important

As described above in showing the factors affecting FP use, a number of inter-related factors interplay in determining FP use. The sociodemographic, socioeconomic and cultural, and access factors may influence women's motivation for FP use and generally referred as "demand factors". These factors can also potentially prevent those motivated women in making contact with the FP services provision facilities ("reaches the door of the health facility"). However, once these couples reach the health facility to receive FP services ("inside the health facility"), the quality of care is an important "supply factor" affecting FP use ^(7, 133).

The quality of care provided in FP service delivery can impact FP use in two ways. Firstly, when clients receive a good quality of care at their first visit, they are more likely to remain in the FP program ⁽³⁷⁾. Secondly, when FP clients do receive a good quality of care in their first encounter at the a FP clinic, they are likely to spread positive information in the community and may motivate other non-contraceptive user women to make decision in adopting FP methods and accessing FP services ⁽⁷⁾. On the other hand, the opposite can also happen, where dissatisfied clients share their negative experiences with others and are less likely to begin or continue use of FP and FP services ⁽⁹⁶⁾. Good quality of care can also result in positive outcomes as clients' satisfaction, increased awareness and longer use of contraceptives ^(37, 134). In a study that included 15 countries, it was found that 7% to 27% of women ceased to practice contraception within a year of adoption due to quality of care related reasons such as a desire for a more effective methods, side effects, and health concerns ⁽³⁵⁾. Figure 2 shows effect of

quality of care in FP services on FP use and subsequent fertility reduction. Quality of care became a focus in FP and reproductive health programs during the 1980s and 1990s ^(16, 135, 136).

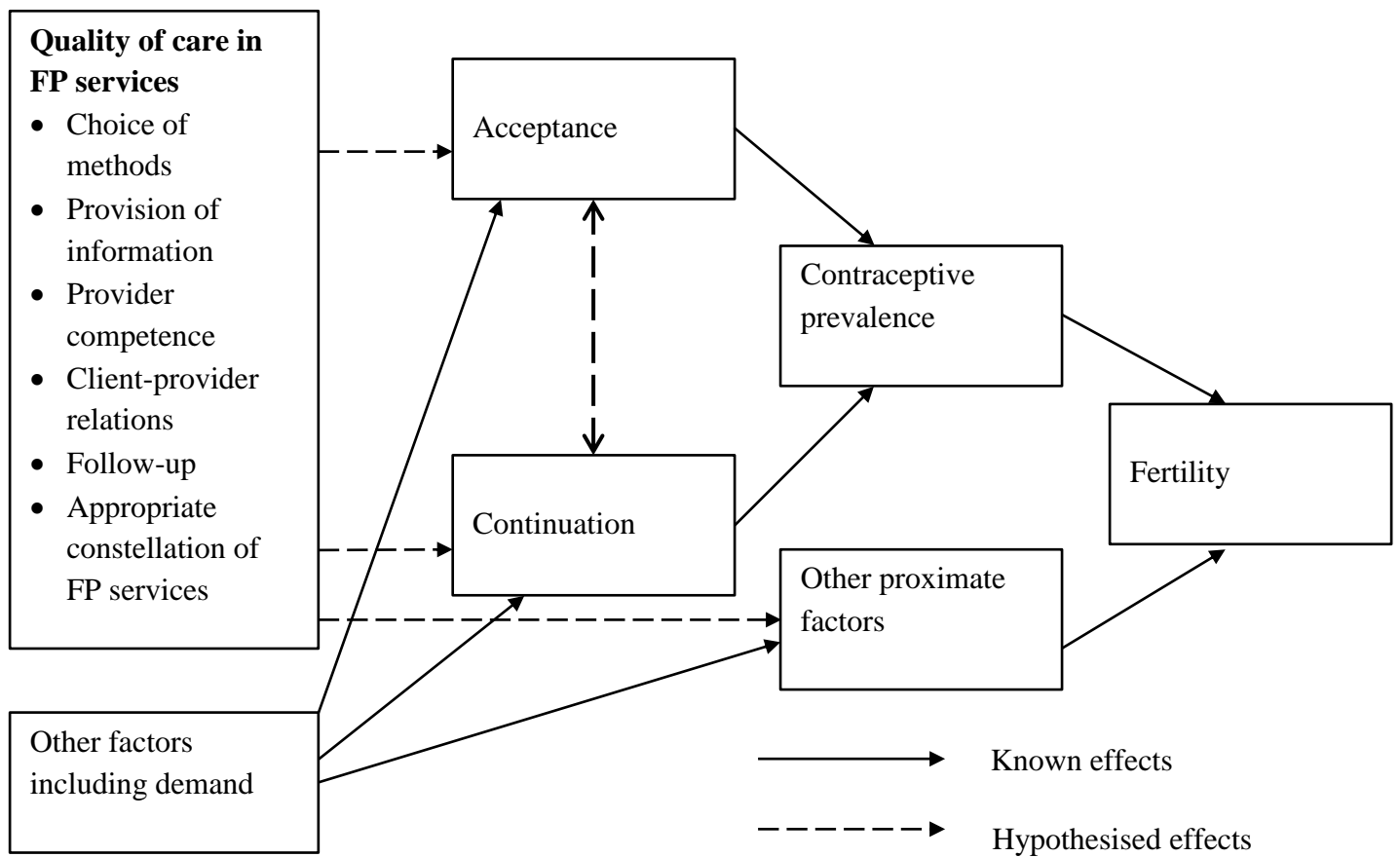


Figure 2 Schematic presentation of the link between quality of care in FP services and FP use and fertility

Source: Adapted from Jain AK. Fertility reduction and the quality of family planning services. *Stud Fam Plann.* 1989;20 (1):1-16

2.7 Definition and conceptualisation of quality of care

Quality has been a difficult concept to define and measure. Its difficulty is attributed to its subjective nature and intangible characteristics ⁽¹³⁷⁾. It is particularly more difficult in the healthcare sector due to the distinct nature of the healthcare industry in terms of its intangibility, heterogeneity, and the existence of many participants with different interests in the healthcare delivery ⁽¹³⁸⁻¹⁴¹⁾. In a generic approach, quality is defined as excellence ⁽¹⁴²⁾, expectations or goals which have been met ⁽¹⁴³⁾, ‘zero defects’ ⁽¹⁴⁴⁾ or fitness for purpose ⁽¹⁴⁵⁾. However, due to that generic definitions are not easy to operationalise and lack of sensitivity and specificity for generalisation, a disaggregated approach that recognises quality as a complex and multidimensional concept was replaced by different scholars ⁽¹⁴⁶⁻¹⁴⁹⁾. Donabedian defined quality of care as “the application of medical science and technology in a manner that maximizes its benefits to health without correspondingly increasing the risk” ^{(148)p5}. Ovreteit defined quality of care as the “provision of care that exceeds patient expectations and achieves the highest possible clinical outcome with the resources available” ⁽¹⁵⁰⁾. The US Institute of Medicine (IOM) defines quality of care “degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” ⁽¹⁵¹⁾.

2.8 Frameworks to inform assessment of the quality of care in FP services and its determinants

As can be described above, considering the complexity of “quality”, in the last three decades, a wide variety of models or frameworks developed to conceptualise and measure quality of health care including FP services ^(152, 153). While several frameworks could be available in literature, I have discussed below the most commonly used models or frameworks used in measuring the quality of care in FP services. I have also presented the most common tools used in the assessment of quality of care in FP services.

2.8.1 The right to the highest attainable state of health that are available, accessible, acceptable, and good quality (AAAQ)

In 1996, the International Covenant on Economic, Social and Cultural Rights, proclaimed that men and women have the right to health. Later in the year 2010, in an attempt to define the right-based FP services, the United Nations (UN) Committee on Economic, Social and Cultural Rights (UNCESCR) issued General Comment 14 on the Right to Health, which defined the right to the highest attainable state of health as having services that are available, accessible, acceptable, and good quality (known as

AAAQ)⁽¹⁵⁴⁾. In 2016, General Comment 22 defined the right to sexual and reproductive health (SRH), also drawing on AAAQ. In the AAAAQ framework, its quality component emphasises that health facilities, goods, and services must be scientifically and medically appropriate and of good quality. This implies the need for quality to largely focus on technical, clinical, or medical aspect of services⁽¹⁵⁴⁾. The revised General Comment 22 on the right to SRH also encompass quality as evidence-based practices that are scientifically and medically appropriate⁽¹⁵⁵⁾.

2.8.2 Donabedian model

As shown in 2.7 above, Avian Donabedian defined quality of care as “the application of medical science and technology in a manner that maximises the benefits to health without correspondingly increasing the risk”^{(136)P5}. His model was developed considering quality of care could involve several formulations depending on where the healthcare system is located. It was intended to assess quality of care in various health services including FP. He identified quality of care as a linear model comprising three components — structure, process, and outcome. The structure dimension includes all factors affecting the conditions of care-giving such as budget, staff training, reward systems, payment methods, facilities and equipment. The process dimension focuses on what is happening “inside the door” where the provider communicates with the client. The last component of quality is the outcome following provider and client interaction in the clinic. This includes the client’s satisfaction, change in knowledge and behaviour, and other subsequent long-term aspects and in the case of FP, this would include such outcomes as a reduction in fertility and child and maternal mortality. These three parts are interlinked as good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome^(136, 148).

2.8.3 Bruce-Jain Framework

Based on the Donabedian model, in 1990, Bruce and Jain developed a framework that identified the six elements for quality of care in FP programs that “reflect the six aspects of services that clients experience as critical”. These six elements form the Bruce-Jain Framework for assessing quality of care in FP services and are mostly focusing to what Donabedian outlines as a process aspects of quality of care. The elements are: (i) choice of methods, (ii) information given to clients, (iii) technical competence of providers, (iv) interpersonal relations, (v) follow-up mechanisms, and (vi) appropriate constellation of services⁽¹³⁵⁾. The ‘Choice of methods’ refers to having a range of contraceptive methods offered to the clients considering their diverse needs influenced by age, gender, contraceptive

intention, lactation status, health profile, wealth status. ‘Information given to clients’ refers to the information provided to clients during service interactions that enables clients to choose and use contraception with competence and satisfaction. This includes information about a range of available contraceptive methods, method contraindications, method advantages and disadvantages, how to use selected method, potential side effects, and continuing care from service providers. The ‘Technical competence’ aspect involves providers’ clinical techniques, use of protocols, and implementing aseptic procedures in performing clinical conditions. ‘Interpersonal relations’ refer to the degree of empathy, trust, assurance of confidentiality, and sensitivity of providers to meet the client’s needs and expectations. The ‘Follow-up mechanism’ covers how service providers encourage clients on the continuity of use through well-informed mechanisms such as community mass media, client-based follow-up mechanisms (return appointments), or home visits. The last component, ‘Appropriate constellation of services’, refers to the extent to which FP services are situated in convenient and accessible locations. This includes their accessibility (distance, timing, and cost) and the level of integration with other reproductive and maternal health services. In the last three decades, this framework continues to be a basis for defining the quality of care in FP services in the LMIC world (156).

2.8.4 Revised framework for FP quality of care in the context of rights-based family planning

In 2018, Jain and Hardee (157) published a commentary on the widely used quality of care developed by Bruce and Jain back in 1990s. Based on the comparison of the Bruce-Jain framework with the definitions of quality in the rights-based frameworks, prior personal experience, and observation of the continued challenges in measuring quality, Jain and Hardee made suggestions on revising the existing Bruce-Jain framework. Overall, the revised framework identified/re-defined five components such as i) choices of methods, ii) appropriate constellation of services, iii) technical competence, iv) information exchange v) interpersonal relations (157). No change is suggested for the elements of ‘choice of methods’ and ‘appropriate constellation of services’. However, ‘choice of methods’ is recommended to consider not only the availability of FP commodities but also the availability of equipment and a competent provider to provide that method. The element of ‘technical competence’ in the original framework is broadened to include competency in providing the chosen method, insertion and removal of clinical methods safely and compliance with infection prevention practices. This component also involves the need for provider to appropriate interact with clients (information exchange and

interpersonal relations). The element of ‘information given to clients’ has now replaced by ‘information exchange’. Information exchange consists information solicitation from clients to ensure selection of appropriate method satisfy clients’ needs and circumstances. It also consists provision of information to clients to ensure effective contraceptive use and continuity of care. The fifth element is ‘interpersonal relations’ which includes treating clients with dignity and respect and ensuring their privacy and confidentiality.

2.8.5 The World Health Organization (WHO) framework for quality of care

Another framework was developed by the World Health Organization (WHO) which emphasises the health system perspective and proposes a measurement approach for a general quality of care ⁽¹⁵⁸⁾. This framework recommends that quality of care should be viewed in terms of six domains — effective, efficient, accessible, acceptable, equitable, and safe. The term ‘effective’ implies that individuals and communities receive evidence-based health care and this results in improved health outcomes. An ‘efficient’ health care refers to the provision of health services in a manner that maximises resource use and avoids waste. The term ‘accessible’ denotes making health care accessible in terms of time, geography, and appropriate skill and resources. The ‘acceptable’ component means that delivering health care which takes into account the preferences and aspirations of individual users and the cultures of their communities. Moreover, ‘equitable’ denotes delivering health care which does not vary in quality because of various client characteristics such as gender, ethnicity, geographical location, or socioeconomic status. The sixth component in this aspect is the ‘safety’ issue which implies delivering health care which minimises risks and harm to service users.

2.8.6 The International Planned Parenthood Federation (IPPF) quality of care framework

The IPPF Quality of Care Framework ⁽¹⁵⁹⁾ was developed based on existing frameworks such as the Bruce-Jain framework, works of multilateral organisations such as UNFPA and the WHO, and service delivery organisations such as Marie Stopes International (MSI) and the Futures Group; consultation with experts working in the area of quality of care. As a result, there appears to be a number of overlaps with the quality of care frameworks suggested by Donabedian, Bruce-Jain, and the WHO. The IPPF framework identified seven essential elements. These include i) safe and confidential environment; ii) comprehensive integrated services; iii) well-managed services; iv) highly skilled and respectful personnel; v) secured supply chain management system; vi) adequate financial resources; and vii) effective communication and feedback systems. The ‘safe and confidential environment’ emphasises

the necessity of creating safe spaces in service delivery areas in terms of the facility's set-up and structure, easily accessibility including for people with disability, safety of the environment for both providers and clients, and ensuring privacy and confidentiality. The 'comprehensive integrated services' recognises the diverse needs of clients that included counselling services, contraception, safe abortion services, treatment for sexual transmitted infections and HIV, gynecologic services, and prenatal services. The 'well-managed services' described that for a clients' to receive the highest quality services that are compatible with their needs and demands, there must be a combination of professional competency with outstanding personal attention and care. Related to the previous element, the 'highly skilled and respectful personnel' component suggests that service delivery facilities must be equipped with an adequate number of staff required to provide the available services. The 'secured supply chain management system' component of the quality of care framework requires service delivery points to employ an effective supply chain to ensure a continuous supply of sufficient quantities (a range of products necessary to meet the diverse needs of clients) of high quality FP commodities. The 'adequate financial system' component is also focusing on ensuring quality services for clients in terms of availing well-funded services which will help to effectively deliver high quality services that have the right team, with the right training, a good infrastructure and the right equipment and commodities. The final component of the IPPF quality of care framework involved 'effective communication and feedback systems'. The component requires service delivery facilities to be client-focused and have well-functioning monitoring and evaluation systems which can help clients and community to actively engage in ensuring quality of care and its continuity.

In conclusion, the frameworks used in measuring quality of care in health services including FP services, indicate that a range of factors are important in achieving quality of care. While variations exist between these frameworks, there is some overlap. For example, two of the Bruce-Jain components — choice of methods, appropriate constellation of services — fit to the structural aspects in the Donabedian model, while the other four components of the Bruce-Jain framework — information given to clients, technical competence of providers, interpersonal relations, follow-up mechanisms — match the process aspects of the Donabedian Model ^(135, 136). Similarly, while the accessible component of the WHO framework related to the constellation of services in the Bruce-Jain framework, the safety and effective component of the WHO framework relate to the outcome component Donabedian Model ^(135, 136, 158). The WHO framework is different from these two frameworks in that its main domain is the health care system, not individual patients/clients ⁽¹⁵⁸⁾. Moreover, most of the IPPF quality of care components which include safe and confidential

environment, comprehensive integrated services, secured supply chain management system are related to the structural aspects of the Donabedian model ^(136, 159). It can also be noted that the IPPF components of quality of care which focuses on well-managed services, highly skilled and respectful personnel, effective communication and feedback systems partly reflects on the Bruce-Jain frameworks of quality of care ^(135, 159). It has also been evident that none of the available frameworks were free from limitations. For example, the Donabedian model has been critiqued for excluding some contextual factors tied to healthcare providers and client characteristics ⁽¹⁶⁰⁾. Similarly, as Jain and Hardee indicated, the Bruce-Jain framework did not explicitly mention safety of contraceptive technologies and compliance with infection prevention practices ⁽¹⁵⁷⁾. Moreover, the Bruce-Jain framework is mostly focussed on the client perspective. As a result, in 1993, the IPPF added health providers perspectives by establishing the tools required for providers to deliver quality of care for their clients ⁽¹⁶¹⁾. Providers' needs include training, information, supplies, guidance, back-up, respect, encouragement, feedback, and self expression.

2.9 Client satisfaction as an outcome measure of quality of care

In order to identify the factors affecting quality of care and track the quality improvement programs, outcome measures in terms of what has been achieved in the provision of services delivery are important. In the provision of FP services, outcome is usually related to client satisfaction, change in contraceptive behaviour, and reduction in fertility ⁽¹³⁶⁾. However, measuring some of these outcomes are complex, time consuming, and expensive. To address this challenge, client satisfaction, a simple and more practical outcome measure, and so can serve as a good indicator and outcome measure in resource limited countries ⁽⁹⁶⁾. Client satisfaction has been found as a key determinant of uptake and continued use of family planning services ^(35, 162). Measuring client satisfaction not only evaluates certain aspects of quality of care but also indicates better prospects for sustainability in terms of recruiting new users and maintaining those clients who are already in the service ^(35, 162, 163). Client satisfaction is a highly relevant signal of quality of care as it reflect consumers' perceptions of the standards achieved, their evaluation of the "goodness" of care, and the success of providers at meeting client values and expectations ^(148, 164, 165). Evidence has also shown that good quality of healthcare positively correlates with patient satisfaction ⁽¹⁶⁶⁾. As such, client satisfaction is widely used for measuring quality of care in FP services and other health services and has been used in a number of studies in low and middle income country settings aimed at determining the factors associated with quality of care in family planning services ⁽¹⁶⁷⁻¹⁷¹⁾. The Ethiopia health care quality strategy has also

included client/patient satisfaction as one of the key indicators for the assessment of quality of care in health care services ⁽⁵⁰⁾. However, the limitations of focusing on client satisfaction are also reported in the literature, including its personal and subjective nature of the evaluation means that clients' views about given standards of care can vary. Additionally, clients' expression of satisfaction may reflect their own knowledge and expectations, rather than the quality of care provided ⁽¹⁶⁴⁾.

2.10 Tools used to assess quality of care in FP services and its determinants

As noted above, while overlaps exist between frameworks for measuring FP services, there is no standardised tool to assess the quality of FP services and its determinant factors. In this regard, a review of literature aimed to identify quality assessment tools for FP services in LMIC showed that there were more than 20 diverse tools that have been developed and used to measure quality of care in FP services ⁽¹⁷²⁾. Of these identified tools, some of the widely used tools are listed below.

- 1) The Situation Analysis tool: Based on the concepts of the Bruce-Jain framework, in 1989, the Population Council developed this tool to provide a comprehensive view of quality of care including the strengths and weaknesses of a program ⁽¹⁷³⁾. This tool has been widely used in 1990s in the assessment of the overall state of FP program quality in more than 40 countries throughout the world ^(34, 125). However, it was highlighted that a situational analysis approach was difficult to apply in locations where there is low contraceptive use. This is due to the challenge in getting adequate numbers of client-provider interactions for observation ⁽¹⁷⁴⁾.
- 2) The Quick Investigation for Quality (QIQ) tool developed by the Measure Evaluation and uses 25 indicators to “quickly” but thoroughly assess quality of care in FP services every 1-2 years ^(152, 175). The tool uses three data collection methods which included facility audit, provider observation and client exit interviews. Most of these indicators relate more or less to the elements outlined by Bruce ^(176, 177).
- 3) The Services Provision Assessment (SPA) tool developed by the DHS Program, provides a national overview of a health service delivery system ^(175, 178). The DHS program is an international organisation funded by the United States Agency for International Development (USAID) and provides technical assistance in conducting surveys for global understanding of health and population trends in LMIC ⁽¹⁷⁸⁾. The tool uses four different data collection methods including facility inventory, provider interview, client-provider observation, and client exit interview to collect information on the availability of and readiness to provide facility-based health services. The SPA provides comparisons across different service areas, facility types,

regions and countries⁽¹⁷⁹⁾. Such a data collection tool has been utilised in different African countries such as Ethiopia, Kenya, Egypt, Senegal, Namibia, Senegal, Tanzania, and Ghana⁽¹⁷⁸⁾.

- 4) The Service Availability and Readiness Assessment (SARA) tool developed by the WHO, uses rapid data collection and analysis methods to assess health facility service delivery⁽¹⁸⁰⁾. A standard set of core questions that address facility type, managing authority, national service guidelines, staffing categories and national medicines policies allow for comparisons across and within countries.
- 5) Performance Monitoring and Accountability 2020 (PMA2020) tool was developed recently in relation to FP2020⁽¹⁸¹⁾. This tool uses standardised questionnaires, modified to the local context, to monitor nationally representative FP indicators that support the FP2020 goals. PMA2020 collects, analyses and disseminates data on access, quality, equity, demand and utilisation. The PMA2020 is currently implemented in 11 countries which include Ethiopia.

2.11 Gaps in the empirical evidence on the factors affecting quality of care in FP services in Ethiopia

This chapter presented the literature related to global and national contexts of FP services, determinant of FP utilisation, how quality of care is linked with FP services utilisation, and the most common models and measurement tools used to assess the quality of care in FP services. It has shown that quality of care in FP services is a key determinant of FP use and increasing the utilisation of FP services among women in Ethiopia is critical to lowering high levels of maternal and child mortality, improving women's empowerment.

However, scoping of the literature in 2015 and 2016 identified few studies (quantitative and/or qualitative, systematic review or primary) assessing the determinants of quality of care in FP services in African countries^(169, 170, 182-184). For Ethiopia, only five studies⁽¹⁸⁴⁻¹⁸⁸⁾, two being descriptive, were identified. All of the five studies conducted in Ethiopia were collecting primary data.

Loha et al.⁽¹⁸⁷⁾ performed a descriptive cross-sectional study in eight health centres (six public and two NGO) in 2003. The objective of the study was to assess the quality of care in FP services in southwest Ethiopia, with a focus on the six elements of quality of care in the Bruce-Jain framework. The study also found that while a majority of facilities included in the study did not have copies of guidelines, all of the health facilities reported that they received no supervision from district and regional health

managers in the previous three months. It was also found that as there were no sufficient ranges of FP methods available in the facilities, clients were not provided with a method of their choice.

Fantahun ⁽¹⁸⁶⁾ conducted a descriptive cross-sectional study in six health facilities (five public and one NGO) in 2002 with the objective of assessing the quality of FP service provision in terms of clients' perspectives, technical competence, interpersonal relations of providers and resources for the provision of effective FP services in Northwest Ethiopia. The study found that two-thirds of the clients reported that there was inadequate privacy in consultations. The study also reported that as the guidelines indicated that FP service provision should consider certain circumstances such as clients' age, marital status, and menstrual status, husband's consent for partner's FP use, it restricted their choice of FP methods. The study also reported deficiencies in the provision of information and communication with clients, infection prevention procedures, and adequacy and cleanliness of health facilities.

Kebede ⁽¹⁸⁵⁾ conducted a descriptive cross-sectional community and facility-based study in 2004 with the objective of assessing the quality of family planning services in Dembia district, Northwest Ethiopia. Kebede ⁽¹⁸⁵⁾ found that health facilities provided few ranges of FP methods and clients were provided with insufficient information about these methods. The study also reported that more than 40% of providers in the facility did not receive training on FP.

Tafese et al. ⁽¹⁸⁴⁾ and Argago et al. ⁽¹⁸⁸⁾ conducted cross-sectional studies in 2011 and 2015, respectively. Tafese et al. ⁽¹⁸⁴⁾ included five governmental health centres and found that clients' perception on adequacy of information provision, ease of finding the location of the facility, short waiting times, and clients' higher educational status were associated with quality of care as measured by client satisfaction. Argago et al. ⁽¹⁸⁸⁾ also included public health facilities in an urban areas in southern Ethiopia and found that client satisfaction was positively associated with short waiting time, assurance of client's privacy during examinations and procedures, information provision on how to use FP method, client's having previous history of unintended pregnancy, clients who visited facilities for the second or more times users, and facilities convenient opening hours.

Overall, the existing studies pointed to quality of FP services being influenced by the process of care provision in terms of information process, clients' waiting time, assurance of privacy, and infection prevention procedures. Additionally, structural aspects of quality of care including the available contraceptive methods, opening hours of the facilities were compromised.

However, this evidence base has the following limitation. While three studies were conducted more than a decade ago, they were limited in that they simply describe some aspects of quality of care in FP services based on studies conducted in a few health facilities, which were mostly public facilities. No study has systematically investigated the facility-level factors in Ethiopia. While health providers are a key role player in the provision of FP services, no study has explored their experiences on the factors affecting quality of care. There is limited evidence available to inform an understanding of the factors determining quality of services in FP in Ethiopia, and the importance of ensuring quality of services to support maternal and child health, motivated the research, presented in this thesis.

2.11.1 Research aims

The overall aim of the thesis was to contribute to the evidence base informing understanding of the factors determining quality of care in FP services in Ethiopia and the differences between private and public health facilities in the structural aspects of FP service quality and the characteristics of clients. To achieve this aim, four studies were designed to address specific objectives as follows (Table 1):

Table 1 Studies in the thesis and their objectives

Study	Objective
Factors determining quality of care in family planning services in Africa: a systematic review of mixed evidence	<ul style="list-style-type: none">• To identify and synthesise quantitative and qualitative evidence to understand factors determining the quality of care in family planning services in Africa.
Client and facility level determinants of quality of care in family planning services in Ethiopia: Multilevel modelling	<ul style="list-style-type: none">• To identify the client and facility-level determinants of quality of care in FP services in Ethiopia.
Quality and use of family planning services in primary care facilities in Ethiopia. How do public and private facilities compare?	<ul style="list-style-type: none">• To compare the structural aspects of quality of care in FP services between public and private primary health care unit facilities• To investigate the characteristics of women who accessed FP services in private and public health facilities.
Healthcare providers perspectives on use of family planning guideline in family planning services in Amhara Region, Ethiopia: A qualitative study	<ul style="list-style-type: none">• To explore health providers' views on the use of FP guideline in FP services in Amhara Region, Ethiopia, focusing on barriers and facilitators.

Chapter 3

Study setting, design, and methods

The aims of this thesis, a review of the literature, and research justification were presented in Chapter 2. This chapter describes the study setting, design and rationale for the design used, the key data sources used and their limitations, and ethical approvals, to answer the aims specific to each of the four studies in this thesis.

3.1 Study setting

The primary studies conducted for this thesis were undertaken in Ethiopia, a country located in the horn of Africa (see Figure 3). The country is divided into 11 administrative regions, nine regional state (which included Amhara region) and two city administrations (Figure 3). Each region is then divided into *Woredas* (districts) and each district is sub-divided into *kebeles* (the smallest administrative unit comprising 3000-5000 residents) (Figure 3). The two quantitative studies used national level data, and the qualitative study was undertaken in one of the administrative regions, the Amhara region (Figure 3). The detailed descriptions of the Ethiopian health care system was provided in Chapter 2, section 2.3. The Amhara region is the second largest of the 11 administrative regions in Ethiopia, located in Northern Ethiopia, with a population of approximately 21 million population ⁽¹⁸⁹⁾. According to the 2016 EDHS, the region has 19 hospitals, 796 health centres, and 3267 health posts ⁽¹⁹⁰⁾. FP services are provided in all the health facilities in this region. In the region, 47% of married women were using FP method, which is higher than the national average (35%)⁽⁶⁾.

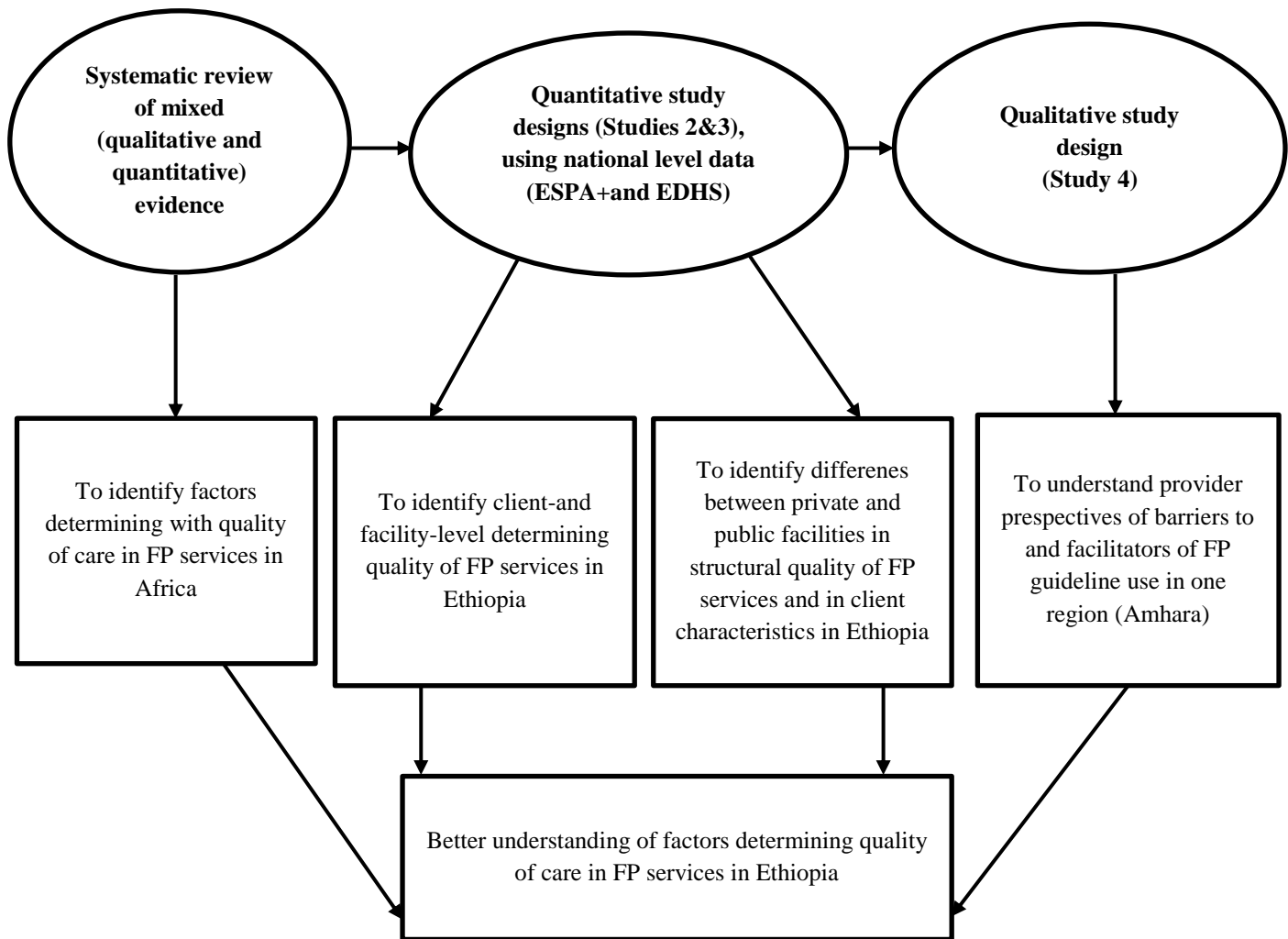


Figure 3 Maps of the study area where studies in the thesis were conducted

Source: Adapted from Google maps

3.2 Study designs and methods used in the research

This thesis employed a mix of study designs, informed by the aims of each study. More specifically, a systematic review was used for study 1, quantitative study designs for studies 2 and 3, and qualitative design for study 4 (Figure 4).



*QoC – Quality of Care, FP – FP

Figure 4 Overview of the study design, aims, and purpose

3.2.1 The systematic review

In order to understand the factors affecting quality of care in FP services in Ethiopia, it was firstly important to examine the available evidence in a similar context. Assessing the available studies conducted in Africa was considered for two reasons. First, despite there were high rates of fertility in most African countries, the rate of FP use is one of the lowest in the world ^(43, 191). Second, most

countries in this continent are resource-limited and major recipient of bilateral and multilateral support for their health services including FP ^(192, 193). Therefore, assessing the available studies that investigated the factors affecting quality of care in FP services in African countries helped to inform the study design and identify the potential variables to be included in the secondary data analysis of survey data obtained from the Ethiopian government. The details of the methodology of the systematic review, which followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guidelines ⁽¹⁹⁴⁾ were pre-specified in a published protocol, presented in Appendix A. The methods are also summarised in the systematic review publication, presented in Chapter 4.

3.2.2 Quantitative studies

As discussed in Chapter 2, a number of data collection tools have been employed for the assessment of quality of care in health services including FP services. Among the tools that have been widely implemented in assessing quality of care in FP services in LMIC in more than two decades, the SPA survey tools have been widely utilised. While the first SPA surveys took place in Guatemala, Kenya, and Bangladesh in the late 1990s, since then more than 22 LMIC ⁽¹⁹⁵⁾ have implemented SPA surveys. Since then the SPA surveys have been expanded to include other LMIC. Moreover, the surveys are repeated in time intervals of 1-5 years in some countries for comparing the overtime changes in the availability, readiness, and quality of health services in a particular country. In this regard, three rounds of surveys had been conducted in Kenya ⁽¹⁹⁶⁾ and two rounds of surveys in Malawi ⁽¹⁹⁷⁾. Using the SPA tools, the ESPA+ survey was conducted by the Ethiopian Public Health Institute (EPHI) in collaboration with the Federal Ministry of Health (FMOH) of Ethiopia and other stakeholders such as the ICF International.

Study 2 and 3 in this thesis used ESPA+ 2014 survey data. Besides this, also used in Study 3 was the Ethiopian Demographic and Health Survey data collected in 2016 (EDHS 2016) to overcome the limitation of the ESPA+ 2014 survey data in providing women's sociodemographic characteristics. While the ESPA+ 2014 and EDHS 2016 surveys are described below, the methods, analysis and results for Study 2 and 3 are described in detail in the published and under review articles presented in Chapters 5 and 6. In this chapter, the focus is on describing the data collection processes, the recruitment processes, the sampling procedure employed in both surveys, and the limitations of these surveys.

3.2.2.1 The Ethiopian Services Provision Assessment + 2014 (ESPA+ 2014)

While some information about the ESPA+ 2014 is presented in Chapter 5, this section focuses the data collection, survey questionnaires and data quality assurance procedure implemented by the EPHI during the data collection and entry. The range of services that the ESPA+ 2014 survey covered four high-priority health services provided in Ethiopian context. These services included child health services, FP services, maternal health services, and services for specific infectious diseases such as Sexually Transmitted Infections (STIs), tuberculosis, and HIV/AIDS services, and malaria. The survey assessed whether components considered essential for the provision of quality of care were available and properly functioning. In particular, the ESPA+ 2014 survey provided data on infrastructure, resources, and support systems. Infrastructure included availability of basic amenities such as water and electricity sources, functioning client toilet/latrines, environment and practices to ensure infection control (appropriate waste disposal, sterilisation, and processing of equipment for reuse). Information on the support systems of health facilities includes availability of service guidelines/protocols, management and supervision practices, staff training. Additionally, the FP component of the ESPA+ 2014 survey collected data related to process followed in counselling and providing contraceptive methods to FP clients, and data on outcome following the FP services provision ⁽⁶⁰⁾.

The survey included hospitals at the highest level of the Ethiopian health system to health posts at the lowest level. The survey collected data from the facility, the client receiving the service and the providers who were provided service to the clients using four standardised questionnaires. ***The facility inventory questionnaire*** was used to collect information on the availability of services including FP. In addition, information on the general state of infrastructure, supplies, medicines, staffing, training, and procedures employed at the facility was collected by the facility inventory questionnaire. The focus was on ascertaining the functional ability of facilities to provide services of acceptable standards. ***The provider interview questionnaire*** collected information on the experience, qualifications, and perceptions of the service delivery environment among those health care providers who delivered FP. ***An observational checklist*** was used to document the extent to which providers applied accepted service delivery and quality standards. ***An exit interview questionnaire*** was used to collect data among the clients whose consultations have been observed. This questionnaire includes questions on the client's understanding of the consultation or examination, recall of instructions received about treatment or preventive measures, and perception of the service delivery environment.

The data collection process took six months, between March and July 2016, and used a team approach comprising a team leader and interviewers. A sample of providers (with a maximum of 15 providers)

providing FP services were invited for interviews. The facility inventory assessment tool was completed by interviewing the most knowledgeable person about the health facility. The questionnaire was initially prepared in English and later translated to three major languages in Ethiopia- *Amarigna, Oromiffa, and Tigrigna*.

To ensure the quality of the data, the EPHI put in place certain processes during the data collection and data entry phases. The data collectors and supervisors of the ESPA+ 2014 survey were health professionals and were trained in the survey implementation and interviewing. They were selected based on their technical skills to assess the quality and procedural correctness of client-provider interactions. The data collectors and providers received three weeks training. The questionnaires were pre-tested to detect possible problems in the flow of the questionnaires, check the length of time required for interviews, and any problems in the translations. Double data entry for questionnaires by the data encoders and verification was conducted. The data were secured and could only be accessed by authorised person. In the thesis, I combined data from three of the four questionnaires – the facility inventory questionnaire, an observational checklist, and an exit interview questionnaire.

3.2.2.2 The Ethiopian Demographic Health Survey 2016 (EDHS 2016)

The EDHS was first conducted in 2000 and a total of four national surveys have been conducted ⁽⁶⁾. The EDHS is a cross-sectional survey conducted every five to six years to measure the demographic and health-related characteristics of the population. The latest EDHS survey was conducted from January to June 2016 and includes a sample of 15,683 women of reproductive age ⁽⁶⁾. A stratified, two-stage cluster sampling procedure was used to recruit the nationally representative sample. The 11 administrative regions found in Ethiopia were initially stratified into urban and rural areas. Each stratum was subdivided into districts (*woredas*), and *woredas* were then subdivided into *kebeles* (the smallest administrative unit in Ethiopia). Finally, each kebele was subdivided into Enumeration Areas (EAs) that served as sampling clusters. A total of 624 EAs were included in EDHS 2011 and 645 EAs were included in EDHS 2016.

The EDHS used five data instrument tools –the Household Questionnaire, the Woman’s Questionnaire, the Man’s Questionnaire, the Biomarker Questionnaire, and the Health Facility Questionnaire. These standardised tools were adapted from the DHS Program’s standard DHS questionnaires, and were customised after discussion with stakeholders to reflect the population and health issues relevant to Ethiopia. While all questionnaires were developed in English, they were translated to and administered

in *Amarigna, Tigrigna, and Oromiffa*. The data used for the thesis was based on the data collected from the Woman's Questionnaire. The quality of EDHS 2016 survey was maximised through pre-testing, provision of training to the data collection staff, and close supervision of data collectors during the field work. All electronic data were transferred to the Central Statistics Agency (CSA) central office in Addis Ababa, where they were stored on a password-protected computer.

3.2.2.3 Limitations of the Ethiopian Services Provision Assessment + 2014 and the Ethiopian Demographic Health Survey 2016

Although SPA survey tools have been used in assessing quality of care in FP services in LMIC, there are a number of methodological concerns raised in the literature⁽¹⁵⁶⁾. These limitations include courtesy bias, the Hawthorne effect, and recall bias. Courtesy bias results when clients feel uncomfortable reporting negative aspects of care in FP services. Courtesy bias may have occurred with the ESPA+ survey as clients may feel uncomfortable in reporting negative aspects of care. As a result, the findings tends to skew results related to client report on their satisfaction in a positive direction of higher perceived quality^(156, 175, 198).

Recall bias in the survey could have also occurred as clients not being able to recall all the information they received during the FP service provision sessions⁽¹⁷⁵⁾. Tumlinson⁽¹⁵⁶⁾ pointed that even at times when providers discuss possible FP methods side effects for the clients during counselling sessions with clients, they may not remember if the information was given to them or they may deliberately omit some of the information they discussed during FP services provision, thinking that it is inappropriate to share what they have been told by providers.

Hawthorne effect also occurred due to the presence of a third party to observe the provider-client interaction. The presence of an observer could impact the providers' behaviour in that she/he may act differently in that they are likely to provide better quality of care than when only provider and client are alone in the room⁽¹⁹⁸⁾.

The other limitation related to the ESPA+ 2014 survey was related to the provider-interview questionnaire. Ideally, all health providers who provided health services including FP services should have been interviewed in the survey. As the ESPA+ 2014 included the World Bank's Service Delivery Indicator (SDI) clinical knowledge assessment module for assessing the health providers' knowledge on common health conditions in Ethiopia, the survey included only a random number of health providers. As a result, it was not possible to link the provider interview questionnaire to the other three

questionnaires in the survey. This meant that the provider-level factors affecting quality of care were not assessed in the analysis using this dataset. The ESPA+ survey also only collected two demographic variables - client's age and educational status. In order to address this gap, data from the EDHS 2016 supplemented the analysis in Study 3. However, it was not possible to link the two survey datasets as they collected data from different samples. The EDHS 2016 was also prone to recall bias as women's responses on the sources of FP methods were based on remembering their past experiences. There was also a possibility of misclassification bias as women might have accessed FP methods from both public and private health facilities.

3.2.3 The qualitative study

In Study 2, two facility-level factors (availability of FP guidelines/protocols and facility's urban location) and four client-level factors (client's age, short waiting times, provision of information on potential side effects of FP methods, and number of history and physical assessment) were found as key factors of quality of care in FP services in Ethiopia. The study also found that more than half of the facilities did not have FP guidelines. While the existing FP guidelines in Ethiopia suggested routine FP clients' health assessment through client's history taking and physical examination ⁽⁴⁷⁾, the number of history and physical assessments performed for clients who received FP services was found to be one of the key determinant factors of quality of care in FP services in Ethiopia. Therefore, it was important to explore why the use of FP guidelines was low in Ethiopia. To address this gap, I conducted a qualitative study to explore the barriers and facilitators of use of FP guidelines in one region in Ethiopia, Amhara region. The Amhara region is the second largest region in Ethiopia. Data were obtained from in-depth interviews with healthcare providers who worked in health facilities providing FP services in two cities-Bahir Dar city and Gondar city- located in Amhara region, Northwest Ethiopia. Although the factors affecting FP guidelines in Amhara region may not represent the factors in other regions, understanding the barriers and facilitators of FP guidelines in FP services in this region may provide some insight for improving quality of care in FP services in Amhara region. To be included in the study, healthcare providers needed to have a minimum of six months of experience in providing FP services in the facility. Data were collected using the local language (Amharic) and the interviews were undertaken between April and June 2017. Study participants were provided with expression of interest forms, information sheet, and consent forms before conducting the interviews (Appendix B). An interview guide developed by the researcher was used to guide the data collection in

the interviews (Appendix B). The details of the qualitative study methodology are described in Chapter 7.

3.3 Ethical approval

Ethical approval for the secondary data analysis of the ESPA+ 2014 dataset was obtained from the Human Research Ethics Committees (HREC) of The University of Adelaide (0000021084) (Appendix C) and the Scientific and Ethical Review Committee (SERC) Ethiopian Public Health Institute (EPHI 6.13/966) (Appendix E2). Following the ethical approvals from the HREC and SERC, a data sharing agreement was signed between the EPHI and the University of Adelaide, to obtain access for the ESPA+ data (Appendix D). Permission was also granted to use the publicly available EDHS data for analysis. The data were not identifiable for either survey.

For the qualitative study, ethical approvals were given from the Human Research Ethics Committees of The University of Adelaide (H-2017-023) (Appendix C) and the Institutional Review Board of the University of Gondar, Ethiopia (O/V/P/CS/05/562/2017) (Appendix C). Moreover, letters of support were also obtained from the Dean's office of the College of Medicine and Health Sciences, Amhara Region Health Research and Technology Transfer, Gondar City Administration Health Department, and Bahir Dar City Administration Health Department (Appendix D) and provided by the managers of the selected health facilities involved in the study. Written informed consents were obtained from the study participants before the start of the interviews (Appendix B). Confidentiality was maintained by interviewing them in a private room where no one can see them and hear what they are talking about during interview. The participants were free to withdraw from the study at any time before, during or after the interviews. All digital recordings obtained from the interviews were destroyed from the recording device once the interviews had been transferred to a password protected computer. The survey data files were entered into a password-protected file on a server with a firewall.

In the following Chapters 4 through to 7, the results of the four studies that comprise this thesis are presented as publications accepted by or under review in various journals.

Chapter 4

Study 1. Factors Determining Quality of Care in Family Planning Services in Africa: A Systematic Review of Mixed Evidence

4.1 Preface

This chapter contains the first of the four articles contributing to this thesis. This article has been published in *PLoS One* journal. With reference to one of the aims of this thesis, *i.e.* to identify and synthesise quantitative and qualitative evidence to understand factors determining the quality of care in family planning services in Africa, this article systematically explored the available quantitative and qualitative literature on factors affecting quality of care in FP services in Africa. The systematic review was needed to identify the factors affecting quality of care in FP services in a broader level, with countries having similar context with Ethiopia, is necessary to assist in identifying the potential variables and confounding factors that may impact quality of care in FP services in Ethiopia. Therefore, the systematic review included those studies conducted in African countries as most countries in Africa are resource-limited and major recipients of bilateral and multilateral support for their healthcare provision ^(192, 193) and have similar health systems to that of Ethiopia.

The systematic review was guided by a systematic review protocol published in *JBI Database System Review and Implementation Report*. Overall, 11 studies (eight quantitative and three qualitative) meeting the inclusion criteria were presented. While the quantitative studies provided findings on factors associated with quality of care in Family Planning (FP) services, the findings from the qualitative studies provided clients and/or providers experiences on the factors affecting quality of care in FP services. Some information found in Chapters 1 and 2 are repeated in order to provide the context and research gaps required for the peer-reviewed article on this topic. Supplementary materials to guide the methodology of the systematic review and support results of Chapter 4, including the systematic review protocol, and online supplementary files such as search strategy, quality assessment for

included studies in the systematic review, and findings and illustrations of the included qualitative studies, are provided in Appendix A.

4.2 Publication

Tessema GA, Gomersall JS, Mahmood MA, Laurence CO (2016). Factors determining quality of care in family planning services in Africa: a systematic review of mixed evidence. *PLoS One*, 11, e0165627.

Statement of Authorship

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Name of Principal Author (Candidate)	Gizachew Assefa Tessema		
Contribution to the Paper	Conceived and designed the study, conducted data extraction and synthesis, and drafted the manuscript.		
Overall percentage (%)	85%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	12/7/2018

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

- i. the candidate's stated contribution to the publication is accurate (as detailed above);
- ii. permission is granted for the candidate to include the publication in the thesis; and
- iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Contribution to the Paper	Contributed to the design of the study, interpretation of the findings, and reviewed the manuscript.		
Signature		Date	16/7/2018

RESEARCH ARTICLE

Factors Determining Quality of Care in Family Planning Services in Africa: A Systematic Review of Mixed Evidence

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Abstract

Background

Improving use of family planning services is key to improving maternal health in Africa, and provision of quality of care in family planning services is critical to support higher levels of contraceptive uptake. The objective of this systematic review was to synthesize the available evidence on factors determining the quality of care in family planning services in Africa.

Methods

Quantitative and qualitative studies undertaken in Africa, published in English, in grey and commercial literature, between 1990 and 2015 were considered. Methodological quality of included studies was assessed using standardized tools. Findings from the quantitative studies were summarized using narrative and tables. Client satisfaction was used to assess the quality of care in family planning services in the quantitative component of the review. Meta-aggregation was used to synthesize the qualitative study findings.

Results

From 4334 records, 11 studies (eight quantitative, three qualitative) met the review eligibility criteria. The review found that quality of care was influenced by client, provider and facility factors, and structural and process aspects of the facilities. Client's waiting time, provider competency, provision/prescription of injectable methods, maintaining privacy and confidentiality were the most commonly identified process factors. The quality of stock inventory was the most commonly identified structural factor. The quality of care was also positively associated with privately-owned facilities. The qualitative synthesis revealed additional factors including access related factors such as 'pre-requisites to be fulfilled by the clients and cost of services, provider workload, and providers' behaviour.

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Conclusion

There is limited evidence on factors determining quality of care in family planning services in Africa that shows quality of care is influenced by multiple factors. The evidence suggests that lowering access barriers and avoiding unnecessary pre-requisites for taking contraceptive methods are important to improve the quality of care in family planning services. Strategies to improve provider behavior and competency are important. Moreover, strategies that minimize client waiting time and ensure client confidentiality should be implemented to ensure quality of care in family planning services. However, no strong evidence based conclusions and recommendations may be drawn from the evidence. Future studies are needed to identify the most important factors associated with quality of care in family planning services in a wider range of African countries.

Background

Strengthening family planning services is crucial to improving health, human rights, economic development, and slowing population growth [1]. Yet, globally more than 289,000 maternal deaths occurred in 2013 of which nearly 99% (286,000) women died in developing countries, of which a larger proportion were African countries [2]. Studies have showed that up to 40% of maternal deaths could have been averted through use of family planning services [3,4]. In 2015, 64% of married or in-union women of reproductive age were using some form of contraception in the world but the use was much lower in Africa (33%) [5]. It is estimated that globally, 225 million women who want to avoid pregnancy are not using safe and effective family planning methods [6,7]. Most of the women with an unmet need for contraceptives live in 69 of the poorest countries [8]. This unmet need is due to both rapidly growing populations and shortage of family planning services [6,7].

In response to this, increasing access to family planning services has become a globally recognized public health priority. A number of global partnerships such as the International conference on Population and development (ICPD) in 1994 [9], the Millennium Development Goal (MDG) summit in 2000 [10], and the London Summit on Family Planning in 2012 endorsed a global partnership known as Family Planning 2020 (FP2020). This partnership aims to enable 120 million more women and girls to use contraceptives by 2020 in 69 of the world's poorest countries [11].

Improving the quality of care in family planning services is key to improve use of family planning services in developing countries, both by attracting new contraceptive users and by maintaining existing users (i.e. ensuring continued engagement with services) [12–19]. Providing decision makers in developing countries, including in Africa, with the best available evidence on the factors that determine the quality of care in family planning services, from the perspective of clients and health care providers, is important to inform the design and implementation of the most effective, efficient and acceptable measures.

The World Health Organization (WHO) defines family planning as “the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility” [20]. A report developed by Center for Disease control (CDC) and the Office of Population Affairs (OPA) of the United States Department of Health and Human Services articulates family planning services broadly in terms of infertility treatment and sexually

transmitted disease (STD) screening and treatment, pregnancy testing and counseling services, helping clients who want to conceive; providing preconception health services besides services related to contraceptive provision and counseling [21]. However, previous studies conducted to assess the quality of care in family planning services viewed family planning services narrowly, as the provision or prescription of contraceptive methods after women receive counseling on contraception to help them delay or prevent pregnancies [22–24].

Literature relating to quality of care in family planning services found that a number of approaches have been used to define and measure quality of care in family planning services and its determinants, and these vary with the stakeholders' priorities and perspectives [25]. The Donabedian [26,27] and Bruce Frameworks [28] are the two conceptual frameworks that have been used most frequently since the early 1990s to inform empirical work assessing the quality of family planning services and factors that determine quality of care in family planning services. The latter framework was developed specifically for family planning services.

Donabedian [27]p5 defined quality of care as “the application of medical science and technology in a manner that maximizes the benefits to health without correspondingly increasing the risk”. This model, developed in 1988, was intended to assess quality of care in various health services, including family planning. He described quality of care in a linear model comprising the three components—structure, process, and outcome [26]. This model has continued as a dominant paradigm for assessing quality of care in health services although it has been critiqued for failing to incorporate precursors to quality care such as patient characteristics and broader environmental factors (including the patient's cultural, social and political context), as well as factors related to the health profession itself [29].

Underpinned by the work of Donabedian, Bruce and Jain [28,30] identified six elements of quality of care in family planning programs that “reflect the six aspects of services that clients experience as critical” [28]p63. These six elements were: choice of methods; information given to clients; technical competency of providers; interpersonal relations; follow-up mechanisms; and appropriate constellation of services [28]. The ‘choice of methods’ refers to having a range of contraceptive methods offered to the clients considering their diverse needs such as clients age, gender, contraceptive intention and lactation status. ‘Information given to clients’ refers to the information provided to clients during service interactions that enables clients to choose and use contraception with competence and satisfaction. This includes information about a range of available contraceptive methods, method contraindications, method advantages and disadvantages, how to use selected method, potential side effects, and continuing care from service providers. The ‘technical competence’ aspect involves providers’ clinical techniques, use of protocols, and implementing aseptic procedures in performing clinical conditions. ‘Interpersonal relations’ refer to the degree of empathy, trust, assurance of confidentiality, and sensitivity of providers to meet the client's needs and expectations. The ‘follow-up mechanism’ considers how service providers encourage clients on the continuity of use through well-informed mechanisms such as community mass media, client-based follow-up mechanisms (return appointments), or home visits. The last component, ‘appropriate constellation of services’, is suitability of family planning services in terms of their location being at convenient place and time and the level of integration with other reproductive and maternal health services. Since its development, this framework has been widely used to inform studies measuring quality of care in family planning services [31–34].

The Donabedian and Bruce/Jain Frameworks have identified a range of outcomes for quality of care including client satisfaction, change in behaviour and contraceptive knowledge, reduction in fertility and mortality [26,28]. However, measuring some of these outcomes are complex, time consuming, and expensive. To address this challenge, client satisfaction, a simple and more practical outcome measure, can serve as a good indicator and outcome measure

in resource limited countries [35]. Client satisfaction has been found as a key determinant of uptake and continued use of family planning services [12,36]. Measuring client satisfaction not only evaluates certain aspects of quality of care but also indicates better prospects for sustainability in terms of recruiting new users and maintaining those clients who are already in the service [12,36,37]. Evidence has also showed that good quality of healthcare positively correlates with patient satisfaction [38]. As a result, client satisfaction is widely used for measuring quality of care in family planning and other health services and has been used in a number of previous studies in low and middle income country settings aimed at determining the factors associated with quality of care in family planning services [22,24,39–41]. Therefore, client satisfaction was used as an outcome of interest in the quantitative part of this review.

A preliminary search of databases found no existing systematic review, or systematic review protocol, with the objective of identifying factors determining the quality of care in Africa or in any one or group of African countries. The objective of this systematic review was to identify and synthesise quantitative and qualitative evidence to understand factors determining the quality of care in family planning services in Africa.

Methods

This review followed best practice guidelines for systematic review of quantitative and qualitative evidence [42]. The review was based on published protocol [43] and followed established Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA reporting guidelines (S1 Table) [44].

Inclusion criteria

Quantitative and qualitative African studies, of all design types, published in peer-reviewed journals and grey literature, between 1990–2016 were considered. The year 1990 was set as the start date for the search because this was when quality of care began to be emphasized in family planning services [28,45,46].

The participants of the studies were clients and/or providers of family planning services. Female and male clients and providers of all ages, any socio-economic status and from all ethnic and language groups from Africa were considered. Clients and providers of all levels (lower levels such as health post or higher levels such as tertiary hospitals) and types (public or private) of health service facility types from Africa were considered. Family planning services were defined as provision or prescription of contraceptive methods after women receive counseling on contraception to help them delay or prevent pregnancies.

For the quantitative component of the review, the exposure of interest was factors that were associated with quality of care in family planning services. An exposure factor was identified when a study reported a statistically significant association between the exposure (independent) and the outcome (dependent) variable. Studies that investigated factors including facility, client, and provider characteristics associated with quality of care in family planning services in Africa were considered. The outcome of interest for the quantitative component of the review was quality of care in family planning services. While there are a number of outcomes that could be used to measure the quality of care of family planning services such as knowledge and behavioral change, fertility reduction and mortality reduction [26,37], as described in the background section, client satisfaction was selected as a proxy outcome measure for this review. In the included studies, client satisfaction was assessed in three ways: First, using proxy questions such as satisfaction on waiting time, privacy for not being seen or heard by others, availability of family planning methods, cleanliness of the facility, costs of the services, the staff treatment. Then studies developed one aggregate variable using principal component analyses to present

the measure as a continuous variable or dichotomized in to binary variable as satisfied or not satisfied; Secondly, using a Likert scale in ten categories with the higher scale indicating greater satisfaction and then creating a binary variable using the mean as a cut point (i.e those who scored below the mean regarded as less satisfied while those who scored above the mean regarded as highly satisfied. Thirdly, using client's overall satisfaction and then created a binary outcome comprising as satisfied and not satisfied.

In the qualitative component of the review, the phenomenon of interest was client and provider experiences and/or perceptions of the factors that determine quality of care in family planning services.

Search and study selection

We followed a three-staged process for a comprehensive search strategy of electronic sources [42]. In addition, one researcher known to the lead reviewer working in family planning and reproductive health services research in Ethiopia was contacted through email to identify any other relevant studies.

The databases searched were PubMed, CINAHL, EMBASE, Scopus, POPLINE, the Cochrane Collaboration reports of controlled trials (CENTRAL), African Index Medicus (AIM), and Web of Science using the search strategy and key terms outlined in the [S2 Table](#). The search engines Google, Google Scholar, and specific websites such as World Bank, WHO, Family Health International, International Planned Parenthood Federation (IPPF), and the Demographic and Health Survey program were searched for grey literature.

An overarching search strategy was developed by GAT in consultation with JSG, CL, AM and then Librarian was consulted for specific approach on how to execute. The search terms used were: (“quality of care” OR “quality of health care” OR quality) AND (“family planning” OR “family planning services” OR “contraceptive services” OR “birth control services” OR contraceptive OR contraception) AND Africa ([S2 Table](#)).

Citations identified through the search strategy were initially reviewed for inclusion based on information contained in titles, abstracts, citation information, and keywords. One reviewer (GAT) screened the records to determine eligibility. Full text articles were obtained for all eligible studies and for those requiring further review to determine eligibility. Articles on full text examination that did not match the inclusion criteria were excluded, and the reasons for exclusions were noted ([S1 Fig](#) and [S1 Text](#)). Those articles that fulfilled the inclusion criteria were critically appraised and included in the review.

Assessment of methodological quality

Two reviewers (GAT and JG) independently appraised the methodological quality of the studies that met the inclusion criteria. Quantitative studies were appraised using the tool for appraisal of quantitative descriptive studies in the Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) [42]. Qualitative studies were appraised using the appraisal tool in the JBI Qualitative Assessment and Review Instrument (JBI-QARI) [42]. Studies scoring greater or equal to seven were deemed high quality, those scoring four to six were deemed of medium quality and those scoring less than four were deemed low quality for both instruments.

Data extraction

Data extraction was performed using templates based on the JBI-MAStARI data extraction tool for quantitative data and JBI-QARI for the qualitative studies [42]. For each quantitative study, gathered information was gathered on the general characteristics of the study (type of

study, aim, country, methodology), and on statistically significant factors identified by the included quantitative studies. In addition to the general study characteristics, the experiences and views of clients and providers were extracted from qualitative studies as well as the author's interpretation of findings along with illustrations (participant's voices). The findings and supporting illustrations extracted from the included qualitative studies are provided in [S3 Table](#).

Data synthesis

Due to quantitative studies' heterogeneity in assessing the outcome variable, we performed textual narrative analysis after tabulating individual quantitative studies in terms of their characteristics, key significant factors, and conclusions of the individual studies [42]. The qualitative findings were synthesized using meta-aggregation [42]. Two syntheses of the perceptions were performed, one using the clients' experiences and perceptions of quality of care, the other the provider experiences and perceptions. In each segregated synthesis, the pooled findings were first grouped into categories defined by their similarity of meaning and then combined into one or more synthesized finding(s) that captured their meaning. All the findings extracted from the qualitative studies meeting the inclusion criteria were judged credible and used in the syntheses ([S3 Table](#)).

Results

Description of studies

In total, 4334 potentially relevant records were identified, of which 3780 remained after removing duplicates. Title and abstract screening led to an additional 3682 exclusions. A total of 98 articles were deemed eligible for full text analysis, of which 87 articles were excluded for not meeting the inclusion criteria. ([S1 Text](#) lists the articles excluded on full text examination with the reasons for exclusion). A total of 11 studies [22,41,47–55], eight quantitative [22,41,47–50,54,55] and three qualitative [51–53], met the inclusion criteria.

Of the eight quantitative studies [22,41,47–50,54,55] reporting the factors associated with quality of care in family planning services, four [22,41,49,50] undertook secondary data analysis, with two studies [22,50] undertaking analysis in three different countries (three countries each). Two studies [22,50] identified the factors for higher level (Hospital/health centre) and lower level (clinics/others) facilities separately. Two studies were conducted in Egypt, three in Kenya, two in Senegal, two in Ethiopia, one in Ghana, one in Tanzania, and one in Namibia ([Table 1](#)). Two studies [22,49] employed the same database from Senegal but used a different study population and data analysis techniques. In total, 3219 health facilities and 7676 clients were included in the eight quantitative studies.

Three qualitative studies [51–53], two conducted in Kenya [51,52] and one in Uganda [53] met the eligibility criteria of the qualitative review component. One [52] included client and provider participants, one [51] had only client participants, and one [53] had provider participants. In total, there were 122 client and 65 health provider participants in the three qualitative studies ([Table 2](#)).

Of the eight quantitative cross-sectional studies [22,41,47–50,54,55], seven were rated as moderate quality and one was rated high quality. Two [48,55] out of eight studies undertook systematic random sampling in selecting their study participants. The samples taken for the study were representative and outcomes were measured using reliable methods. Most (7/8) of the studies assessed their outcome using objective measures through proxy questions. Most (7/8) studies controlled confounding factors using multivariate regression analysis. Most (7/8) studies did not describe those participants who withdraw or refused to participate in the study.

Table 1. Characteristics of the quantitative studies included in the review.

General article information								Quality score
First author, year of publication, and reference number	Aim(s) and study design	Country and year of study	Study Population and sample size	Data collection method (s)	Outcome measurement	Data analysis	Limitations identified by the author(s)	
Abdel-Tawab 2002[47]	<ul style="list-style-type: none"> Aims: to examine the feasibility, acceptability, and effectiveness of client-centred models in FP clinics Design: Cross sectional study 	Egypt 1992	<ul style="list-style-type: none"> Female family planning client (n = 112) Mean age = 29 years (range 19–45) 84% rural Physician (n = 34) Mean age = 32 years (range 27–50) Family planning clinics (n = 31) 	Client exit interview, audiotaped data for provider-client interaction data, physician interview	<ul style="list-style-type: none"> Client satisfaction was assessed by considering five proxy questions which were rated 0 to 10, with higher score indicating greater satisfaction. An average satisfaction score (mean score) was calculated and client satisfaction was dichotomized as highly satisfied and less satisfied. 	Multivariate logistic regression analysis	No limitation information was provided	Moderate
Agha 2009[41]	<ul style="list-style-type: none"> Aim: to compare the quality of family planning services delivered at public and private facilities Design: Secondary analysis of cross-sectional study 	Kenya 2004	Health facilities (n = 323) and family planning clients (n = 628) in a subset of 172 facilities.	Facility inventory, observation, and client exit interviewing	Client satisfaction was assessed through proxy questions and those clients who responded 'no problem' to these questions were regarded as satisfied client and otherwise taken as not satisfied.	Multivariate logistic regression analysis	Sample for private facilities was smaller	Moderate
Hutchinson 2011 [50]	<ul style="list-style-type: none"> Aim: to quantify the differences in the quality of family planning services at public and private providers in three countries Design: secondary data analysis of cross sectional studies 	<ul style="list-style-type: none"> Tanzania 2006 Kenya 2004 Ghana 2002 	<ul style="list-style-type: none"> Tanzania: Health facilities (n = 482), providers (n = 1244), and clients (1005) Kenya: facilities (n = 323), providers (n = 860), clients (n = 628) Ghana: facilities (n = 386), providers (n = 845), clients (n = 611) 	Data collected through facility survey, observation and client interview	Client satisfaction was measured in two ways. Responses were dichotomized as satisfied if there were 'no problem' in proxy questions related to client satisfaction. Additionally, they calculated index of satisfaction using principal component analysis and took as a continuous variable. Factors were identified using both measurements.	Both multivariate linear regression and multivariate logistic regression analysis conducted. The regression analysis were conducted for hospital and clinics separately.	Inability to distinguish between for-profit and not-for-profit private facilities	Moderate
Tafese 2013[55]	<ul style="list-style-type: none"> Aim: to assess the quality of family planning services in primary health care centres Design: Cross-sectional study 	Ethiopia 2011	Family planning clients (n = 301) mean age (SD) = 26 (+5), range (15–45), 61.5% were from rural Health centres (n = 5)	Exit-interview of women at facility, and observation of provider-client interactions	Client satisfaction measured through 10 proxy questions and the principal component analysis was used to create an aggregate measure of continuous variable. Each included proxy question was assessed using a 5-points Likert scale (0 to 5)	Multivariate linear regression	Hawthorne effect during provider observation, Courtesy bias during the exit interview and introduction of observer bias	High
Wang 2014[22]	<ul style="list-style-type: none"> Aim: to assess the quality of care at health facilities in providing family planning, antenatal care and sick child care Design: Cross sectional study 	<ul style="list-style-type: none"> Kenya 2010 Namibia 2009 Senegal 2012/2013 	<ul style="list-style-type: none"> Kenya: Health facilities (n = 575), providers (n = 1583), clients (n = 1004) Namibia: Facilities (n = 362), providers (n = 966), clients (n = 983) Senegal: Facilities (n = 338), providers (n = 735), clients (n = 968) 	In all the three countries, data were collected through facility inventory assessment, client exit interview, provider-client interaction observation, provider interview	Client satisfaction variable was rated as an index of problems encountered during the visit (none versus any). Client's responses for these proxy questions were then aggregated into an index using principal components analysis	Multivariate linear regression	Observer bias and social desirability bias	Moderate
Assaf 2015[49]	<ul style="list-style-type: none"> Aim: to examine the quality of care in health facilities in Senegal, with a focus on family planning services Design: Secondary data analysis of cross-sectional study 	Senegal 2012/13 and 2014	<ul style="list-style-type: none"> Two rounds Round 1, facilities (n = 364), clients (n = 872), and provider (n = 872) involved Round 2, facilities (n = 363) 	Data collections was made in two rounds. Facility inventory survey, observation of provider-client interaction, and providers interviewing were made in each survey periods	Client satisfaction was measured based on a general question about overall client satisfaction on the family planning services. The categories of the responses were very satisfied, more or less satisfied, and not satisfied. Finally they created a binary variable as very satisfied or not satisfied.	Multivariate logistic regression	Social desirability bias, client satisfaction maybe over-reported	Moderate

(Continued)

Table 1. (Continued)

General article information								Quality score
First author, year of publication, and reference number	Aim(s) and study design	Country and year of study	Study Population and sample size	Data collection method (s)	Outcome measurement	Data analysis	Limitations identified by the author(s)	
Argago 2015[48]	<ul style="list-style-type: none"> • Aim: To assess client satisfactions with family planning services and associated factors • Design: cross-sectional study 	Ethiopia 2014	<ul style="list-style-type: none"> • Family planning clients (n = 324) • Mean age = 28 years (SD = 5.57), range (17–42) • 72.8% were repeated users. • Health facilities (n = 20) 	Client exit interview was conducted	Client satisfaction score was calculated using 18 proxy questions and then binary variable was devised as low and high satisfaction.	Multivariate logistic regression	The study was solely based on client's information. It did not include provider-client observation or a facility inventory assessment.	Moderate
Nasr 2016[54]	<ul style="list-style-type: none"> • Aim: to assess the association between quality of family planning services and client satisfaction level • Design: Cross-sectional study 	Egypt 2014	<ul style="list-style-type: none"> • Clients of family planning (n = 240) between 20–40years • Mean age = 31.6 years (SD = 7.0) • Women at least 2 children • Health facilities (n = 10) • Nurses (n = 20) • Mean age = 36.4 (SD = 8.04) • 10 (50%) had less than 5 years of work experiences 	Facility survey, observation, and client interview	Client satisfaction measured through Likert scale and then binary outcome variable was created as satisfied and not satisfied.	Chi-square test	No limitation information was provided	Moderate

SD- Standard Deviation

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This would affect the studies generalizability when they had a high rate of non-response and eventually influence generalization in the present review.

Of the three qualitative studies, two [51,53] were assessed as high quality, receiving scores of 7/10 and one [52] was assessed moderate quality (6/10). All three of these studies lacked description of the congruency between the philosophical perspectives and research methodology used. Failure to describe how the researchers' perspectives may have influenced the analysis and interpretation of findings was identified as the main weakness in the three qualitative studies, potentially undermining credibility (S4 Table).

Factors associated with quality of care in family planning services identified by the quantitative evidence

Eight quantitative studies [22,41,47–50,54,55] identified various factors determining quality of care in family planning services in seven African countries. Table 2 shows the factors that the studies have found to be statistically significantly associated with quality of care, categorized into factors related to the client, provider, facility, structure, and process. These factors were related to the demographics of clients, the provider involved in the provision of family planning clients, and the general characteristics of the health facilities in terms of locations, ownership. In addition, those factors related to the infrastructure, equipment, and provider-client interaction were classified as structural and process related factors.

Client, provider, and facility factors. Two studies [41,47] showed that the age of the client was associated with client satisfaction. However, the effect of age was inconsistent in that Abdel-Tawab et al. [47] found young clients were less likely to be satisfied with family planning services while Agha et al. [41] revealed young clients as more likely to be satisfied than their

Table 2. Key characteristics of qualitative studies included in the review.

First author, year of publication and reference number	Aim(s) of the study	Country and year of study	Study Participants and sample size	Data collection method (s) and analysis	Limitations identified by the author(s)	Quality Score
Lewis 1995[52]	To define the laypersons' and providers' dimensions of quality of care and compare them with the Bruce-Jain elements.	Kenya 1994	Women 15–49 years (N = 31); Service providers (n = 17), simulated clients (n = 51)**, Clinics (n = 9), 2 urban and 2 rural setups	<ul style="list-style-type: none"> • FGD* with clients • In-depth interviews with clients, simulated client visits**, indepth interview with provider and managers Services delivery points' visits • Analysis: Thematic analysis 	No limitation information was given	Moderate
Mugisha 2008[53]	To assess providers' perceptions of quality of care and the barriers to quality services at the organizational and societal levels.	Uganda 2002	<ul style="list-style-type: none"> • Service providers and managers (n = 38, midwives = 33; nurses = 6) • Almost half of the providers were aged between 31 and 45 years and most were married. 	<ul style="list-style-type: none"> • FGD* • Provider and manager interviews • Analysis: not explicitly described but thematic analysis seemed to be employed. 	No limitation information was given	High
Keesara 2015[51]	To describes women's expectations and experiences when seeking contraceptive care from private and public facilities in Nairobi.	Kenya 2013/2014	Postpartum reproductive aged women (n = 91)	<ul style="list-style-type: none"> • FGD* and • In-depth interview with clients • Data analysis: thematic analysis 	<ul style="list-style-type: none"> • Participants lived far away from public facility were not included. • The type of private facility that the interviewee had attended was not differentiated. • Social desirability bias. 	High

* FGD- Focus Group Discussions

**those findings from simulated clients were not included in this analysis

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older counterparts. Another three studies [22,49,55] showed no statistically significant association between age of clients and client satisfaction.

A significant association between client's educational status and quality of care in family planning services was found in three studies [41,50,55]. Clients with higher educational levels were identified as more likely to be satisfied with quality in two studies [50,55], while, one study showed less educated women as more likely to be satisfied [41]. One study revealed that repeat family planning clients were more likely to be satisfied with the service than first time clients [48] (Table 2).

With respect to the provider variables, provider's years of education and number of years of experience were significantly associated with client's satisfaction in family planning services [41,49]. One study also showed that clients were less satisfied with family planning services provided by young physician than when they received services from older physicians [47] (Table 2).

Regarding the health facility characteristics [22,41,49,50], firstly, client satisfaction was reported in three studies as greater for private than publicly owned health facilities [22,41,50]. Secondly, client satisfaction was found in two studies as being associated with geographic location of health facilities [41,49].

Structural factors. Health facility's structural factors such as staffing levels, management, availability of materials and equipment were found to be associated with the quality of care in family planning services [22,41,48,50,54]. There was a positive but weak association between number of staff in facilities and client's satisfaction in that clients were more likely to be satisfied in facilities possessing higher staff numbers [41]. Greater numbers of days in a week for family planning service, facilities closer to the client's residence, and with what client perceived to be convenient opening hours were positively associated with client's satisfaction in family planning provision [48,50]. In contrast, Wang et al. [22] found that greater number of days in the week for family planning services provision did not result in client satisfaction. In addition, two studies showed facility cleanliness as a factor associated with client's satisfaction [48,54] (Table 3).

The presence of supervision of health facilities in the past six months before the survey from higher officials including from the district federal officials was identified by two studies [20, 38] as a factor determining quality of care in family planning services. However, the two studies presented inconsistent findings with regard to how supervision affected quality of care. Wang et al. [22] showed health facility supervision was positively associated with client satisfaction in two countries, whereas Hutchinson et al. [50] found a negative association between presence of facility's supervision and client satisfaction. Infrastructure in the form of availability of electricity, water, toilets, and waiting areas were associated with client satisfaction in some levels of health facilities in Kenya and Tanzania [50]. Other structural factors associated with client satisfaction were availability of trained providers, and use of incentives and promotions for health providers [41,50]. While following family planning protocol was positively associated with client's satisfaction in Tanzania, having client cards/ records was negatively associated with client satisfaction [50]. Costs of family planning services were associated with client satisfaction in two studies [41,54] (Table 2).

Process factors. The study conducted in Egypt [47], identified client-provider interaction in the form of positive talk by the provider, as positively associated with client satisfaction. Similarly, client centered family planning services, client's choosing on the type of contraceptive method to use were more likely to result in client satisfaction [47]. Confidentiality assurance and maintaining privacy were also shown to be positively associated with client's satisfaction in four studies [41,48,50,54].

Three studies found that information given to the client during the counseling such as information about how to use the method was associated with for client satisfaction [48,50,55]. The studies have presented mixed findings about information provision about side effects as a factor determining quality of care in family planning services [49,50]. The provider's technical competency was associated with client's satisfaction in two of the studies [41,50]. In this regard, clients who were asked more reproductive health related questions and underwent physical examination were more likely to be satisfied with the services [41,50]. Hutchinson et al. study [50] measuring the quality of family planning services in three different countries and the study by Wang et al. [22] conducted in for Kenya, showed that injectable method provisions/prescriptions were more likely to bring higher levels of client satisfaction. Counseling on when to return/follow up dates was identified as a factor in two studies [41,49].

Finally, with respect to the results from the quantitative studies, the overwhelming majority of studies (6/8), identified waiting time as a factor determining quality of care in family planning services [22,41,49,50,54,55].

Table 3. Summary of the statistically significant factors affecting quality of care in family planning services in Africa.

First Author, year of publication and reference number	Factors for QoC in FP services				Authors conclusions
	Socio-demographic and other factors*	Structural Factors*	Process Factors*	Controlled variables during multivariate analysis	
Abdel-Tewab 2002[47]	Client's age less than 35 (AOR = 0.3), physicians age less than 35 (AOR = 0.2)		Client-centred communication (AOR = 2.8), high positive talk by physician (AOR = 2.0), FP methods chosen by the client (AOR = 3.3)	Physician's duration of stay in the project, Physician's attendance on the training course focusing on counselling and interpersonal communication, types of FP used, Physicians to clients talk ratio.	Client-centred communication was associated with a three-fold increase in the likelihood of client satisfaction. In addition, solidarity statements by the physician (positive talk) was also important for client satisfaction.
Agha 2009[41]	Private facility (AOR = 3.1), Hospital (AOR = 0.4), Region: Central province (AOR = 8.9), coast (AOR = 0.2), client's age 25–34 (AOR = 0.4), 34+ (AOR = 0.07), client's primary education (AOR = 0.07), secondary education (AOR = 0.008)	Index of services availability (AOR = 1.7), number of staff per facility (AOR = 1.002), providers with 7+ years of experience (AOR = 3.9), providers received family planning training in last 3 years (AOR = 3.6), providers believed supervisor support would help improve (AOR = 4.6), provider believed incentives would help improve services (AOR = 3.1), Provider believed there was opportunity for promotion (AOR = 3.1), clients paid for family planning (AOR = 0.4)	Confidentiality assured (AOR = 1.8), high reproductive history and physical examination score (AOR = 1.2), longer waiting time (AOR = 0.98),	<ul style="list-style-type: none"> Catchment population, Time taken to reach facility 	Client satisfaction is much higher at private facilities. Technical quality of care provided is similar in public and private facilities.
Hutchinson 2011[50]	<ul style="list-style-type: none"> Ghana NGO facilities ($\beta_1 = 0.3034$) (H), ($\beta_2 = 0.7329$) (C), Client education: primary ($\beta_2 = 0.5967$), secondary ($\beta_2 = 0.8252$) (H) Kenya NGO facilities ($\beta_1 = 0.6930$) (C), Urban facility ($\beta_1 = -0.8163$) (C) Tanzania NGO facilities ($\beta_1 = 1.1462$), ($\beta_2 = 2.4378$) (C) 	<ul style="list-style-type: none"> Ghana Supervisory visit in last 6 months ($\beta_2 = -1.1562$) (H) Number of days FP offered ($\beta_2 = 0.4559$) (H) Quality stock inventory ($\beta_2 = 0.4317$) (H) Kenya Facility inventory ($\beta_1 = 0.1243$) (C), trained provider present 24 hours ($\beta_2 = 0.7691$) (C), supervisory visit in last 6 months ($\beta_1 = -0.3453$) (H), ($\beta_2 = -1.4670$) (C), total FP offered ($\beta_1 = -0.0839$) (H), FP client record maintained ($\beta_1 = -0.3421$) (H), ($\beta_2 = 1.1700$) (C) number of trained provider ($\beta_1 = -0.1385$) (H) Tanzania Facility inventory ($\beta_2 = 0.1091$), ($\beta_1 = 0.0628$) (H), protocol on FP followed ($\beta_1 = 0.1376$) 	<ul style="list-style-type: none"> Ghana Number of reproductive health related questions asked and physical exam done ($\beta_1 = 0.0308$) (C), Client told about side effect ($\beta_1 = 0.5430$) (C) ($\beta_1 = 0.3884$), Injection method prescribed ($\beta_1 = 0.3884$) (C), long waiting time ($\beta_2 = -0.0048$), ($\beta_1 = -0.0021$) (H) ($\beta_2 = -0.009$), ($\beta_1 = -0.0037$) (C) Kenya Number of reproductive health related questions and physical exam ($\beta_1 = 0.0431$) (H), ($\beta_2 = 0.1418$) (C) confidentiality assured ($\beta_1 = 0.4389$) ($\beta_2 = 0.3512$) (H), long waiting time ($\beta_2 = -0.008$), ($\beta_1 = -0.004$) (H), ($\beta_2 = -0.011$) (C) Tanzania Injection method prescribed ($\beta_2 = 0.5246$), Long waiting time ($\beta_2 = -0.007$) ($\beta_1 = -0.0030$) (H) ($\beta_1 = 0.0237$) (C) 	In the three countries, the catchment population, structural factors such as number of staff, system for quality assurance, number of FP trained and process factors such as visual and auditory privacy, client concerns noted were controlled	Private health facilities appear to be of higher (interpersonal) process quality than public facilities Client satisfaction appears considerably higher at private facilities

(Continued)

Table 3. (Continued)

First Author, year of publication and reference number	Factors for QoC in FP services				Authors conclusions
	Socio-demographic and other factors*	Structural Factors*	Process Factors*	Controlled variables during multivariate analysis	
Tafese 2013[55]	Educational status ($\beta_2 = 0.09$)		Perceived sufficiency of consultation** ($\beta_2 = 0.24$), perceived facilitated services*** ($\beta = 0.17$),	Marital status, preferences of additional children, discussion with husband/partner, occupational status, religion, age, and waiting time	<ul style="list-style-type: none"> There was lack of critical resources for the provision of quality family planning services. Client satisfaction was affected by recipient of adequate information about the chosen family planning method, and educational status
Wang 2014[22]	<ul style="list-style-type: none"> Kenya Government managed facilities ($\beta_1 = -0.28$) (C) Senegal Government managed facilities ($\beta_1 = -0.68$) (H) 	<ul style="list-style-type: none"> Namibia Supervisory visit to facility within the past 6months ($\beta_1 = 0.27$) (C) Number of days FP services provided ($\beta_1 = -0.041$) (C) Number of FP visual aids ($\beta_1 = -0.06$) (C) Senegal Supervisory visit to facility within the past 6months (0.83) (H) Number of days FP services provided ($\beta_1 = -0.14$) (C) 	<ul style="list-style-type: none"> Kenya Process composite score ($\beta_1 = 0.09$) Injectable provided/ prescribed ($\beta_1 = 0.47$) Waiting time ($\beta_1 = -0.01$) (H) ($\beta_1 = -0.00$) (C) Namibia Waiting time ($\beta_1 = -0.01$) (H) ($\beta_1 = -0.021$) (C) 	Clients age, Educational status	<ul style="list-style-type: none"> The client satisfaction score was higher at clinics and other types of facilities than hospitals/health centres in Senegal. Process attributes seem to be more predictive of client satisfaction than structural attributes. Long waiting time was association with lower levels of client satisfaction. More client satisfaction was observed in the private sector than in the public sector.
Assaf 2015[49]	Client's education: no education (AOR = 2.1), primary and post primary (AOR = 2.0), provider's years of education: 6–12 years (AOR = 2.9), 13–16years (AOR = 3.4) facility region: Dakar (AOR = 4.8), Thies (AOR = 2.5), central (AOR = 11.5), South (AOR = 13.9)		Client left with FP methods (AOR = 3.7), No counselling on methods side effects (AOR = 2.6), counselling on when to return (AOR = 2.0), No waiting time (AOR = 5.4)	Client age, payment for services, client status, types of contraceptive method used, provider's job description, provider salary, counselled on how to use the method, health facility type, general structure equipment composite index	The effectiveness of the different forms of counselling was not seen in the outcomes of client overall satisfaction.
Argago 2015[48]	Repeated client (AOR = 3.04), history of side effect (AOR = 0.121), history of unintended pregnancy (AOR = 2.8)	Less than 30min to reach the services (AOR = 5.5), convenient opening hour (AOR = 4.73), perceived health facility unclean (AOR = 0.192)	Clients who were advised on how to use the method (AOR = 3.43) privacy ensured (AOR = 5.08)	Parity, still birth, number of living children, respect and courtesy, giving written information, told about the methods side effects	The frequency of FP visit, waiting time, cleanness of health facilities, history of side effect, history of unintended pregnancy, and information on how to use methods, privacy during examination and procedure and convenience of opening hour were the predictors of client satisfaction.
Nasr 2016[54]		Waiting place [§] , cleanliness of examination room [§] , quality of FP methods [§] , availability of methods [§] Cost [§]	privacy during examination [§] waiting time [§] ,	Confounders not controlled	The number of received training program affects quality of family planning counselling of nurse's practice, providers of the services and the provided services affect the client satisfaction.

AOR- Adjusted Odds Ratio β_1 - Regression coefficient for linear regression analysis β_2 = regression coefficient for logistic regression analysis FP-Family Planning H- Hospital (analysis done for hospitals/health centres) C- Clinic/other facilities (analysis done for client/other facilities)

* the factors included only significant factors adjusted for confounders.

** Information given about the method and the time spent for consultation

*** clinic site is easy to get and short waiting time

[§] p-value for chi-square less than 0.05

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Synthesized findings on perceptions of factors associated with the quality of care in family planning services from qualitative findings

Client perceptions. The limited findings from the two existing qualitative studies [51,52] that have explored how African clients perceive the factors determining quality of care in family planning services, were summarized in three synthesized findings (Table 4).

Synthesized finding one: *Accessibility of services was important to clients. Proximity to clients' residing areas, costs incurred to get to services, convenience of facility's opening hours, availability of clients preferred contraceptive methods, and pre-requisites for getting contraceptive methods were identified by clients as factors that influence service accessibility and in turn quality of care.* Five categories of findings informed this synthesized finding (see Table 4). Category one included findings that spoke about physical proximity of the facilities [52]; category two included findings that were about costs incurred to receive the services [52]. The third category related that convenience, and more specifically opening hours, made services easily accessible [51]. For example, one client said: "I can go [to the private hospital] at any time" [51]p3. The fourth category spoke about clients' preference for facilities possessing their preferred contraceptive methods [51].

The fifth category included findings which related that pre-requisites expected to be fulfilled by the clients [51,52] affected access. The following client voices illustrate how client's perceived pre-requisites to be fulfilled such as the requirement of being on menses to take contraceptive methods

When my periods came [at 4 weeks], I felt like it was an emergency, and I didn't want to waste more time because, like I mentioned, these men are unpredictable and they might demand for it [sex] at any time. I had planned on going for the [public] clinic, but when my menses came I asked a friend if they will allow me to take up family planning at the clinic [early] and she told me that they cannot accept. That is why I went for the method at a private health facility. (Age 27, 3 children, page 4)[51]p4.

Synthesized finding two: *The way care was provided in family planning services was central to clients' notions of quality care in family planning services. Clients identified six characteristics of the way care was provided as central to their notions of quality of care in family planning services. Positive service delivery qualities, that clients related they valued, and as influencing quality of care included: 1) responsiveness of providers to clients' self-perceived needs and freedom to choose the contraceptive method; 2) length of waiting time; 3) behavior of providers towards clients; 4) provision of information and support in making decision during consultation; 5) privacy and confidentiality; and 6) range of services.* Six categories of findings informed this synthesized finding. Each identified a different attribute of the way care was provided from clients' perspectives influenced the quality of care. Category one related that clients valued facilities in which providers listened to clients' needs and allowed them to choose their preferred method [51,52]. Category two included findings related to the time spent before receiving family planning services. Clients indicated that they valued facilities with short waiting time [51,52]. The third category included findings in which clients spoke about provider behavior. Clients said that respectful behaviour of providers was important to them [51,52]. In this regard, a client said that "...the last time I found a Kisii lady. her advice was good, she was polite like a fellow woman. She showed some signs of respect to me. ..." [52] p42. The fourth category included findings [51,52] that were about information provision as a factor determining quality of care. Clients said that they valued being provided with information about the side effects of contraception and having their questions adequately responded

Table 4. Synthesis of qualitative findings on how clients perceive factors determining the quality of care in family planning services.

Findings	Category	Synthesized findings
<p>Participants identified proximity to facility and cost as important considerations for choosing a source, the mode of travel and time to source were never mentioned directly as reasons for choosing a facility.</p> <p>Proximity was stated as a reason for choice of service delivery points in two ways. Sometimes the respondents gave it as the sole reason for choice or in a combination with other reasons.</p> <p>From the combination of reasons for which choice is made, it is clear that proximity is a facilitating factor but not sufficient to sustain use at a health facility.</p>	<p>1. Proximity of services influenced access</p>	<p>Accessibility of services was important to clients. Proximity to clients' residing areas, costs incurred to get the services, convenience of opening hours, availability of clients' preferred contraceptive methods, pre-requisites for getting contraceptives were identified by clients as factors that influence service accessibility.</p>
<p>Participants identified proximity to facility and cost as important considerations for choosing a source, the mode of travel and time to source were never mentioned directly as reasons for choosing a facility.</p> <p>Among the private clinics, the clients were also able to rank facilities according to the cost of services.</p> <p>Though clients complain about cost, they recognize the higher quality of services at Non-Governmental health facilities.</p>	<p>2. Cost of services influenced clients choice of facilities/ access</p>	
<p>Women reported that private facilities offered long and convenient service hours that accommodated women's busy schedules. One woman explained that public facilities often closed before they attended to everyone.</p>	<p>3. Clients tend to prefer facilities having convenient opening hours</p>	
<p>Some women said that they had wasted time waiting at the public facilities for free services, only to find that their preferred method was not available. One woman began to obtain her contraception at a private facility when she found that public facilities did not stock all methods consistently</p>	<p>4. Availability of preferred method (method mix)</p>	
<p>...discontinued from Makuyu Health Centre when she found she was not given the injectable, the method that she had wanted. The secondary reason is that the providers asked her to return to the clinic when she was on menses—to make sure that she was not pregnant.</p> <p>Another woman explained that she chose a private facility because she wanted to bypass obstructive processes that she foresaw at the public facility. She had planned to obtain the contraceptive implant at a public facility during her six-week postpartum visit. However, when she received her period four weeks after delivery, she opted for a private facility.</p>	<p>5. Administrative issues in terms of putting pre-requisites for taking contraceptive influences access for family planning services</p>	
<p>Women explained that workers at private facilities always provided whichever method was requested. One woman complained that nurses at the public facility prevented her from switching to the injectable contraceptive, so she went to a private facility where they administered her desired method.</p> <p>When you walk to a private clinic, you will tell them that you need an injection and when you walk there asking for an injection that is what you will be given.</p> <p>... the high degree of dissatisfaction with methods and lack of provider responsiveness to the clients' problems and needs.</p> <p>While public facilities were able to provide a broad overview of side effects, they were not able to provide individualized attention. Due to crowded facilities in public healthcare settings, some women were not given the opportunity to address problems with their current method. One woman described her disappointment about not receiving adequate counseling from a public facility when she returned with irregular vaginal bleeding</p> <p>Woman in the individual interviews said they preferred public facilities when they needed more decision-making support or guidance for initial selection of a contraceptive method.</p>	<p>1. Responsiveness: Respect for client's needs and freedom to choose was identified as a factor client's access to family planning services</p>	<p>The way care was provided in family planning services was central to clients' notions of quality care. Clients identified six qualities of the way care was provided as influencing quality: 1) responsiveness of providers to clients' self-perceived needs and freedom to choose the contraceptive method; 2) length of waiting time; 3) behavior of providers towards clients; 4) provision of information and support during consultation; 5) privacy and confidentiality; and 6) range of services.</p>

(Continued)

Table 4. (Continued)

Findings	Category	Synthesized findings
<p>...what irritates clients is when they think the providers are idling while they wait. ...</p> <p>The private sector clinics have a better image with respect to waiting time.</p> <p>...they would like family planning services to be provided within an hour of their arrival so that they could get back to their homes quickly before their absence is noticed.</p> <p>Even though family planning services were free at the public hospitals, one woman explained that she was willing to pay for contraception at private facilities to avoid waiting in long lines:</p>	<p>2. Waiting time to receive family planning services related with quality of care</p>	
<p>In the public institutions complaints are mostly related to provider behavior while those from the private clinics tend to be related to structural constraints of facilities.</p> <p>Respectful treatment was an added benefit of private facilities. Women believed that private facilities treated their customers with care and attention compared to public facilities where participants experienced verbal harassment, inattention, and rudeness. Respectful behaviour included answering questions kindly and allowing sufficient time for each client. One woman described how rude behaviour at public facilities drove clients to private clinics</p> <p>... Though the providers in public institutions are talked of negatively, it should also be pointed out that there are some of them well commended by clients.</p>	<p>3. Provider behaviour while talking to the client identified as a barrier for quality of care</p>	
<p>... Sometimes the client is just told to use a certain method and she accepts.</p> <p>Because of concern for side effects, almost every woman described an ideal family planning visit as one with ample counseling about side effects and support from the provider to choose a method that minimized side effects</p> <p>Focus groups participants noted that the private facilities prioritized profit over providing safe medical treatment. While some women mentioned that private providers at non-governmental organization (NGOs) answered questions fully, most women said that most private facilities did not provide counseling or decision support when administering a method.</p> <p>While public facilities were able to provide a broad overview of side effects, they were not able to provide individualized attention. Due to crowded facilities in public healthcare settings, some women were not given the opportunity to address problems with their current method. One woman described her disappointment about not receiving adequate counseling from a public facility when she returned with irregular vaginal bleeding</p> <p>Woman in the individual interviews said they preferred public facilities when they needed more decision-making support or guidance for initial selection of a contraceptive method.</p>	<p>4. Information provision and support in reaching a decision was identified as an important aspect in the delivery of family planning services</p>	
<p>Privacy and confidentiality also came up when the topic of client home visits was raised.</p> <p>Women said they used private facilities when they required more confidentiality. One woman related a story of a friend who chose to receive family planning at a private facility to hide her use from her husband.</p>	<p>5. Maintaining the privacy and confidentiality of clients during family planning provision was valued by clients.</p>	
<p>Medical examinations were identified by both clients and providers as an important component of family planning service provision which affects choice, continuation and satisfaction with services.</p> <p>While public facilities were able to provide a broad overview of side effects, they were not able to provide individualized attention. Due to crowded facilities in public healthcare settings, some women were not given the opportunity to address problems with their current method. One woman described her disappointment about not receiving adequate counseling from a public facility when she returned with irregular vaginal bleeding.</p>	<p>6. Range of services including eligibility screening, blood tests, and physical assessment was valued by clients</p>	

(Continued)

Table 4. (Continued)

Findings	Category	Synthesized findings
An important factor for the recipient of services was the age and maturity of the providers.	1. Clients perceived to receive family planning services from older and matured provider 2. Provider competency in terms of adequate knowledge and skill was valued by clients.	Provider characteristics were identified by clients as factors influencing quality of care. These were provider competency and age.
Those who did not mind about the sex of the provider were more concerned about the knowledge and skill of the provider		
In individual interviews, women elaborated on their perceptions of the deficiencies in private facilities, which included questionable medications, poor eligibility screening, poorly qualified staff, and poor quality counseling.		
Other women were concerned about the competency of private facility providers. This woman explained her concerns about private providers and her preference for well-qualified public providers		
While it was expected that private facilities would provide a consistent stock of contraceptive supplies, women worried that these facilities administered fraudulent and expired medications to unaware clients. A few women stated that private facilities were more likely to stock expired contraceptives because their inventory exceeded their client flow. This woman attributed two incidences of failed contraception to fraudulent medication provided at private facilities		

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[51]. The importance of privacy and confidentiality was identified by the findings in category five. One client said that she perceived confidentiality to be facilitated by one to one counseling [51,52]. In the sixth category informing this synthesized finding, clients indicated that a wide range of services, including eligibility screening, blood tests and physical examinations were factors influencing quality of care in family planning services [51,52].

Synthesized finding three: Clients perceive two characteristics of health care providers, provider competency and provider age as influencing the quality of care in family planning services. Two categories informed this synthesized finding. The first was comprised of one finding [52] in which clients related that they preferred older providers because they felt self-conscious about showing their naked body to a young provider. The second category included findings in which clients related they perceived the knowledge and competency of the provider to be a factor determining the quality of care. In this regard, one client said “. . .the doctor might be qualified, but he could be using his wife to assist him, but the wife is not qualified” [51]p4.

Provider perceptions. The very limited qualitative evidence identified, on how providers perceive the factors determining quality of care in family planning services, also generated by two studies [52,53] was summarized in two synthesized findings (Table 5).

Synthesized finding four: Providers identified factors related to the availability of resources as influencing the quality of care in family planning services. These included: clients’ low income levels, and inability to pay high fees; inadequate supplies in facilities; and high staff workload. Three categories informed this synthesized findings. The first category related that the high costs of family planning services relative to clients’ income undermined clients’ ability to choose facilities and methods, and affected quality of care [52,53]. Category two informed that lack of family planning supplies often prevented providers from delivering the type of services clients intended to receive [53]. The high workload of providers in the

Table 5. Synthesis of qualitative findings on how providers perceive factors determining the quality of care in family planning services.

Findings	Categories	Synthesized findings	
<p>Like the clients, the providers believed that their clinics were chosen partly because of their competitive fees.</p> <p>Perceptions of clients' ability to pay for services influenced the type of care providers offered. Sometimes providers would not bother to make referrals for contraceptive methods or medical treatment if they believed that financial support was lacking.</p> <p>Lack of supplies was the most commonly cited barrier to quality family planning services. The few providers who reported that they had enough contraceptive supplies still said they lacked disinfectant, gloves, family planning cards and educational materials. Some stock-outs of contraceptives and other supplies were reported to last 3–6 months and led to discontinuation.</p> <p>Providers and managers agreed that many family planning clinics did not stock implants and intrauterine devices because they lacked trained providers who could insert them. Furthermore, lack of training resulted in some providers imposing menstruation barriers—meaning a client must be menstruating before starting a contraceptive method—because they were concerned about inadvertently giving a method to a pregnant woman. Managers agreed this practice occurred and admitted this could result in unintended pregnancies.</p> <p>Almost all providers felt that the quality of care they could offer was compromised because they were overloaded with work, and managers confirmed some clinics were understaffed.</p>	<p>1. Cost incurred for family planning services was identified as barriers for family planning services</p> <p>2. Lack of family planning supplies (equipment's, contraceptive methods, and other materials) were perceived as barriers for family planning services provision</p> <p>3. Workload of providers was identified as factor quality of care in family planning services</p>	<p>Providers identified a range of factors related to the availability of resources including clients', low income levels, and inability to pay high fees; inadequate supplies; and high staff workload.</p>	
<p>.....the providers were critical of some of their inconsiderate actions at the clinics. . . .</p> <p>Providers reported that many women secretly used contraceptive methods. A woman who hides use and experiences a side effect is at risk of stopping the method rather than switching to a method that might be detected by her husband, they said. Informed choice loses much of its meaning when the primary use criterion is a method that cannot be detected.</p> <p>Medical examination were identified by both clients and providers as an important component of family planning service provision which affects choice, continuation and satisfaction with services.</p>	<p>1. Provider behaviour while interacting with clients was identified as a factor for quality of care</p> <p>2. Privacy and confidentiality for client from other clients and parents were factor for quality of care</p> <p>3. Providers perceived range of services such as conducting medical examination as an important element in the provision of family planning services</p>		<p>Behavior of providers towards clients, for example being disrespectful of client's time, and privacy and confidentiality of clients for example the need to hide from husbands and parents were identified as factors affecting the quality of care. The range of services offered by providers to clients was also identified as factor influencing the quality of care.</p>

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facility influenced the delivery of quality of care for their family planning clients [53] was the third category. The following two illustrations were client's voices supporting the second and third categories. In the words of one provider: "We had no Depo-Provera, for a long time . . . over 6 months actually. [Question: So what were you doing by that time?] Those who wanted Depo were not being served because most people here do not like oral contraceptives." (Manager) [53]p38. The third category included only one finding which identified too few staff relative to clients as a factor affecting quality of care [53]. In the words of a provider: "We are overloaded.

We are small doctors [laughter]. There are clients for Voluntary Counselling and Testing (VCT) there . . . in the labour ward; there are two mothers waiting and then there are clients in antenatal clinic . . . If these mothers wait for so long, they have to go elsewhere and if they do not get their method they will never come back.” (Bushenyi, FGD) [53]p39.

Synthesized finding five: Behavior of providers towards clients, for example being disrespectful of client’s time, regard for privacy and confidentiality for family planning clients, were perceived by providers as factors affecting the quality of care. Providers also identified the range of services offered by providers to clients as a factor influencing the quality of care. This synthesized finding was informed by three categories of findings. The first described provider behavior as something that affected quality of care [52,53]. The second spoke the importance of privacy and confidentiality of clients affecting quality of care [53]. The third identified the range of services as a factor affecting quality [52]. The following provider voice illustrates that the providers perceptions about clients need about range of services.

“I have seen a client coming from town [to our clinic] and she already was provided with pills but she said she was not examined. She told her friend who told her that one normally is supposed to be examined. . . So I think they value examinations—general examinations and pelvic” (INDEPTH, Provider 11, Location 2) [52]p44.

Discussion

This systematic review aimed to develop an evidenced based understanding of factors that determine the quality of care in family planning services in Africa, using a systematic review of mixed evidence. A total of 11 moderate to high quality studies, undertaken in seven of the fifty five African countries, were identified and included to inform understanding of the factors determining quality of care in family planning services in Africa.

The quantitative component of the review pointed to a wide range of factors determining the quality of care in family planning services in Africa. These included client, provider, facility, structural and process factors. Client’s waiting time before receiving the services, provider competency, provision of injectable methods, maintaining privacy and confidentiality were the most commonly identified process factors found in the quantitative studies. Quality of stock inventory was the most commonly identified structural factor identified by the quantitative evidence. In addition, the quantitative studies pointed to the type of ownership of facilities as an important factor influencing quality of care in family planning services. More specifically, privately owned facilities were associated with higher levels of client satisfaction than publicly owned facilities. We also found from the quantitative studies, that certain client characteristics, namely age, educational status, and types of clients in terms of being whether new or repeat users were associated with satisfaction with family planning services.

A number of factors that were identified by the quantitative studies as important factors determining the quality of care in family planning services were mirrored in the synthesized findings from the included qualitative studies. These were waiting time, information provided to clients, maintaining client’s privacy and assurance of confidentiality, provider competency, convenient operating hours and cost of family planning services. The qualitative findings pointed towards three additional factors not identified by the quantitative studies. These were pre-requisites to be fulfilled by clients before taking family planning services, workload of providers, and provider behaviour.

The findings from the systematic review corroborate the aspects of quality of care of family planning identified in the Bruce and Jain framework [28,30]. The aspects that the Bruce and

Jain Framework suggested, were mostly related to the process of family planning services provision included the contraceptive method mix, the information provided to the clients, provider's technical competency, the interpersonal relationship between provider and clients, continuity and follow-up, and constellation of services [28,30]. However, the current review highlighted additional factors that were associated with quality of care. Firstly, service accessibility issues including cost of services and the presence of certain pre-requisites such as clients were required to confirm they were on their menses at the time of contraceptive initiation. Secondly, waiting time and client's preference for older and mature providers were identified as additional factors determining quality of care in family planning services from the qualitative studies. The range of factors identified by this review as influencing the quality of care in family planning services in Africa points to the limitations for the Donabedian model in the sense that it excludes the patient's own characteristics as important factors determining quality of care [29]. In this regard, the included studies in the current review showed age and educational status of clients as factors associated with quality of care.

Similar to this review, a review of studies conducted in the United States, showed quality of family planning services as depending on a range of factors including the characteristics of the facility, provider, and client [56]. Three studies, one in United States [57] and two [58,59] conducted in Iran, also highlighted access to services as an important factor influencing quality of care in family planning services.

This systematic review has several strengths and shortcomings. The first strength is its inclusion of qualitative and quantitative studies. The inclusion of mixed evidence in systematic review is widely regarded as best practice [60,61] to provide decision makers with information to inform policy making as qualitative evidence can aid understanding, by offering insights into factors that cannot be measured. A second strength of this reviews is the consideration and inclusion of academic (peer reviewed) and grey literature. Inclusion of grey literature addresses the issue such as publication bias [62]. The use of best practice method for systematic review, and in particular the conduct of critical appraisal and formal synthesis of qualitative findings using meta-aggregation is a third strength.

This systematic review also has a number of limitations. Firstly, the included quantitative studies employed different definitions classification and measurement approaches of client satisfaction and hence meta-analysis was not possible. Secondly, the studies were conducted in a small number of Africa's diverse countries and regions. The findings may reflect health service structures and client/provider perceptions that are specific to these areas and may not be applicable to other African countries and regions. Thirdly, there were relatively few quantitative studies and very few qualitative studies included in our review. These last two limitations may limit the generalizability of the results. However, some factors were found to be significant in all or the majority of the studies, which suggests that these may be applicable to a number of settings. Finally, although client's perceptions are often mediated through the social and cultural environment [63], the included studies did not consider the cultural aspects of family planning clients.

Implications of the policy and planning of family planning services in Africa

The limited size and heterogeneous nature of the evidence base identified by this review precluded identifying the factors that are most important, in a wide range of African settings, for the provision of high quality of care in family planning services in Africa. This prevents the drawing of firm evidence based recommendations for health planners wanting to implement measures to improve quality of care in family planning services in all health settings in Africa.

However, our findings about the factors influencing quality of care in family planning services do offer some guidance for health planners about strategies that should be priorities. First, in this regard, the positive association found between quality of care and structural factors related to the facility, including proximity to clients' place of residence, costs of services, and the number of days in a week that the service is open, points towards the need for planners to implement strategies that reduce these access barriers. Towards this end, subsidized or free services, outreach services, flexible opening hours of clinics/hospitals, and arrangements of transportation are options that could be explored. Second, the finding that provider competency is an important factor determining quality of care in family planning services suggests that investing in provider skills, and supporting providers to deliver care in a way that is congruent with best practice, are important. Third, the finding that the provision of information about planning methods is an important factor determining quality of care, suggests that strategies to ensure that clients are supplied with necessary information about the different methods, and their potential side effects are important to support high quality of care in family planning services. Fourth, the findings from our review point to the need for planners to implement strategies to shorten clients' waiting time and ensure client's privacy and confidentiality in family planning services.

Conclusion

Overall, the limited, moderate to high quality, quantitative and qualitative studies on factors determining quality of care in family planning services in Africa, pointed to multiple factors, related to client, provider, facility characteristics, as well as structural and process. Hence, improving quality of care in family planning services in Africa requires multiple actions that target these different factors. Further research is required to understand the key factors associated with quality of care in family planning services in African countries.

Supporting Information

S1 Fig. PRISMA Flow Diagram.

(TIF)

S1 Table. PRISMA 2009 Checklist.

(DOCX)

S2 Table. Search strategy.

(RTF)

S3 Table. Findings and illustrations of the included qualitative studies.

(RTF)

S4 Table. Methodological quality assessment.

(RTF)

S1 Text. Records excluded at full text examination with reasons.

(RTF)

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Chapter 5

Study 2. Client and facility level determinants of quality of care in family planning services in Ethiopia: Multilevel modelling

5.1 Preface

This chapter contains the second article contributing to this thesis and published in *PLoS One* journal. In the systematic review of mixed evidence presented in the previous chapter, the limited available studies included in the systematic review pointed to some potential factors that may affect quality of care in FP services in Africa. The results from that study (Study 1) helped to select the potential variables and confounding factors likely to be important in assessing quality of care in FP services in Ethiopia. The results from Study 1 also informed the design and outcome of Study 2 which focused on identifying the client- and facility-level factors affecting quality of care in FP services in Ethiopia (research aim number 2), using the first ever nationally representative facility-based survey data. As discussed in Chapter 2, while there are a number of frameworks available to guide the assessment of quality of care in FP services, the Donabedian model of quality of care was used to select variables in the analysis. This model was used due to its suitability in analysing the type of collected in the ESPA+ 2014 survey which focussed on the facility structure, how FP services were provided (the process) and the client-related outcome following care provision. While the client-level factors included the clients' characteristics and the process components of care in the Donabedian model, the facility-level factors included the facility's context (e.g. geographic location) and the structural components of care in the Donabedian model of quality of care. This study provides information about the characteristics of health facilities and those clients who accessed FP services in these facilities as well as what factors were associated with quality of care in FP services. A number of client-level and facility-level factors were found to be positively associated with the quality of care in Ethiopian FP services.

5.2 Publication

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Overall percentage (%)	70%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
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By signing the Statement of Authorship, each author certifies that:

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RESEARCH ARTICLE

Client and facility level determinants of quality of care in family planning services in Ethiopia: Multilevel modelling

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Abstract

Introduction

Over the last two decades, while contraceptive use has improved in Ethiopia, the contraceptive prevalence rate remains low. In addition to socio-demographic and cultural factors, the quality of care in Family Planning (FP) services is an important determining factor of FP utilization. However, little research exists on the determinants of quality of care in FP services in Ethiopia. This study aims to identify the client and facility level determinants of quality of care in FP services in Ethiopia.

Methods

This study was based on the first Ethiopian Services Provision Assessment Plus (ESPA+) survey conducted in 2014. A total of 1247 clients nested in 374 health facilities were included in the analysis. Multilevel mixed-effects logistic regression modelling was conducted. The outcome variable, client satisfaction, was created using polychoric principal component analysis using eleven facets that reflect client satisfaction.

Results

The results showed that both client-level and facility-level factors were associated with quality of care in FP services in Ethiopia. At the client-level; provision of information on potential side effects of contraceptive method (AOR = 5.22, 95% CI: 2.13–12.80), and number of history and physical assessments (AOR = 1.19, 95% CI: 1.03–1.34) were positively associated with client satisfaction, whereas waiting times of 30 minutes to two hours (AOR = 0.11, 95% CI: 0.03–0.33) was negatively associated with client satisfaction. At the facility-level; urban location (AOR = 4.61, 95% CI: 1.04–20.58), and availability of FP guidelines/protocols for providers (AOR = 4.90, 95% CI: 1.19–20.19) had positive significant effect on client satisfaction.

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Data Availability Statement: The data for the present study was provided by the Ethiopian Public Health Institute (EPHI) under an agreement that imposes restrictions on data sharing. However, interested readers/researchers may contact the Director of the Health System Research Directorate at the EPHI, Addis Ababa, Ethiopia through email; abebe1277belay@gmail.com. Accessing the primary data is possible after getting ethical approval from the EPHI.

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Conclusion

Quality improvement programs in FP services in Ethiopia should focus on shortening waiting times and provision of information about the potential side effects of contraceptive methods. It is also important to improve health providers' skills in thorough client history taking and physical assessment. Further distribution and implementation of best practice guidelines for providers working in the FP services must be a priority.

Introduction

In 2015, the World Health Organization (WHO) estimated that 303,000 women were dying globally from pregnancy-related causes and complications, of which 66% occurred in sub-Saharan Africa. Ethiopia is ranking fourth in the top ten countries that accounted for 59% of the maternal deaths globally [1]. According to the recent Ethiopian Demographic and Health Survey (EDHS), the maternal mortality ratio was 412 per 100,000 live births in 2016 [2].

In response to the high rate of maternal deaths in developing countries, in 1996 the WHO identified Family Planning (FP) services as one of the key strategies of the safe motherhood initiative [3] aimed to reduced maternal deaths. This followed the outcome of the 1994 International Conference on Population and Development (ICPD) where FP was seen as important in meeting reproductive health needs for couples and families [4]. In 2012, analysis of data from 172 countries showed that contraceptive use had averted 44% of maternal deaths [5]. In addition, evidence points to family planning's key role in also reducing infant mortality. For example, a study focusing on developing countries found that it reduced infant mortality by 10%, and childhood mortality by 21% [6]. The contribution of FP in reducing maternal mortality is due to its role in preventing unintended pregnancy and complications such as abortions and preventing teens pregnancy [7,8]. Moreover, the adequate interval between successive pregnancies gained from use of FP helps to prevent preterm, low birth weight, and small-for-gestational age infants, factors associated with early child mortality [9,10].

In Ethiopia, little was known about FP before the mid-1960s. Modern FP was introduced in Ethiopia half a century ago by the Family Guidance Association of Ethiopia (FGAE). Initially, the FGAE provided services in a single room by one nurse, at St Peter Hospital in Addis Ababa. Later, the Ministry of Health (MOH) enhanced the effort through provision of FP services as part of the Maternal and Child Health (MCH) services in all levels of health facilities [11,12]. In 1996, the MOH developed guidelines for FP services to expand and ensure the quality of care in FP and these were revised in 2011. In the latest guidelines, the MOH outlined that FP services should be delivered through community-based, facility-based, and outreach modalities [11]. These developments have contributed to significant improvements in the Contraceptive Prevalence Rate (CPR) in the past 16 years (8% in 2000, 14.7% in 2005, 28.6% in 2011, and 36% in 2016) [2,13–15]. Nevertheless, the fertility rate remains high in Ethiopia, with an average total fertility rate of 4.6 in 2016 [2].

Despite the improvements in FP use in Ethiopia, there are still areas for improvement. More than one third (37%) of Ethiopian women who commence contraception discontinue use within 12 months and the discontinuation rate varies by the method of contraception. According to the EDHS 2011 report, the discontinuation rate for oral contraceptive pills was 70%, 62% for male condoms, and 34% for injectable methods [15]. The reasons for such high discontinuation rates are not clearly understood. However, several studies from developing countries have found that poor quality of care in FP services is a prime reason for high rates of

discontinuation, reduced utilization of FP services, non-compliance, and high unintended pregnancies [16–22]. A study conducted in Northern Ethiopia found that women who did not receive a follow-up appointment to the FP service or had not been satisfied by the service provided were more likely to discontinue their FP use [23]. In 2015, the Health Sector Transformation Plan (HSTP) was introduced in Ethiopia. One of the goals of the HSTP is to increase the CPR to 55% and reduce the unmet need for FP use (percentage of those who want to stop or delay childbearing but are not using any method of contraception) to 10% by 2020 [24]. Improving the quality of care in FP services may be one strategy to help achieve these goals.

Globally, assessments of quality of care in FP services have largely been informed by two frameworks: the Donabedian and the Bruce/Jain frameworks. These have identified a range of outcomes such as client satisfaction, change in contraceptive knowledge and behaviour, and reduction in fertility as important in measuring the quality of care in FP services [25,26]. However, in resource limited countries such as Ethiopia, most of the long term outcome measures have rarely been collected, with short term outcome measures such as client satisfaction more frequently collected as an indicator for quality of care.

To date only a few small-scale studies have been conducted to assess quality of care in FP services in Ethiopia [27–31]. These studies were limited to public health facilities [30,31] or failed in identifying the factors determining quality of care in FP services [27–29]. These studies that identified factors associated with quality of care in FP services were pointed to quality of care was associated with client's age, educational status, providers' experiences, client's waiting time, clients' perception on adequacy of information during consultation, ease of getting the health facility [30,31]. A recent systematic review, that considered quantitative and qualitative studies, showed that few studies have assessed determinates of quality of care in FP services in Africa [32]. The first ever Ethiopian Services Provision Assessment Plus (ESPA+) survey, undertaken in 2014 [33]. This study was aimed to identify the client and facility-level determinants of quality of care in FP services in Ethiopia.

Methods

Study context

This study was conducted in Ethiopia which has nine administrative regions and two city administrations. The country had a population of 102 million (second largest in Africa) and a total fertility rate of 4.6 in 2016 [2,34]. In 2010/11, there were 202 hospitals, 3292 health centers, 15618 health posts, and 3990 private clinics (higher clinics, medium clinics, and lower clinics) providing various health services including FP [35].

Study design

This study employed a secondary analysis of data obtained from ESPA+ 2014 survey. Three databases—namely, the facility inventory data for facilities providing FP services, the client-provider observation data, and clients exit interview data—were linked for this analysis.

Overview of the Ethiopian Services Provision Assessment Plus (ESPA+) 2014

The ESPA+ 2014 survey provided a comprehensive picture of the quality and availability of a basic health services that includes maternal and child health, reproductive health services, and infectious diseases. Guided through the Services Provisions Assessment (SPA) methodology which was initially developed by Demographic and Health Survey (DHS) Program, the ESPA+ survey was conducted on a nationally representative sample of health facilities. Similar SPA

surveys have been conducted in several African countries [36]. The ESPA+ 2014 survey comprised facility inventory assessment, client exit interviews, observation of client-provider, and health provider's interviews. The survey was conducted by the Ethiopian Public Health Institute (EPHI) in collaboration with the Ministry of Health. ICF International provided technical assistance. The survey involved a representative sample of these health facilities of all levels (lower and higher) and types (public and private) [33]. Details of the ESPA+ instruments, data collection methods, recruitment and data quality assurance procedures is provided elsewhere [33].

Sampling and sample size

A total of 1327 health facilities were visited during the survey, of which 1037 provided FP services. In these health facilities, 5008 clients were invited to undertake client exit interviews of which client-provider interaction observations were undertaken for 1264 clients in a subset of 374 health facilities. For analysis, 17 samples were excluded due to incompleteness of important variables related to the outcome measure. The final analysis was therefore based on 1247 clients nested in 374 facilities providing FP services (Fig 1).

Variables

Outcome variable. The outcome variable of this study was *client satisfaction*. There are three advantages of using client satisfaction as the outcome measure. Firstly, client satisfaction is one of the key determinants of uptake and continued use of FP services [16,37]. Secondly, it signals other aspects of quality of care including structural and process aspects of quality of care in FP services [16,37,38]. Thirdly, client satisfaction reflects the perception of health care consumers (FP clients) on quality of care on existing health services.

Client satisfaction was measured using clients' exit interview responses to questions about the health service quality, assessed by the problems encountered to clients during their visit to health facilities for FP services. In this regard, respondents were asked to rate eleven facets that reflect clients' perceptions of the quality of the visit (Table 1). The responses were then aggregated into an index using polychoric principal component analysis for discrete variables [39]. Principal component analysis was undertaken using the correlation matrix of these eleven facets. The first principal component was used as the index for client satisfaction. As the aggregated index value was skewed, we created a dichotomised variable using the median score as a cutoff point. The median score for the aggregate value was 3.91. Finally, a binary outcome of client satisfaction was devised as more satisfied if a score was 3.91 or greater, and as less satisfied if a score was less than 3.91.

Independent variables. The independent variables used in the analysis included client-level and facility-level factors and these are described in Table 1. The client-level variables represent characteristics related to the FP client, the process variables related to aspects of quality of care that clients encountered while receiving FP services, or during client/provider interaction. The data for the client characteristic variables were derived from the client exit interviews and the process variables were from the client-provider observations. The facility-level variables included the characteristics of the health facility and structural issues in the facility where clients received FP services. The data for these variables were derived from the facility inventory.

Statistical analysis

Descriptive and summary statistics were used to describe the client-level and facility-level variables. All the analysis was conducted after applying client weights to adjust for

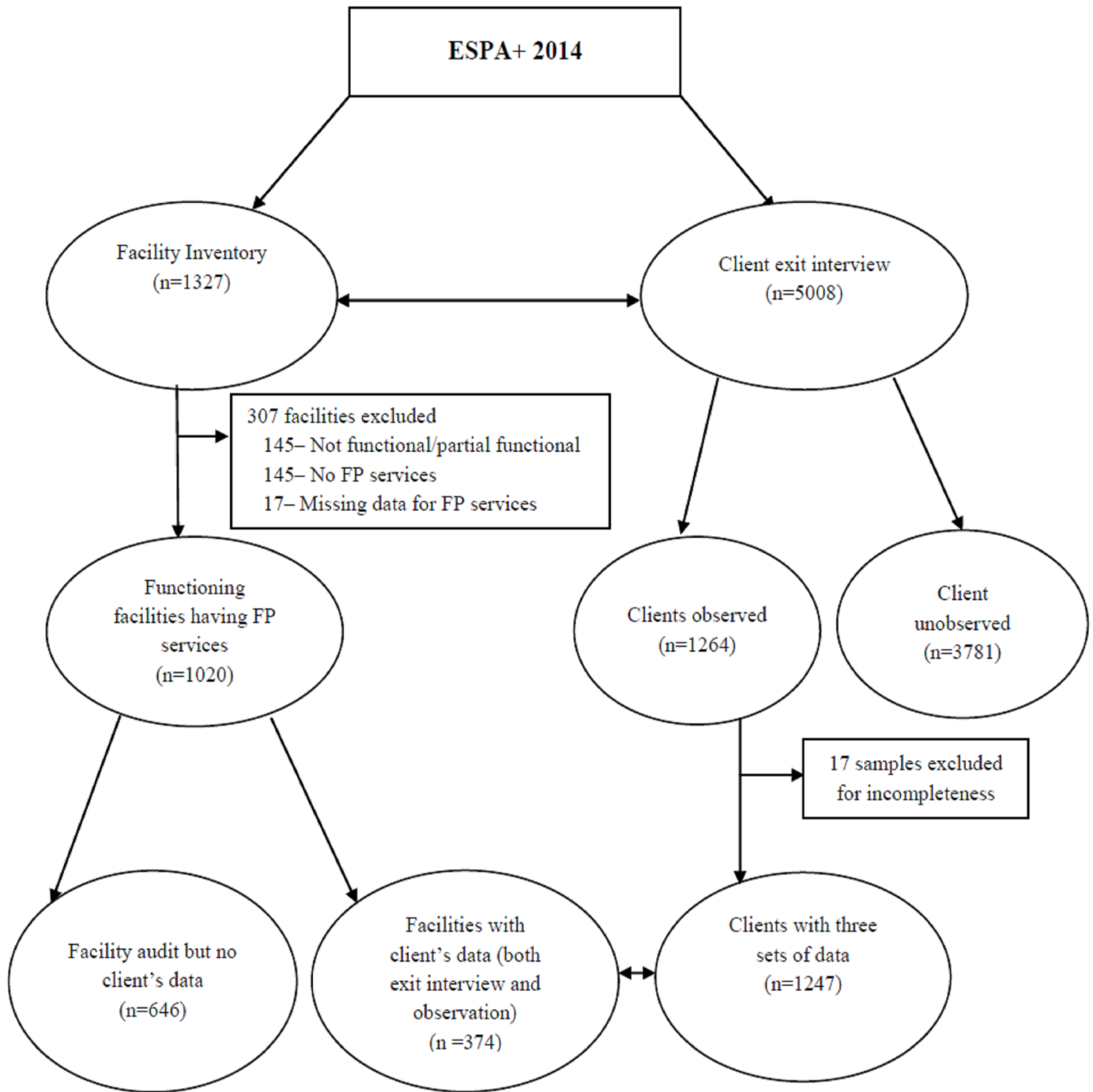


Fig 1. Schematic presentation of samples for identifying client and facility level determinants of quality of care in family planning services in Ethiopia.

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disproportionate sampling and non-responses. To examine the magnitude of the relationships between different client-level and facility-level factors associated with client satisfaction, multi-level logistic regression analyses were performed. The rationale for using multilevel modelling was the following. Firstly, quality of care in FP services is influenced by the characteristics of different levels (clients, health care providers, and health facilities). Analysing variables from

Table 1. Description of variables used in the analysis.

Variable	Type of variable and/or definitions	Sources of dataset
Outcome variable		
Client satisfaction	Binary variable (less satisfied Vs more satisfied) The variable created using polychoric principal component analysis based on 11 aspects that clients have been asked to report if they encountered a problem during visit to the facility. These aspects included: 1) time clients waited to see provider; 2) ability to discuss problems or concerns about your method; 3) amount of explanation you received about the problem or treatment; 4) privacy from having others see the examination; 5) privacy from having others hear your consultation discussion; 6) availability of FP commodities at this facility; 7) the hours of service at this facility, i.e., when they open and close; 8) the number of days services are available to you; 9) the cleanliness of the facility; 10) how the staff treated clients; 11) cost for services or treatments	Client exit interview
Independent variables		
Client characteristics		
Sex	Binary (male, female)	Client exit interview
Age (in years)	Continuous	Client exit interview
Educational status	Categorical (no education, primary education, secondary education, tertiary education)	
Types of client	Binary (new, repeated); clients were regarded as new clients if it was their first time to seek FP services; otherwise regarded as repeated clients.	Client exit interview
Process aspects / client-provider interaction		
Information provided about how to use the contraceptive method	Binary (no, yes); whether or not the clients received explanation about how to use the contraceptive method	Client-provider observation
Information provided about contraceptive method's potential methods side effects	Binary (no, yes); whether or not clients have been told about possible side effects of the contraceptive method	Client-provider observation
Information provided on what to do if problem occurs	Binary (no, yes); whether or not clients have been told what to do if they have any problems	Client-provider observation
Information provided on when to return for follow-up	Binary (no, yes); whether or not clients have been informed when to return for follow-up	Client-provider observation
Partner's attitude towards FP asked	Binary (no, yes); whether or not clients asked about their partner attitude towards FP (in favour of, or against the idea of family planning)	Client-provider observation
Client's number of sexual partners asked	Binary (no, yes); whether or not client's number of sexual partner(s) asked by the provider	Client-provider observation
Client's perceived risk of HIV/STI asked	Binary (no, yes); whether or not client's perceived risk of HIV/STI asked by the provider	Client-provider observation
Client's concerns about the methods addressed	Binary (no, yes); whether or not provider asked clients about any question or concerns about the current contraceptive method; or clients expressed concerns about the contraceptive method including possible side effects	Client-provider observation
Clients asked questions to the providers	Binary (no, yes); whether or not clients expressed concerns or asked questions about the contraceptive method including possible side effects	Client-provider observation
Information about condom use for STI prevention provided	Binary (no, yes); whether or not clients have been informed about condom use for STI prevention	Client-provider observation
Information about dual method use for HIV/STI prevention provided	Binary (no, yes); whether or not clients have been informed about use of dual contraceptive methods that included condom and one of hormonal contraceptive methods to prevent HIV/STI	Client-provider observation
Privacy maintained	Binary (no, yes); whether both auditory and visual privacy of clients maintained during consultation	Client-provider observation
Confidentiality assured	Binary (no, yes); whether the clients received verbal reassurance about their privacy	Client-provider observation
Duration of consultation in minutes	Continuous; Number of minutes provider spent for consultation	Client-provider observation

(Continued)

Table 1. (Continued)

Variable	Type of variable and/or definitions	Sources of dataset
Number of history and physical assessment	Continuous (0–14); An index based on 14 aspects that the provider assessed or conducted for clients. The aspects involved if the provider asked clients about their last time of delivery, age, last time of mensuration, history of breastfeeding, history of regular menses, number of living children, desire for additional children, asked for smoking, asked for any chronic illness, asked for Sexually Transmitted Infection (STI) symptoms, took client's blood pressure, and took client's body weight.	Client-provider observation
Client's waiting time	The total time in minutes elapsed between client's arrival to the facility and the time when she has been seen by the provider for consultation on FP services. Categorized into less than 30min, 30min-2hours, and greater than 2hrs or don't know	Client exit interview
Client paid for FP services	Binary (paid, not paid); whether or not clients reported they were paid for FP services in the facilities	Client exit interview
Facility relatively close to client's home	Binary (no, yes); whether or not clients reported that the facilities were the closest health facilities to their residential area	Client exit interview
Facility-level variables		
Facility characteristics		
Facility ownership	Binary (public, private); public included government and military facilities, whereas private included private for profit, private for-not-profit (faith based facilities)	Facility inventory
Facility location	Binary (urban, rural), classified based on the whether the facility is located in urban or rural areas	Facility inventory
Types of facility by level	Binary (lower, higher); lower facility included health posts, health centre, lower and medium clinics whereas higher facility included regional, zonal and referral hospitals	Facility inventory
Region	Categorical, 11 administrative regions	Facility inventory
Structural aspects		
Number of basic amenities	Continuous (0–6); the number of basic amenities available in the facility. It considered telephone, cell phone, computer, email, water, electricity/generator	Facility inventory
Twenty four hours staff availability	Binary (no, yes); whether or not provider available 24-hours of day (day, night, and week shifts)	Facility inventory
System to collect client opinion	Binary (no, yes); whether or not the facility has a system to collect quality assurance document such as client's opinion sheet	Facility inventory
Availability of FP guidelines/ protocols	Binary (no, yes); whether or not the facility possessed FP guidelines/protocols on the date of survey	Facility inventory
Availability of chart/record	Binary (no, yes); whether or not the facility possessed client chart or recoding for taking notes about the clients during history taking and physical assessment	Facility inventory
Availability of supervision in the past six months	Binary (no, yes); Whether or not the facility received supervisory visit from district/ regional/ zonal/federal offices in the past six months before the survey	Facility inventory
Availability of weight measurement tool	Binary (no, yes); whether or not the facility possessed weight scales	Facility inventory
Availability of Blood Pressure (BP) measurement tool	Binary (no, yes); whether or not the facility possessed BP measurement apparatus	Facility inventory
Presence of trained provider in the past 24 months	Binary (no, yes); whether or not the provider received FP related training in the past 24 months before the survey	Facility inventory
Facility has private room for counselling	Binary (no, yes); whether or not the facility's possessed private room for counselling during FP services	Facility inventory
Number of infection prevention precaution measures	Continuous (0–14); the number of infection prevention precaution measures involved in the facility. It included availability of running water, hand washing soap, alcohol based hand rub, waste receptacle, safety box, disposable latex glove, disinfectant/antiseptics, syringe, medical masks, gowns, eye protection goggle, standard precaution guidelines, and boots.	Facility inventory
Number of FP equipment and supplies	Continuous (0–9); the number of FP equipment and supplies available in the facility. It included availability of digital BP apparatus, manual BP apparatus, stethoscope, examination light, examination bed/couch, sample FP methods, FP specific visual aids, pelvic model for IUCD demonstration, penile model for demonstrating condom use	Facility inventory

(Continued)

Table 1. (Continued)

Variable	Type of variable and/or definitions	Sources of dataset
Number of quality stock organizations measures	Categorical, number of quality stock arrangements for FP commodities (No stock, 1–4, 5–8 components). It considered eight components: storage area, protected from water, protected from sunlight, protected from rodents, well ventilated, organised upon expired date, sufficient space in the stock, commodities labelled for strength and expire date.	Facility inventory
Number of days that FP services offered in a week	The median number of days that facilities providing FP services	Facility inventory
Number of contraceptive methods offered and/or prescribed	Continuous (0–12); the number of contraceptive methods offered or prescribed in the facility. The contraceptive methods included combined oral contraceptive pills, progestin only pills, progestin only injectables, male condom, female condom, implant, Intrauterine Device (IUD), periodic abstinence, emergency pills, female sterilization, and vasectomy (male sterilization), and Lactational Amenorrhea Method (LAM).	Facility inventory

FP- Family planning, IUCD- Intrauterine Contraceptive Device, BP-Blood Pressure, STI- Sexual transmitted Infections, HIV- Human Immunodeficiency Virus

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different levels at one single common level using the standard binary logistic regression model could create bias due to correlation between clients within the same facility. A multilevel model allows us to consider the individual level (client-level) and the facility-level in the same analysis, rather than having to choose one or the other. Secondly, the collected data had a hierarchical structure where client’s data (level 1) nested in the facility (level 2), with the likelihood that clients’ satisfaction would be correlated within the characteristics the health facilities where they received FP services.

Two-level logistic mixed-effects regression modelling was used to examine the effects of the client (level 1) and facility (level 2) variables. We ran four models: an empty model (null model)-without covariates; a model containing only client factors; a model containing only facility-level variables; and a model comprising both the client and facility-level variables.

The following equation illustrates the multilevel modelling for client satisfaction.

The full model $\text{Log} \left[\frac{p_{ij}}{1-p_{ij}} \right] = \beta_0 + \beta_1 C_{ij} + \beta_2 F_j + \mu_j + \epsilon_{ij}$ where:

i and j are the level 1 (client) and level 2 (facility) units respectively;

p_{ij} is the probability of client satisfaction occurrence in client i in a facility j that provided FP services; the β 's are the fixed effects coefficients;

C and F refer to client-level and facility-level explanatory variables, respectively;

μ shows the random effects for the j th cluster; and

ϵ , the random error at the client-level.

The distribution of μ_j was normal with mean 0 and variance $\sigma^2 \mu_0$. The Intra-Class Correlation (ICC) was calculated using between-cluster (facility) variance and within cluster (facility) variance [$\text{ICC} = \sigma_{\mu}^2 / (\sigma_{\mu}^2 + \pi^2 / 3)$]. The ICC was used to assess the influence of unobserved facility-level variables on client satisfaction. Univariate mixed-effects logistic regression analysis was performed to estimate the crude odds ratios at 95% confidence interval. Those variables that had p-value of less than 0.2 in this model were included in the multivariate mixed-effects logistic regression analysis.

The model fitness was assessed using Akaike Information Criterion (AIC) and Likelihood Ratio (LR) test. Variance Inflation Factor (VIF) was employed for checking multicollinearity among the independent variables. The fixed effect sizes (measure of associations) of the client and facility-level factors on client satisfaction were expressed using the Odds Ratio (OR) and 95% Confidence Interval (CI) whereas variance (measure of variations) was used to express the random effects. To account for the complex sampling strategy, weighting was employed during the analysis as well as when performing the ICC and AIC calculations. A p-value of less than 0.05 was applied used to declare level of significance. All statistical analyses were carried out with STATA 14 (Stata Corporation, College Station, TX, USA).

Ethical approval

Ethical approvals were obtained from the Scientific and Ethical Review Committee (SERC) at the Ethiopian Public Health Institute (EPHI) and the University of Adelaide Human Research Ethics Committee (HREC).

Results

Description of client characteristics

The clients' characteristics are shown in Table 2. The majority of the clients were female, aged below 35 years (83.2%), with the mean age of 28.1 years (SD = 13.2). Many had no education (44%) or only had primary education (34%). Nearly one third (30%) were new FP clients.

Client satisfaction and process aspects in the provision of family planning services

Table 3 shows level of client satisfaction and various process aspects of quality of care in the provisions of family planning services in Ethiopia. Of 1247 clients who had a client-provider observation and participated in an exit interviews, 729 (59%) were more satisfied with FP services. In terms of information provision to the clients, nearly three quarters (73%) were

Table 2. Description of clients' characteristics (n = 1247).

Variables	Frequency	Percent
Sex		
Female	1246	99.9
Male	1	0.1
Age (in years)		
< = 24	487	39.0
25–34	550	44.2
> = 35	206	16.5
Missing	3	0.3
Educational status		
No education	552	44.2
Primary	428	34.4
Secondary	189	15.1
Tertiary	74	6.0
Missing	3	0.3
Types of client		
New client	372	29.9
Repeated client	871	69.9
Missing	2	0.2

<https://doi.org/10.1371/journal.pone.0179167.t002>

Table 3. Client satisfaction and process aspects during client-provider interaction (n = 1247).

Variables	Frequency	Percent
Client satisfaction		
Less satisfied	518	41.5
More satisfied	729	58.5
Information provided about how to use the contraceptive method		
No	319	26.7
Yes	877	73.3
Information provided about the contraceptive method's potential side effects		
No	549	46.4
Yes	635	53.6
Information provided on what to do if a problem occurs		
No	538	45.1
Yes	655	54.9
Information provided on when to return for follow-up		
No	83	6.9
Yes	1,116	93.1
Partner's attitude towards FP asked		
No	1,123	90.10
Yes	124	9.90
Client's number of sexual partner asked		
No	1,204	96.60
Yes	43	3.40
Client's perceived risk of HIV/STI asked		
No	1,145	91.80
Yes	102	8.20
Client's concerns about the methods addressed		
No	541	43.40
Yes	706	56.60
Information about condom use for STI prevention provided		
No	1,221	97.90
Yes	26	2.10
Information about dual method use for HIV/STI prevention provided		
No	1,228	98.50
Yes	19	1.50
Clients asked question to the providers		
No	700	56.10
Yes	547	43.90
Privacy and confidentiality issues		
Auditory privacy maintained		
No	319	25.60
Yes	928	74.40
Visual privacy maintained		
No	440	35.30
Yes	807	64.70
Both auditory and visual privacy maintained		
No	460	36.90
Yes	787	63.10
Confidentiality assured		
No	1,100	88.20
Yes	147	11.80

(Continued)

Table 3. (Continued)

Variables	Frequency	Percent
Duration of consultation in minutes (median = 10min)		
< 10 minutes	651	52.2
10–15 minutes	379	30.4
>15 minutes	211	17.0
Missing	5	0.4
Number of history and physical assessments		
0	187	15.00
1–2	363	29.20
3–6	561	45.00
7–12	191	10.80
>13	0	0
Client's waiting time		
<30min	738	59.2
30min-2hrs	246	19.7
>2hrs	124	10.0
Don't know	138	11.1
Client paid for FP services		
No	1,103	88.5
Yes	144	11.5
Facility relatively close to client's home		
No	240	19.3
Yes	1,005	80.6
Missing	1	0.1

FP- family planning, STI- Sexual Transmitted Infections, HIV- Human Immunodeficiency Virus

<https://doi.org/10.1371/journal.pone.0179167.t003>

informed about how to use the contraceptive method and nearly half (46%) about potential negative side effects. While only 655 (55%) were informed on what to do if a problem occurs, most (93%) were informed about when to return for follow-up. Very few clients were asked about their partner's attitude towards FP method (10%), their number of sexual partners (3%), or their HIV/STI perceived risk (8%). With regard to client's concern about the contraceptive methods, 541 (43%) of them left without their concerns being addressed. Only two percent of clients were provided information about condom use for Sexual Transmitted Infection (STI) prevention and dual contraceptive method use for Human Immunodeficiency Virus (HIV) and/or STI prevention. Privacy was not maintained for 460 (37%) clients and confidentiality was not assured for the majority (88%) of clients. The median duration of the client consultation was 10 minutes of which more than half (52%) were consulted for less than 10 minutes. The average number of history and physical assessments was 3.2 (SD = 2.3). In this regard, 187 (15%) of clients had not been assessed through neither history taking nor physical examination. The overwhelming majority of clients (89%) were not required to pay for the service and 59% waited less than 30 minutes before receiving FP services (Table 3).

Description of the characteristics and structural aspects of health facilities

Table 4 shows the characteristics of health facilities and their structural aspects. Of the 374 facilities where client-provider observations were conducted, 350 (94%) were publicly owned, just over half (53%) were located in urban areas and about 1 in 5 facilities (17%) were higher

Table 4. Description of the characteristics and structural aspects of health facilities (n = 374).

Variable	Frequency	Percent
Facility ownership		
Private	24	6.5
Public	350	93.5
Facility location		
Rural	198	52.9
Urban	176	47.1
Type of facility by level		
Lower-level facility	311	82.9
Higher-level facility	64	17.1
Region		
Tigray	53	13.8
Afar	6	2.1
Amhara	80	20.9
Oromia	84	21.9
Somalie	8	2.1
Benshangul-Gumuz	23	6.0
SNNPR	58	15.1
Gambella	5	1.3
Harari	14	3.7
Addis Ababa	34	8.9
Dire Dawa	16	4.2
Number of basic amenities (median = 3.2)		
0	7	1.9
1–3	248	66.3
4–6	119	31.8
Twenty four hours staff availability		
Not available	101	27.1
Available	273	72.9
System to collect client opinion		
No	280	74.8
Yes	94	25.2
Availability of FP guidelines/protocols		
No	160	42.7
Yes	215	57.3
Availability of chart/record		
No	115	30.7
Yes	259	69.3
Availability of supervision in the past six months		
No	128	34.2
Yes	246	65.8
Availability of weight measurement tool		
No	297	79.4
Yes	77	20.6
Availability of BP measurement tool		
Not observed	290	77.4
Observe	85	22.6
Presence of trained provider in the facility in the last 24 months		

(Continued)

Table 4. (Continued)

Variable	Frequency	Percent
No	121	32.3
Yes	254	67.7
Facility has private for counselling		
No	32	8.6
Yes	342	91.4
Number of IP precaution measures		
1–5	65	17.5
6–10	248	66.1
11–14	71	16.4
Number of FP equipment's and supplies		
1–3	55	14.8
4–6	236	62.9
7–9	83	22.3
Number of quality of stock organization measures		
No stock	190	50.7
1–4 stock component	39.	10.7
5–8 stock component	145	38.6
Number of days that FP services offered in a week (median n = 5.4)		
Number of contraceptive methods offered and/or prescribed		
1–3 methods	28	7.4
4–6 methods	132	35.4
7–11 methods	214	57.2

*IP- Infection Precaution, FP- Family Planning, SNNPR-Southern Nations, Nationality and People Region

<https://doi.org/10.1371/journal.pone.0179167.t004>

level facilities. Nearly three-quarters (72%) of health facilities were from Oromia, Amhara, Southern Nations, Nationality and People Region (SNNPR), and Tigray regions. Two-thirds of facilities (66%) had 1–3 basic amenities (median = 3.2). More than a quarter of facilities (27%) did not have staff available for 24 hours, and 75% did not have systems to collect client's opinion (i.e client's opinion sheet) one year prior to the survey. About 4 in 10 of facilities (43%) did not have FP guidelines/protocols to guide the FP practice. Client's chart/record were available in over two-thirds (69%) of facilities. Health facility supervision is conducted as part of the facilities' monitoring and evaluation system, and aims to provide technical support for staff and identify the facilities' demand for equipment and materials. In this regard, only two-thirds (66%) of the facilities reported receiving supervision from district/zonal/regional/federal health offices in the six months prior to the survey. The majority of facilities did not have weight and blood pressure measurement tools, 77% and 79% of facilities respectively. In 68% of the facilities, health providers received FP related training in the 24 months before the survey. Most (91%) facilities possessed a private room for counselling during FP services (Table 4). While injectable contraceptive methods were provided and/or prescribed in all facilities, female condoms were provided and/or prescribed in less than five percent of the facilities (Fig 2).

Determinants of quality of care in family planning services

The fixed effects (measure of association) and random effects (measure of variation) for client satisfaction are presented in Table 5. The results of the empty model (model I) showed a

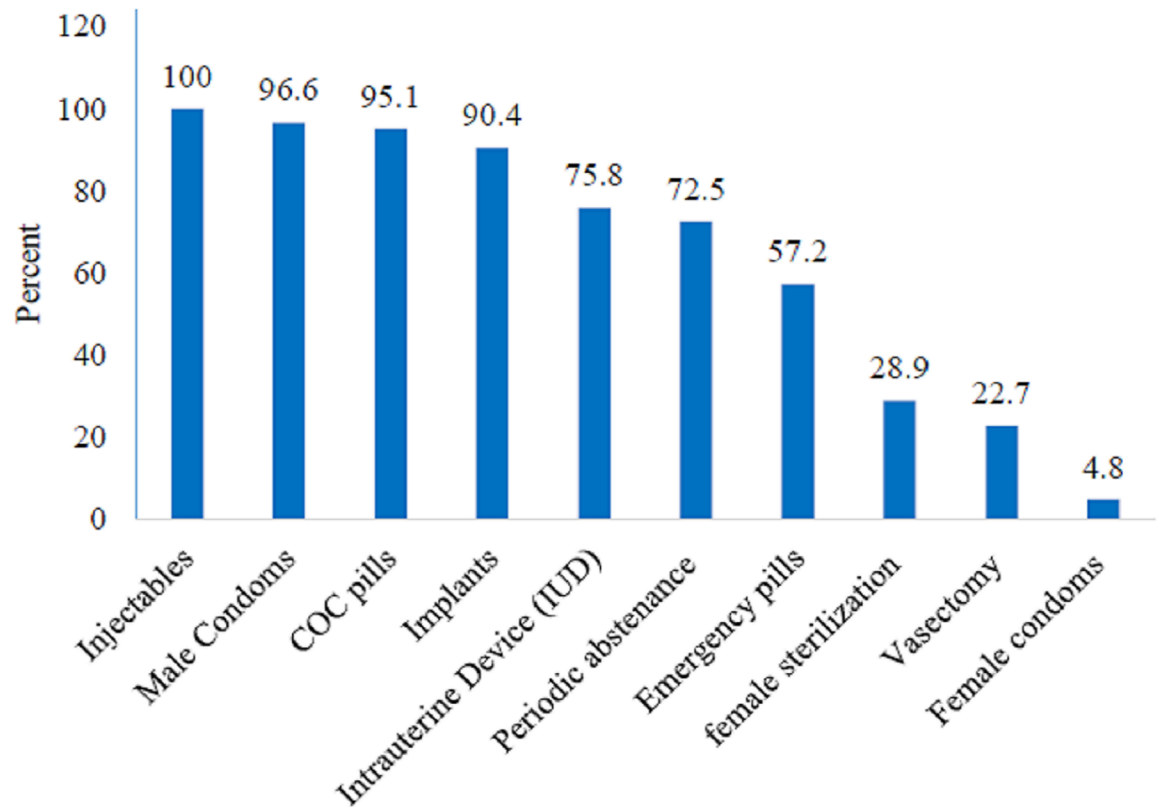


Fig 2. Percentage of facilities by type of available family planning methods during the survey (n = 374).

<https://doi.org/10.1371/journal.pone.0179167.g002>

significant variability in the odds of client satisfaction between health facilities (variance = 1.61). Similarly, the Intraclass Correlation Coefficient (ICC) estimated in the null model (model I) showed that one third (32.8%) of the differences in the client satisfaction can be attributed to the health facilities where clients received FP services. In model II, only client-level variables were included. In this model, client age, client’s waiting time, number of history and physical assessments, information provided about the contraceptive method’s potential side effects, and duration of consultation were found significant. Model III where only facility-level variables included, facility location, availability of supervision in the past six months, and availability of FP guidelines/protocols were found significant. In Model IV (full model), after adjusting for client and facility-level factors, client age, client’s waiting time, information provided about the contraceptive method’s potential side effects, number of history and physical assessments, being an urban facility, and availability of FP guidelines/protocols were the factors that had a statistically significant association with client satisfaction.

The odds of being more satisfied were lower by 89% for clients who waited 30 minutes to two hours compared to clients who waited less than 30 minutes before being seen by the provider for consultation in FP services (AOR = 0.11, 95% CI: 0.03–0.33). Clients who were informed about the potential side effects of the contraceptive methods had about five times higher odds of being more satisfied than those who were not provided with information about potential side effects (AOR = 5.22, 95% CI: 2.13–12.80). The odds of being more satisfied were increased by 19% for each unit increase in number of history and physical assessments (AOR = 1.19, 95% CI: 1.03–1.34). There was borderline significance association between age of the client and client satisfaction (OR = 1.02; 95% CI: 1.00, 1.04, p-value = 0.049).

Table 5. Multivariate mixed-effects logistic regression analysis to identify the client and facility-level determinants of quality of care in family planning services in Ethiopia (n = 1247).

Variables	Univariate model COR (95% CI)	Model I (empty) AOR (95% CI)	Model II AOR (95% CI)	Model III AOR (95% CI)	Model IV AOR (95% CI)
Client-level variables					
Client age	1.02 (1.00–1.04)*		1.03 (1.00–1.05)*		1.02 (1.00–1.04)*
Client's waiting time					
<30min	1		1		1
30min- 2hrs	0.19(0.07–0.53)**		0.10 (0.03–0.31)**		0.11(0.03–0.33)*
>2hrs or don't know	0.84 (0.26–2.68)		0.41 (0.09–1.85)		0.47(0.11–2.08)
Privacy maintained					
No	1		1		1
Yes	1.68 (0.67–4.25)		1.78 (0.51–6.20)		1.96(0.57–6.72)
Number of history and physical assessments	1.15 (1.01–1.31)*		1.20 (1.03, 1.40)*		1.19(1.03–1.34)*
Information provided about the contraceptive method's potential side effects					
No	1		1		1
Yes	4.19 (1.80–9.72)		5.63 (2.14–14.82)**		5.22(2.13–12.80)**
Duration of consultation	0.93 (0.85–1.02)		0.90 (0.82–0.99)*		0.90 (0.82–0.99)
Facility-level variables					
Facility ownership					
Private	1			1	1
Public	8.43 (1.41–50.31)			4.32 (0.63–29.70)	5.39 (0.69–41.75)
Types of facility by level					
Lower-level	1			1	1
Higher-level	0.27 (0.10–0.71)			0.39 (0.14–1.07)	0.86 (0.26–2.83)
Facility by location					
Rural	1			1	1
Urban	1.50 (0.41–5.55)			3.54(1.00–12.50)*	4.61(1.04–20.58)*
Number of basic amenities	0.65 (0.38–1.12)			0.68 (0.41–1.15)	0.43 (0.22–0.84)
Availability of supervision in the past six months					
No	1			1	1
Yes	4.35 (1.25–15.07)*			2.98 (1.18–7.54)*	2.54 (0.81–7.97)
Number of quality stock organization measures					
No stock	1			1	1
1–4 stock	0.77 (0.16–3.86)			1.23 (0.35–4.42)	0.46 (0.10–2.00)
5–8 stock	1.04 (0.31–3.46)			1.41 (0.57–3.54)	1.30 (0.52–1.24)
System to collect client opinion					
No	1			1	1
Yes	2.25 (0.46–11.07)			1.53 (0.54–4.36)	1.36 (0.35–5.26)
Contraceptives offered/ prescribed	0.77 (0.53–1.09)			0.85 (.62–1.17)	0.80 (0.52–1.24)
Availability of FP guidelines/protocols					
No	1			1	1
Yes	3.39 (1.45–11.07)*			3.62 (1.23–10.64)*	4.90 (1.19–20.19)*
Number of IP precaution measures	0.84 (0.66–1.07)			0.93 (0.72–1.19)	0.90 (0.66–1.22)
Number of FP equipment and supplies	0.86 (0.66–1.12)			1.00(0.83–1.20)	0.96 (0.77–1.21)
Random effect					
Variance (SE)		1.61 (0.34)*	9.38 (4.91)*	3.49 (1.12)*	6.15 (2.35)*

(Continued)

Table 5. (Continued)

Variables	Univariate model COR (95% CI)	Model I (empty) AOR (95% CI)	Model II AOR (95% CI)	Model III AOR (95% CI)	Model IV AOR (95% CI)
ICC (%)		32.8%	34.4%	28.1%	31.5%
Model Fitness					
Log Likelihood		-768.13	-674.6	-754.60	-664.52
AIC		1540.3	1367.3	1539.2	1372.05

*P-value< 0.05

**p-value<0.01

AOR- Crude Odds Ratio, AOR- Adjusted Odds Ratio, CI- Confidence Interval, IP- Infection Prevention FP- Family Planning, SE-Standard Error, ICC- Intraclass Correlation Coefficient, AIC- Akaike Information Criterion

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Similarly, those clients who received FP services in urban facilities had about five times higher odds of being more satisfied than those rural facilities. The availability of FP guidelines/protocols was also a significant factor in determining client satisfaction. In this regard, the odds of clients being more satisfied were nearly five times higher in facilities with FP guidelines/protocols as compared to those facilities without FP guidelines/protocols (AOR = 4.90, 95% CI: 1.19–20.19).

Discussion

Using data from the Ethiopian Services Assessment Plus (ESPA+) survey 2014 data, this study assessed the client-level and facility-level determinants of quality of care in FP services in Ethiopia. After controlling the effects of confounders, the findings demonstrate that both client-level and facility-level factors were associated with quality of care in FP services in Ethiopia. At the client-level; age, client’s waiting time, information provision about the potential side effects of the contraceptive methods, and number of history and physical assessments were significantly associated with client satisfaction in FP services. These client-level factors are mostly related to the process of FP services provision. At the facility-level; the availability of FP guidelines/protocols and facility location were significant factors. Excluding client’s age and facility location, the factors identified in the present study reaffirmed four out of the six aspects of the quality of care identified in Bruce/Jain framework [26]. However, unlike this framework, having higher number of contraceptive methods in the health facility (a proxy indicator for the contraceptive method mix) and information on when to return for follow-up were not significant in the present study.

A recent systematic review of studies undertaken in African countries to identify factors determining quality of care in FP services suggests that client waiting time is an important factor associated with quality of care in FP services [32]. Similarly, the present study showed significant association between client’s waiting time and client satisfaction. The odds of being more satisfied in FP services was lower for clients who waited between 30 minutes to two hours as compared to those clients waited less than 30 minutes. When taking the median consultation time of 10 minutes into consideration, the findings that nearly one-thirds of clients waited for more than 30 minutes may suggest either the facilities had too few FP providers relative to the number of clients, or/and too short service opening hours.

The other key client-level factor was the provision of information about the potential side effects of the contraceptive methods. There was higher odds of being more satisfied in FP services when the clients provided information about the potential side effects contraceptive methods. This is in agreement with a previous study conducted in Finland that underscored provision of information about potential side effects of certain contraceptive methods

improved user satisfaction [40]. Additionally, higher number of history and physical assessments for clients' was associated with greater odds of being more satisfied with FP services. In this study, however, about 1 in 7 clients (15%) neither had history nor a physical examination taken. A study conducted in Kenya [41] showed similar finding. These results inform about the need for providers to be retrained about, and supervised for, making sure that they examine the clients and effectively communicate information about the potential side effects.

Besides the client-level factors, the availability of FP guidelines/protocols was an important facility-level structural factor associated with quality of care in FP services. The odds of being more satisfied with FP services was higher for facilities that possessed FP guidelines/protocols as compared to facilities that did not. The availability of guidelines/protocols in the facility suggests that health providers in those facilities have the opportunity to gain up-to-date knowledge about the FP methods which include the potential side effects of different contraceptive methods and the counselling approach. This would in turn help provider to offer client-tailored counselling during FP services. Previous study conducted in Jordan showed similar findings in that provision of protocols to guide client's counselling have improved clients satisfaction with the FP services [42].

Another important determinant of client satisfaction in FP services was the location of the health facility. This study found that those clients who received FP services in urban facilities had higher odds of being more satisfied than rural facilities. This difference may be explained by the following reasons. Firstly, FP clients of rural facilities are likely rural residents who may have less information about the contraceptive methods due to less access for media. Secondly, rural facilities may have a shortage of experienced FP providers due to the possibility that experienced providers would transfer to urban facilities while newly graduated health providers assigned in rural facilities. Thirdly, some contraceptive methods such as female sterilization and Intrauterine Device (IUD) might be available only in urban facilities. As a result, client choice of contraceptive methods may not be fulfilled and eventually they could remain less satisfied with the services.

Strength and limitations

A strength of this study is that it is the first ever study that provides an assessment of the quality of care in FP services in Ethiopia and to identify the determinants of quality of care in FP services based on a nationally representative sample. Secondly, this study provides findings that can be used as a baseline for future study including future rounds of ESPA+ surveys and also for assessing the impact of policy and strategies to improve FP services in Ethiopia.

However, there are some limitations. Given that characteristics of health providers can influence the quality of care in FP services, the ESPA+ 2014 data involved a random sample of health providers rather than interviewing providers involved in FP services provision. A first limitation of the study is that it was not possible to control provider related confounders. A second limitation is that some factors that may be important in determining quality of FP services, including marital status, religion, and residence were not included in the analysis as this information was not collected in the ESPA+ 2014 survey. Thirdly, collecting the observation data during client-provider interaction, might have produced social desirability bias in that health providers may have altered their behaviour, and performed better, due to them being aware that their interactions were being evaluated. This may also apply to client responses.

Policy implications

Our results have a number of policy implications. The provision of information for clients including the contraceptive method's potential side effects is necessary and so future policies

should target in the dissemination and improving uptake of best practice guidelines for providers working in the FP services. In addition, there is a need to improve health providers' skills in terms of conducting thorough history taking and physical assessment for clients attending FP services and this could be done through targeted training. Appropriate strategies including making proper arrangement for long service hours and deploying trained providers from other reproductive health or maternity services are important to minimize clients waiting time in health facilities. The difference between rural and urban FP services need to be addressed and may a number of policies that focus on improving services in rural areas such as recruitment of health providers, provision of resources and education programs for health providers and clients.

Conclusion

Quality of care in FP services in Ethiopia is influenced by client-level and facility-level factors. Shorter waiting times, the provision of information about the contraceptive method's potential side effects, improved history and physical assessments, the availability of FP guidelines/protocols, and being urban facilities were important determinants of quality of care in FP services in Ethiopia.

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Chapter 6

Study 3. Quality and use of family planning services in health care facilities in Ethiopia: How do public and private health facilities compare?

6.1 Preface

This chapter contains the third article/manuscript contributing to this thesis and is under review for the journal *BMC Health Services Research*. In Study 1, the ownership of health facility (private vs public) was identified as a key factor influencing quality of care in FP services in Africa. Currently, the Ethiopian government is increasingly using the private sector to provide health service, including Family Planning (FP) services. Therefore, using the dataset used in Study 2, this study uses the facility-inventory questionnaire to compare the structural quality of FP services between the public and private health facilities at the primary health care facility level. Process and outcome aspects of quality of care were not compared as the ESPA+ survey provided insufficient client-level data from the private facilities for these aspects to be analysed. In addition to comparing the structural aspects of quality of care across the two provider types, Study 3 used the recently released community-based data to explore potential differences in the characteristics of clients accessing services from public and private health facilities.

6.2 Publication

Manuscript currently under review in *BMJ Global Health*. Tessema GA, Mahmood AM, Gomersall JS, Assefa Y, Zemedu TG, Kifle K, Laurence CO (2018). Quality and use of family planning services in primary care facilities in Ethiopia. How do public and private facilities compare?

Statement of Authorship

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Overall percentage (%)	70%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
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Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

- i. the candidate's stated contribution to the publication is accurate (as detailed above);
- ii. permission is granted for the candidate to include the publication in the thesis; and
- iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Abstract

Background

Family planning (FP) is among the important interventions that reduce maternal mortality. Poor quality of FP service is associated with lower services utilisation, in turn undermining the efforts to address maternal mortality. Many women seek care in private sector, and government is also focussing on public-private-partnership. There is currently little research on the quality of FP services in the private sector in Ethiopia, and how it compares to FP services in public facilities. Additionally, no study has compared the characteristics of clients using FP services in the public and private sectors.

Methods

A secondary data analysis of two national surveys, Ethiopia Services Provision Assessment Plus Survey 2014 and Ethiopian Demographic and Health Survey 2016 was conducted. Data from 1094 (139 private, 955 public) health facilities were analysed. In total, 3,696 women were included in the comparison of users' characteristics. Logistic regression was conducted. Facility type (public vs private) was the key exposure of interest. Logistic regression analyses was also conducted to examine the association between women's characteristics and the of facility type they used for FP services. In this analysis, women characteristics were considered as independent variables, facility type (private vs public) was the outcome variable.

Findings

The private facilities were less likely to have a range of contraceptive methods such as injectables (AOR=0.20; 95% CI: 0.06, 0.68) and implants (AOR=0.06; 95% CI: 0.03, 0.12), trained FP providers (AOR=0.23; 95% CI: 0.14, 0.41) and FP guidelines/protocols (AOR= 0.33; 95% CI: 0.19, 0.54) than public facilities. The private facilities were more likely to have functional cell phones (AOR=8.20; 95% CI: 4.95, 13.59) and water supply (AOR=3.37; 95% CI: 1.72, 6.59). Women who accessed FP services from private facilities were more likely to reside in an urban area, to be Muslim, be employed/working, and have no or fewer number of children that women accessing FP services from public health facilities.

Conclusion

The private sector facilities appear relatively deficient in terms of some important aspects such as availability of trained staff, access to FP guidelines/protocols and access to a range of contraceptives. Private sector is better equipped with basic infrastructure and equipment. Women using FP services at private facilities were different from those who accessed services from public facilities. This study alerts to the need for strengthening both private and public facilities for public-private-partnerships to contribute to increase FP use and better health outcomes.

Key Words; Quality of services, Family Planning, Public-Private-Partnership, Primary Health Care, Ethiopia

Background

Family planning (FP) plays an important role in poverty reduction, women's empowerment, human development, and maternal mortality reduction ^(12, 14, 199). The Ethiopian Demographic and Health Survey (EDHS) 2016 reported that only 35% of married women were using contraceptive methods while another 22% of women who wanted to delay or stop childbearing were not using any contraceptive methods ⁽⁶⁾.

This low rate of contraceptive use can be due to several reasons including contraceptive discontinuation among women who were practising contraception ⁽²⁰⁰⁾. Research has shown that contraceptive discontinuation is associated with poor quality of care in FP services ^(35, 38, 201). Improving quality of care in FP services can help maintain contraceptive use for newly adopting FP users and help generate demand by non-users ^(7, 202).

In Ethiopia, FP services are provided by all levels of the health system ⁽⁴⁷⁾, with Primary Health Care Unit (PHCU) facilities being the major source for FP methods for women. In terms of the type of facilities from where women being sourced for FP services, 14% of them have accessed FP methods from private facilities ⁽⁶⁾.

While the private sector provides a small proportion of FP services in Ethiopia, recent health and FP policies and strategies have recognised the potential key role of the private health sector in improving access for FP services ^(50, 59, 203). A report in 2015 showed that Public-Private Partnerships (PPP) in Ethiopia, established between government and private-for-profit and private-non-profit organisations in the provision of primary health care services, have improved access to quality health services including FP ⁽²⁰⁴⁾. As a result, there is an effort to strengthen the engagement of private facilities in the provision of FP services in Ethiopia ⁽⁵⁰⁾. Moreover, private facilities are targeted to be part of the quality improvement programmes. The recent Ethiopian National Health Care Quality Strategy (2016-2020), which aims to transform the quality of health care in Ethiopia, has indicated that the private sector needs to be included in the process of quality assurance and evaluation of quality improvement ⁽²⁰⁵⁾.

Quality of care in FP services can be measured in a number of ways and one approach is the Donabedian model ⁽¹³⁶⁾. The Donabedian model conceptualises quality of care as a linear model comprising three components—structure, process, and outcome. The structure component of quality of care includes the attributes of material resources such as facilities, equipment, and commodities; human resources such as the availability of adequate and trained staff; and organisational structure such as

reward systems and quality assurance systems. The process dimension focuses on the way the health care services are delivered and includes ‘provider-client interaction’. The last component of quality of care is the outcome obtained from provider and client interaction in the FP facilities such as client’s satisfaction, change in knowledge, and other subsequent long-term aspects such as reduction in fertility and mortality. These three-components are interlinked as good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome ^(136, 148). In this regard, the authors have highlighted the relationship between the outcome aspects of quality of care and structure and process aspects of quality of care in FP services in a preceding study, although the analysis did not distinguish between type of facility – public or private⁽²⁰⁶⁾.

There is currently little evidence on the quality and scope of FP services provided in private facilities in Ethiopia or how they compare to the services provided in public facilities. This is important, particularly in a climate where the government is using the public-private-partnership to improve the provision of FP services in the country. This study aims to compare the ‘structural’ aspects of quality of care in FP services between public and private Primary Health Care Unit (PHCU) health facilities in Ethiopia. In addition, this study investigates the characteristics of women who accessed FP services in private and public health facilities.

Methods

Design and Setting

This study is based on secondary data analysis of two nationally representative surveys; the Ethiopian Services Provision Assessment Plus (ESPA+) data, a facility-based data collected in 2014 and the Ethiopian Demographic and Health Survey (EDHS) data, a community-based data collected in 2016. Ethiopia, with nearly 102 million people and an average total fertility rate of 4.6 children per women, is the second most populous country in Africa, next to Nigeria ^(6, 207). Most of the people receive health services in PHCU facilities and these facilities provide a wide range of basic health services including FP. Secondary and tertiary care is provided at the general hospitals and specialised hospital ⁽⁵⁰⁾. While FP services are provided in both PHCU and hospitals, most (96%) of women receive FP services at PHCU facilities ⁽⁶⁾. The reporting of this study follows the guidelines provided by the REporting of studies Conducted using Observational Routinely collected health Data (RECORD) for observational studies ⁽²⁰⁸⁾ (see Supplementary file 1)

Data Sources and Sample

This study used two data sources. The dataset used for the comparison of the structural quality of services was the ESPA+ 2014 survey data. The present study considered data obtained from the facility inventory survey which involved a total of 1,327 health facilities. We excluded those facilities that reported not being functional during the survey (n=145), not providing FP services (n=64), and general and specialised/referral hospitals (n=24). Consequently, we included a weighted sample of 1,094 primary health care (private=139, public=955) facilities. The ESPA+ survey used standardised tools, data collection methods, and quality assurance strategies. Details about the ESPA+ survey are published elsewhere ⁽⁶⁰⁾.

To compare the characteristics of women who accessed FP services in public versus private PHCU facilities, we used data from the EDHS 2016. The EDHS is a cross-sectional survey conducted every five years to measure the demographic and health-related characteristics of the population ⁽²⁰⁹⁾. The EDHS 2016 survey interviewed 15,683 women of reproductive age. A stratified, two-stage cluster sampling procedure was used to include nationally representative sample of reproductive aged women. Of the 3,884 women who accessed modern contraceptive methods during the survey, 3,696 sourced contraceptive methods from the PHCU facilities and were included in the final analysis. Details of the sampling, methods and design of the EDHS 2016 are published in a report elsewhere ⁽⁶⁾.

Variables

The variables used for comparing structural factors impacting on quality of services in public and private PHCU facilities were based on the facility inventory assessment of the ESPA+ 2014 survey ⁽⁶⁰⁾.

We included structural variables that reflected the material structure such as facility's infrastructure (basic amenities), availability of equipment and supplies; human resources such as health provider availability and, trained provider availability; and organisational structure such as quality assurance system and supervision in the past six months, availability of FP guidelines/protocols, availability of other maternal and child health services such as the presence of antenatal, delivery, and availability of range of modern contraceptive methods. Detailed descriptions of the variables are provided in Supplementary file 2.

For the analysis on the characteristics of women who accessed FP services from the two different types of PHCU facilities, we included variables related to the sociodemographic characteristics and exposure to FP media from the 2016 EDHS ⁽⁶⁾ (see Supplementary file 2).

Data analysis

Descriptive and summary statistics were used to describe the characteristics of the facilities in ESPA+ 2014 survey and women who accessed FP services in EDHS 2016. The analysis was conducted after applying weighting of samples.

Bivariate and multivariate logistic regression analyses were used to compare structural variables between public and private PHCU facilities. Odds Ratios (OR) and 95% Confidence Intervals (CI) were calculated to determine association and level of significance. Variables with p-value of less than 0.2 in the bivariate logistic regression analysis were adjusted for facility location, as it was considered the main confounding variable ⁽²¹⁰⁾. While taking the structural variables as an outcome for comparison, the facility type (private vs public) was used as the key exposure of interest. We also conducted bivariate and multivariate logistic regression analyses to examine the association between women's characteristics and the of facility type they used for FP services. In this analysis, women characteristics were considered as independent variables, facility type (private vs public) was the outcome variable. STATA 14 was employed for the analysis.

Ethical consideration

Ethical approvals were obtained from the Scientific and Ethical Review Committee (SERC) at the Ethiopian Public Health Institute (EPHI) and the Human Research Ethics Committee (HREC) at the University of Adelaide. Permission to use the publicly available EDHS data was granted from DHS program.

Results

Description of facility's location, structure, and provisions of reproductive and child health services in PHCU facilities

In the included PHCU facilities, 16% (22) of private and 22% (206) of public facilities reported that there were health providers available twenty-four hours/seven days in those facilities. While 72% (99) of the total private health facilities comprised lower clinics, 81% (773) of the total public facilities comprised public facilities (Table 1). The median number of days in a week that FP services were provided was 6.3 days/week in private facilities and 5.2 days/week in public facilities. In terms of whether health provider received training for FP service provision in the 24 months prior to the survey, one in three (34%) private and nearly two in three (64%) public facilities have staff who received training on FP service provision. When asked to show FP guidelines/protocols utilised in the facility for

guiding the provision of FP services, only 29% of the private and nearly half (49%) of public facilities were able to do this. About half (51%) of the private and 58% of public facilities reported that they had obtained external supervision from district/zonal/regional/federal managers to assess the quality of available health service and discuss their facilities' performance. While the majority (92%) of private facilities charged 'user fee' for FP services, nearly all (99%) of public facilities reported that FP services were provided free.

While over 95% of public facilities were providing antenatal care and health services for children under-five years, these services were provided in 89% of private facilities. Diagnosis and treatment for Sexually Transmitted Infections (STI) were provided in 35% and 90% of public and private facilities, respectively (Table 1).

Table 1. Facility's type, location, structure, and provisions of reproductive and child health services in PHCU facilities in Ethiopia, ESPA+ 2014 (n=1,094)

Variables	Private (n=139)		Public (n=955)	
	Frequency	Percent	Frequency	Percent
Facility's type, location and region				
Facility type				
Primary hospitals	1	0.3	2	0.3
Health centre	N/A	N/A	178	18.7
Health post	N/A	N/A	773	81.0
Higher clinic	7	5.2	N/A	N/A
Medium clinic	21	22.7	N/A	N/A
Lower clinic	99	71.8	N/A	N/A
Urban/rural location				
Rural	65	46.6	889	93.1
Urban	74	53.4	66	6.9
Region				
Tigray	5	3.9	46	4.8
Afar	1	0.6	10	1.1
Amhara	37	26.6	223	23.3
Oromia	34	24.7	380	39.8
Somali	1	0.4	24	2.6
Benishangul-Gumuz	2	1.1	19	2.0
SNNPR	38	27.3	240	25.2
Gambela	4	2.8	5	0.5
Harari	1	0.4	2	0.2
Addis Ababa	16	11.7	3	0.4
Dire Dawa	1	0.5	3	0.3
Material resources				
Basic amenities				
Availability of functional landline telephone	20	14.1	40	4.2
Availability of functional cell phone	84	60.6	140	14.6
Availability of functional computer	16	11.4	93	9.7
Availability of short wave radio	1	0.7	0	0.0
Access to email at least two hours on a day	7	5.3	8	0.9
Access to water supply	126	90.6	614	64.3
Availability Electricity supply/generator	66	47.7	354	37.1
At least one basic amenity	134	97.7	761	79.8
Equipment and supplies				
Availability of body weight measurement tool	16	11.9	97	10.1
Availability of blood pressure measurement tool	19	14.0	96	10.0
Availability of stethoscope	133	95.8	678	71.0
Availability of examination light	114	81.9	340	35.7

Variables	Private (n=139)		Public (n=955)	
	Frequency	Percent	Frequency	Percent
Availability of exam couch	134	96.4	560	58.7
Availability of sample FP methods	75	54.2	427	44.7
Availability of visual aid and leaflet	75	53.8	507	53.1
Availability of pelvic model for demonstrating IUD use	15	10.8	33	18.3
Availability of model for demonstrating condom use	19	13.4	125	13.1
Availability of oral contraceptive pills	119	85.5	834	87.3
Availability of progesterone contraceptive pills	76	54.5	388	40.6
Availability of injectables	133	95.5	942	98.7
Availability of male condoms	121	87.4	837	87.7
Availability of female condoms	4	3.2	17	1.8
Availability of IUD	46	33.5	107	59.4
Availability of implants	53	38.0	158	87.1
Availability of emergency contraceptive methods	87	63.6	210	22.1
Availability of counselling on periodic abstinence	105	75.4	653	68.4
Availability of vasectomy	22	15.6	26	14.3
Availability of tubal ligation	21	15.3	32	17.6
Mean number of types of contraceptive methods in the facility	6(SD=2.4)		5(SD=2.1)	
Mean number of infection prevention precaution measures	8.2(SD=2.2)		6.8(2.6)	
Human resources				
Health provider availability of twenty four hours/seven days	22	15.7	206	21.6
Trained provider availability	46	33.5	613	64.2
Organisational structure				
System to collect client opinion	2	1.7	129	13.1
FP guidelines/protocols	40	28.9	465	48.7
Client chart/record to document client's clinical data	44	31.6	632	66.2
Supervision in the past six months	70	51.4	527	58.0
Private room for providing counselling services	123	88.6	783	82.0
Presence of user fee for FP services	109	91.6	3	1.5
Mean number of days/week that FP was provided	6.4 (SD=0.71)		5.1(SD=1.27)	
Provisions of other reproductive and child health services				
Antenatal care services	78	55.9	909	95.3
Normal delivery services	36	26.1	538	56.4
Service for under five children	123	88.5	933	97.7
Services for the prevention of mother-to-child transmission of HIV	15	10.7	179	18.7
Diagnosis and treat for STI	123	88.4	341	35.8

FP-Family Planning, SNNPR-Southern Nations Nationalities and Peoples Region, IUD- Intrauterine Device STI- Sexual Transmitted Infections, HIV- Human Immunodeficiency Virus, SD- Standard Deviation

Structural quality of FP services in public and private PHCU facilities

The results of unadjusted and adjusted regression analysis comparing structural quality of FP services between public and private PHCU facilities in Ethiopia is presented in Table 2.

In terms of the availability of FP methods private facilities were less likely to have injectable contraceptive methods (AOR 0.20; (0.06, 0.68), IUD (AOR=0.22, 95% CI: 0.13, 0.38), and implants (AOR=0.06; 95% CI: 0.03, 0.12), but were more likely than public facilities to have emergency contraceptive methods (AOR=3.81; 95% CI: 2.37, 6.10). When compared with public facilities, private facilities were less likely to have health providers available 24 hours in the facility (AOR=0.35; 95% CI: 0.18, 0.69), providers who received FP training in the past 24 months (AOR=0.23; 95% CI: 0.14, 0.41), a quality assurance system in terms of reviewing the health facilities' users data (AOR=0.07; 95% CI: 0.02, 0.21), FP guidelines/protocols (AOR=0.33, 95% CI: 0.19, 0.54), and client chart/record to document the client's clinical data (AOR=0.22; 95% CI: 0.13, 0.36).

Comparing the availability of basic amenities (infrastructure), private facilities were more likely than public facilities to have functional cell phones (AOR=8.20; 95% CI: 4.95, 13.59), and water supply (AOR=3.37; 95% CI: 1.72, 6.59). When comparing the availability of equipment, private facilities were less likely than public facilities to have pelvic model for Intrauterine Device (IUD) demonstration (AOR=0.39; 95% CI: 0.21, 0.76), and penile model for condom demonstration (AOR=0.40; 95% CI: 0.21, 0.76). However, the availability of stethoscope (AOR=7.88; 95% CI: 3.49, 17.73), examination light (AOR=8.19; 95% CI: 4.86, 13.79), and examination couch (AOR=14.11; 95% CI: 5.84, 34.08) were higher in private facilities than public facilities.

It was also found that private facilities were less likely to have antenatal care (AOR=0.05; 95% CI: 0.02, 0.10), normal delivery services (AOR=0.15; 95% CI: 0.08, 0.30), services for under five children (AOR=0.15; 95% CI: 0.05, 0.45), and services for the prevention of mother-to-child transmission of HIV (AOR= 0.15, 95% CI (0.08, 0.32). However, diagnosis and treatment of STI (AOR=8.51; 95% CI: 4.64, 15.61) were more likely to be provided in private facilities than public facilities.

Table 2. Unadjusted and adjusted regression model for comparing structural quality of services in private vs public PHCU facilities in Ethiopia, ESPA+ 2014 (n=1,094)

Variables	OR ¹ (95% CI)	
	COR ¹ (95% CI)	AOR (95%CI) ^{1,2}
Availability of progesterone contraceptive pills	1.73(1.15, 2.60)*	1.31(0.83, 2.09)
Availability of injectables	0.28 (0.08, 0.94)*	0.20(0.06, 0.68)*
Availability of IUD	0.35(0.22, 0.54)*	0.22 (0.13,0.38)*
Availability of implants	0.10(0.06, 0.16)*	0.06(0.03, 0.12)*
Availability of emergency contraceptive methods	6.17(3.98, 9.59)*	3.81(2.37, 6.10)*
Health provider availability of twenty four hours/seven days	0.68(0.42, 1.11)*	0.35(0.18, 0.69)*
Trained provider availability	0.28(0.19, 0.43)*	0.23(0.14,0.41)*
Quality assurance system	0.10(0.79, 1.79)*	0.07 (0.02, 0.21)*
FP guidelines/protocols	0.43(0.04, 0.28)*	0.33 (0.19, 0.54)*
Client chart/record to document the client's clinical data	0.23(0.16, 0.37)*	0.22 (0.13, 0.36)*
Supervision in the past six months	0.75 (0.50, 1.15)*	0.91 (0.57, 1.47)
Private room for providing counselling services	1.16(0.89, 3.18)*	0.88 (0.46, 1.70)
Availability of functional landline telephone	3.43 (2.08, 5.69)*	0.64 (0.30, 1.37)
Availability of functional cell phone	9.18 (5.56, 15.15)*	8.20 (4.95, 13.59)*
Access to email at least two hours on a day	6.22 (2.68, 14.48)*	2.01(0.78, 5.50)
Availability of functional computer	1.20 (0.75, 1.92)	0.18 (0.07, 1.44)
Access to water supply	5.25(2.89, 9.57)*	3.37 (1.72, 6.59)*
Availability electricity supply/generator	1.52(1.02, 2.26)*	1.11 (0.69, 1.76)
Availability of stethoscope	9.17(4.28, 19.61)*	7.88 (3.49, 17.73)*
Availability of examination light	8.1(5.04, 13.07)*	8.19 (4.86, 13.79)*
Availability of exam couch	19.01(8.27, 43.72)*	14.11(5.84, 34.08)*
Availability of sample FP methods	1.44(0.95, 2.17)	0.87 (0.55, 1.37)
Pelvic model for demonstrating IUD use demonstration	0.56(0.31, 1.01)*	0.39 (0.21, 0.76)*
Model for demonstrating condom use	1.03(0.61, 1.71)*	0.40 (0.21, 0.76)*
Antenatal care services	0.06(0.03,0.13)*	0.05 (0.02, 0.10)*
Normal delivery services	0.28(0.18,0.43)*	0.15 (0.08, 0.30)*
Under-five health services	0.18(0.06, 0.56)*	0.15 (0.05, 0.45)*
Services for the prevention of mother-to-child transmission of HIV	0.48 (0.30, 0.77)*	0.15 (0.08, 0.32)*
Diagnosis and treat for STI	13.5(7.70, 23.8)*	8.51(4.64, 15.61)*

¹Public facility was taken as a reference in the analysis. ²The final model was adjusted for facility location. *p-value <0.05. FP-Family Planning, IUD- Intrauterine Device, STI- Sexual Transmitted Infections, HIV- Human Immunodeficiency Virus, OR-Odds Ratio COR-Crude Odds Ratio, AOR- Adjusted Odds Ratio

Association of women's characteristics with facility type where they accessed FP services

The characteristics of women who accessed contraceptive services from public and private PHCU facilities are shown in Table 3. Of the 3,696 women who accessed FP methods, 3,110 (84%) did so at public facilities and 586 (16%) from private health facilities. While majority (82%) of women in rural areas accessed FP services from public facilities, half (50%) of them accessed FP services in private facilities.

Table 4 shows the association of women's characteristics with type of PHCU facility where they accessed FP services. The women who accessed FP services from private facilities were significantly more likely to reside in an urban area (AOR= 3.91; 95% CI: 1.71, 4.95), be Muslim (AOR=1.63; 95% CI: 1.07, 2.48), and to be employed/working (AOR=1.31; 95% CI: 1.01, 1.96). Also when compared to women with no children, women having 1-2 children (AOR=0.27; 95% CI: 0.15, 0.47), 3-4 children (AOR=0.23; 95% CI: 0.11, 0.46), and 5 or more children (AOR=0.18; 95% CI: 0.08, 0.41) were 73%, 77%, and 82% less likely to access FP services in private facilities, respectively. The analysis showed no association between the source of FP methods and the women's current marital status, wealth status, and their decision making power in the household.

Table 3. Characteristics of women accessing FP services from public and private health facilities, EDHS 2016 (n=3,696)

Women Characteristics	Private (n=586)	Public (n=3110)
	Frequency (%)	Frequency (%)
Age in years		
15-24	200(34.1)	737 (23.7)
25-34	278(47.5)	1,467(47.2)
35+	108(18.4)	906(29.1)
Marital status		
Currently married/in union	58(9.9)	222(7.1)
Not currently married	528(90.1)	2,888(92.9)
Place of residence		
Urban	291(49.4)	561(18.0)
Rural	297(50.6)	2,549(82.0)
Region		
Tigray	21(3.6)	234(7.5)
Afar	4(0.7)	7(0.2)
Amhara	194(33.0)	1,017(32.7)
Oromia	219(37.3)	914(29.4)
Somali	2(0.3)	1(0.0)
Benishangul-Gumuz	6(1.0)	26(0.8)
SNNPR	65(11.1)	771(24.8)
Gambela	6(1.1)	4(0.1)
Harari	2(0.4)	3(0.1)
Addis Ababa	66(11.2)	119(3.9)
Dire Dawa	2(0.3)	13(0.4)
Religion		
Orthodox	336(57.4)	1,603(51.6)
Muslim	134(22.9)	629(20.2)
Protestant	109(18.6)	833(26.8)
Other/missing	7(1.1)	45(1.4)
Highest educational status		
None	196(33.4)	1,773(57.0)
Primary	213(36.5)	969(31.1)
Secondary+	177(30.1)	368(11.8)
Partner's educational status(n=3416)[§]		
None	125(23.6)	1,237(42.8)
Primary	216(41.0)	1,161(40.2)
Secondary+	187(35.4)	490(7.0)
Working/occupational status		
Not working	206(35.1)	1,445(46.5)

Women Characteristics	Private (n=586)	Public (n=3110)
	Frequency (%)	Frequency (%)
Working/employed*	380(64.9)	1664(53.5)
Wealth index		
Poor	85 (14.6)	990(31.8)
Middle	89(15.1)	679(21.8)
Rich	412(70.3)	1440(46.3)
Number of living children		
0	142(24.1)	241(7.8)
1-2	231(39.4)	1,120(36.0)
3-4	142(24.1)	906(29.1)
5+	72(12.3)	842(27.1)
Exposure to FP media		
No	293(50.0)	2174(69.9)
Yes	293(50.0)	936(30.1)
Decision making power in the household		
No	176(30.2)	1021(32.8)
Yes	410(69.8)	2089(67.2)

FP-Family Planning, SNNPR-Southern Nations Nationalities and Peoples Region

*^sSample was taken for clients who are currently married*Working includes those women who describe themselves as employed or engaged in a work that paid them in cash or in kind.*

Table 4. Association of women's characteristics with the types of health facility where they accessed FP services (private vs public), EDHS 2016 (n=3,696)

Women Characteristics	OR ¹ (95% CI)	
	COR ¹ (95% CI)	AOR ¹ (95% CI)
Age in years		
15-24	1	1
25-34	0.69 (0.51, 0.96)**	1.02 (0.65, 1.64)
35+	0.44 (0.29,0.56)***	1.07 (0.56, 2.06)
Place of residence		
Urban	4.44 (3.05, 6.46)***	3.91 (1.71, 4.95)***
Rural	1	1
Religion		
Orthodox	1	1
Muslim	1.02 (0.67, 1.53)	1.63 (1.07, 2.48)*
Protestant	0.62 (0.41, 0.96)*	0.93 (0.56, 1.53)
Other/missing	0.70 (0.16, 3.02)	1.24 (0.25, 6.28)
Highest educational status		
None	1	1
Primary	1.99 (1.41, 2.83)***	1.8 (0.71, 1.65)
Secondary+	4.34 (2.97, 6.33)***	0.91 (0.52, 1.60)
Partner's educational status(n=3416)[§]		
None	1	1
Primary	1.85 (1.26, 2.72)**	1.49 (0.99, 2.23)
Secondary+	3.79 (2.44, 5.87)***	1.64 (1.01, 2.70)
Working/occupational status		
Not working	1	1
Working [§]	1.60 (1.18, 2.17)**	1.35 (1.01, 1.96)*
Wealth index		
Poor	1	1
Middle	1.51 (0.97, 2.37)***	1.54 (0.96, 2.47)
Rich	3.31 (2.21, 4.96)***	1.51 (0.90, 2.54)
Number of living children		
0	1	1
1-2	0.35 (0.22, 0.55)***	0.27 (0.15, 0.47)**
3-4	0.27 (0.17, 0.42)***	0.23 (0.11, 0.46)**
5+	0.14 (0.08, 0.26)***	0.18 (0.08, 0.41)**
Exposure to FP media		
No	1	1
Yes	2.33 (1.70, 3.19)***	0.97 (0.66, 1.44)

FP-Family Planning, ¹Public facility was taken as a reference in the regression analysis. [§]Working includes those women who describe themselves as employed or engaged in a work that paid them in cash or in kind ***p-value<0.001 **p-value<0.01 *p-value <0.05. FP-Family Planning, OR-Odds Ratio COR-Crude Odds Ratio, AOR- Adjusted Odds Ratio

Discussion

This study found that there were differences in the structural factors that may impact on quality of FP services between private and public health facilities. It also demonstrated that the characteristics of women who accessed FP services from private facilities were significantly different from those who accessed these services from public facilities.

A previous study found in private facilities that the presence of trained providers at all times was the most important structural factor in terms of access to services for clients irrespective of their income status ⁽²¹¹⁾. This study showed that the availability of training for the FP provider, twenty-four availability of health providers', and the provision of FP guidelines was less than adequate in the private facilities when compared to that in the public health facilities. This finding suggests the need for the private health facilities to invest acquiring FP trainings for its staff and source and distribute FP guidelines.

The private health facilities were found to have better basic infrastructure such as functional cell-phones and water supply than public facilities, a finding consistent with a similar study conducted in Kenya ⁽¹⁷¹⁾. This result is likely to reflect the urban location of most private facilities, with urban areas have better access to mobile-network and water sources ⁽²¹²⁾. This study showed some mixed findings vis-à-vis the availability of equipment and FP methods in the provisions of FP services of public and private facilities. While the private facilities were better in terms of having equipment such as stethoscopes, examination lights, and examination couches, the availability of penile model and Intrauterine Device (IUD) model for male condoms and IUD methods demonstration, were less than found in public facilities. This difference was also reflected in the available FP methods in that commonly utilised FP methods which included injectables, IUD, and implants were less likely to be provided in private facilities than public facilities in Ethiopia. These findings may arise from a lack of policies that emphasise on FP and facilitate supply of essential commodities for the provision of FP services in private facilities ⁽²¹³⁾. Despite the more limited ranges of FP services in the private facilities, it was found that STI services and emergency contraception are more likely to be available in the private facilities than the public facilities. A study conducted in Nigeria and Kenya supports our finding in that emergency contraceptive methods were mostly available in private health facilities ⁽²¹⁴⁾.

Equipment such as stethoscopes and examination couches are used not only for FP but for most other health problems with which the patients present and that is probably the reason that this equipment is better sourced and made available in private facilities.

The profile of the clients using private facilities for FP services was not surprising. Being a fee-based service ⁽²¹⁵⁾, these facilities attract employed or working to be paid in cash or in kind who are in a position to pay for their FP services. The provision of FP services for greater number of days in private facilities than public facilities (6.3 days per week versus 5.1 days per week in public facilities) may also account for the why certain women use these facilities. For example, the more flexible opening hours would allow employed women access to FP services that may not be accommodated in the shorter opening hours found in the public facilities. This finding is consistent with a study conducted in 57 LMIC that found women residing in urban areas used private sectors more than women in rural areas ⁽²¹⁶⁾.

The study has a number of policy implications. If the private facilities are to play an important role in the provisions of quality of FP services in Ethiopia, there needs to be re-orienting of the private facilities, and introduction of policies that support expanding client base so that the private facilities attract not just urban residents, employed/working, and women with no or few children. In order for a broader range of women to access privately provided FP services, this may require subsidizing the costs of FP service in the private facilities. With the expansion of the public-private-partnerships in the provision of health care services in Ethiopia, it is also important to ensure high quality of services provided in both private and public sectors. This study showed that there is a need for improvement with regard to some important structural quality aspects of the FP services in private facilities. The application of government policies and guidelines on quality FP services to the private sector would contribute to improve structural quality of services. There are also lessons to be learnt from the private facilities that can be applied to public facilities. For example, the government should work in improving basic infrastructure and availability of equipment in the public facilities and to strengthen public facilities to be cater to the needs of women with different background.

This study has an important limitation. The analysis of quality of care in FP services was limited to analysis of the structural aspects and did not include process and outcome aspects. This limitation arose because the study used data collected as part of a national survey, where the number of FP clients in private sectors from whom data related to process and outcome variables was collected was very small. Inclusion of process (eg. waiting time, provision of information) and outcome variables (eg. client

satisfaction) in a future research would help to achieve a more comprehensive understanding of the state of quality of FP services. However, an understanding of the structural aspect does provide good insights which could be used to strengthen FP services. Another limitation was that, while the EDHS 2016 survey collected data for those women who accessed FP services from primary, general, and specialised hospitals, in the dataset it was combined into one variable. As a result, the types of facilities included in the ESPA+ 2014 and the EDHS 2016 were not matched. This meant we were not able to distinguish the number of women who accessed FP services from the primary hospitals only, and therefore data related to the characteristics of women who accessed FP services in primary hospitals were lost. However, since only 4% of women were accessed FP services from hospitals ⁽⁶⁾, we expected the number of women who were accessed FP services in primary hospitals would be low. The ESPA+ data were not linked to the EDHS data. However, as both surveys involved data collection in all 11 administration regions in Ethiopia, it could be assumed that the women included in the EDHS household survey are likely to access FP services from the health facilities that were included in the ESPA+ facility-based survey.

Conclusion

In summary, it was found that there were differences in the structural quality of FP services between public and private PHCU facilities. When compared to the public facilities, private facilities were deficient in terms of the availability of supplies, FP methods, trained providers, FP guidelines, and quality assurance activities, but were better in some of the basic infrastructure and equipment. Women who accessed FP services from private facilities were different from those who accessed services from public facilities.

Declarations

Ethics approval and consent to participate

Ethical approvals were obtained from the Scientific and Ethical Review Committee (SERC) at the Ethiopian Public Health Institute (EPHI) (Protocol # EPHI/6.13/966) and waiver of ethics was provided from the Human Research Ethics Committee (HREC) at the University of Adelaide (Application # 0000021084). Permission to use the publicly available 2016 EDHS data was granted from DHS program.

Consent for publication

Not applicable.

Availability of data and material

The primary data collected in the 2014 ESPA+ can be accessed from the Health System Directorate of the Ethiopian Public Health Institute (EPHI), Addis Ababa, Ethiopia. Accessing these data is possible after getting ethical approval and signing agreement with the EPHI. However, the EDHS 2016 dataset can be accessed online from the DHS program website [<http://dhsprogram.com/data/>].

Competing interests

The authors declared that they have no competing interests.

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Authors' contributions

Initially conceived and designed the study: GAT, MAM, JSG, COL. Conducted the data cleaning and analysis: GAT. Wrote the draft manuscript: GAT. Made revisions to draft manuscript: GAT, MAM, JSG, YA, TGZ, MK, COL. All authors have read and approved the final manuscript.

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Supplementary file 1. Description of variables used in the analysis

Variable	Type of variable and/or definitions
ESPA+ 2014 DATASET	
Facility type and location	
Facility type	Binary (public, private); public included government and military facilities (health post, health centre, and primary hospital), whereas private included private for profit, private for-not-profit (lower clinic, medium clinic, higher clinic and primary hospital)
Urban/rural location	Binary (urban, rural), classified based on the whether the facility is located in urban or rural areas
Region	Categorical, 11 administrative regions
Facility's structural aspect	
Material resources	
Basic amenities/infrastructure	
Availability of electricity/generator	Binary (yes, no); whether or not the health facility possessed electricity/generator
Availability of functional landline telephone	Binary (yes, no); whether or not the health facility possessed functional telephone/cell phone
Availability of cell phone	Binary (yes, no); whether or not the health facility possessed functional cell phone
Availability of functional computer	Binary (yes, no); whether or not the health facility possessed functional computer
Access to email for two hours in a day	Binary (yes, no); whether or not the health facility get email for two hours/day
Access to water supply	Binary (yes, no); whether or not the health facility possessed water supply
Equipment and supplies	
Availability of body weight measurement tool	Binary (yes, no); whether or not the facility showed functioning weight scales.
Availability of Blood Pressure (BP) measurement tool	Binary (yes, no); whether or not the facility showed functioning BP measurement apparatus.
Availability of stethoscope	Binary (yes, no); whether or not the facility showed functioning stethoscope
Availability of examination light	Binary (yes, no); whether or not the facility showed functioning examination light
Availability of exam couch	Binary (yes, no); whether or not the facility showed examination couch for examining clients
Availability of sample FP methods	Binary (yes, no); whether or not the facility showed sample FP methods for counselling
Availability of visual aid and leaflet	Binary (yes, no); whether or not the facility showed visual aid and leaflet for demonstration during counselling
Availability of pelvic model for demonstrating IUD use demonstration	Binary (yes, no); whether or not the facility showed pelvic model for demonstrating IUD use
Availability of model for demonstrating condom use	Binary (yes, no); whether or not the facility showed model for demonstrating condom

Variable	Type of variable and/or definitions
Mean number of contraceptive methods offered and/or prescribed	Continuous (0-12); the mean number of contraceptive methods offered or prescribed in the facility. The contraceptive methods included combined oral contraceptive pills, progestin only pills, progestin only injectables, male condom, female condom, implant, Intrauterine Device (IUD), periodic abstinence, emergency pills, female sterilization, and vasectomy (male sterilization), and lactational amenorrhea.
Mean number of infection prevention precaution measures	Continuous (0-14); the mean number of infection prevention precaution measures involved in the facility. It included availability of running water, handwashing soap, alcohol based hand rub, waste receptacle, safety box, disposable latex glove, disinfectant/antiseptics, syringe, medical masks, gowns, eye protection goggle, standard precaution guidelines, and boots.
Human resources and organisational structure, and provision of other reproductive and child health services	
Health availability of twenty four hours/seven days	Binary (yes, no); whether or not facilities have health providers available to provide services for twenty four hours of day (day, night, and week shifts)
Trained provider availability	Binary (yes, no); whether or not the provider received FP related training in the past 24 months before the survey
Organisational structure	
Quality assurance system	Binary (yes, no); whether or not the facility routinely carry out periodic audit of registers to see facility-wide review of clients/patients data
FP guidelines/protocols	Binary (yes, no); whether or not the facility possessed FP guidelines/protocols on the date of survey
Client chart/record	Binary (yes, no); whether or not the facility possessed client chart or recoding for taking notes about the clients during history taking and physical assessment
Supervision in the past six months	Binary (yes, no); Whether or not the facility received a supervisory visit from district/regional/ zonal/federal offices in the six months before the survey
Private room for providing counselling services	Binary (yes, no); whether or not the facility's possessed private room for counselling during FP services
Presence of user fee for FP services	Binary (yes, no); whether or not the facility collected users' fee for FP services.
Mean number of days/week that FP was provided	Continuous; mean number of days that FP services were provided in a week
Provision of other reproductive and child health services	
Antenatal care services	Binary (yes, no); whether or not the facility provided antenatal care services during the survey
Normal delivery services	Binary (yes, no); whether or not the facility provided normal delivery services during the survey
Services for under-five children	Binary (yes, no); whether or not the facility provided under five services during the survey
Services for the prevention of mother-to-child transmission (PMTCT) of HIV	Binary (yes, no); whether or not the facility provided HIV test services during the survey
Diagnosis and treatment STI	Binary (yes, no); whether or not the facility provided diagnosis and treatment STI services during the survey

Variable	Type of variable and/or definitions
EDHS 2016 DATASET	
Sources of FP method by facility types	Categorical; public (government health station/centre, government health post, and public pharmacy, and other public sector) , private (private clinics, pharmacy, non-governmental organisation's health facilities, private clinics, and private pharmacies, and other private medical)
Characteristics of women	
Age category in years	Categorical; 15-24, 25-34, 35+
Marital status	Binary (yes, no); currently married (married or in sexual union), currently unmarried (never married, divorced, widowed, separated)
Place of residence	Binary (yes, no); Urban, rural
Region	Categorical; 11 administrative regions
Religion	Categorical; Orthodox, Muslim, Protestant, others
Highest educational status	Categorical; none, primary, secondary+
Highest partner educational status	Categorical; none, primary, secondary+
Working/occupational status	Categorical; Not working (not employed/not working), working (<i>women who describe themselves as employed or engaged in a work that paid them in cash or in kind</i>)
Wealth index	Categorical; poor, middle, rich
Number of living children	Categorical; 0, 1-2,3-4,5+
Exposure to FP media	Binary (yes, no); Whether or not a woman heard or read about FP methods in radio/television/newspaper/mobile message
Women decision making	Binary (yes, no); whether or not a woman able to make decisions alone or with her partner regarding about her health care, large household purchase, and visiting her families or relatives

FP- Family planning, BP- Blood Pressure, IUD- Intrauterine Contraceptive Device, STI- Sexual transmitted Infections, HIV- Human Immunodeficiency Virus

Chapter 7

Study 4. Health provider perspectives on implementation of family planning guidelines in family planning services in Amhara Region, Ethiopia: A qualitative study

7.1 Preface

This chapter contains the fourth and last article/manuscript contributing to this thesis and is under revision in *BMJ Open*. Study 2 identified a number of factors that were associated with good quality of care and in Study 3 it was found that many of these factors were not used or available in public and private facilities. While it would be useful to further understand each of the factors found to affect quality of care in FP services in Ethiopia, for the interest of available resource to conduct the study, feasibility of gathering data, and potential relevance of the factor affecting quality of care, it was necessary to prioritise one of the factors affecting quality of care in FP services. Excluding the facilities location, provision of FP guidelines/protocols was the only facility-level factor that affected quality of care in FP services in Study 2. In Study 2, it was also shown that, while the national FP guideline recommends conducting routine client assessment and provision of information, about 1 in 7 clients (15%) did have neither history taken nor physical assessment. Such lack of routine history taking and physical assessment is likely to be related with lack of compliance with guidelines. The results in Study 3 have shown that more than half of the public facilities (51%) that provide FP services did not have available FP guidelines/protocols. Considering these, it is useful to further understand why FP guideline is underutilised in Ethiopia.

While clinical guidelines are increasingly being developed at local, regional, and national levels^(217, 218), there is lack of evidence on the assessment of barriers, facilitators, and effectiveness of clinical guideline in Ethiopia and other LMIC. Study 4 used a qualitative methodology for exploring health providers' experiences on barriers and facilitators to use of FP guidelines in FP services. This study was conducted in one of the largest region in Ethiopia (Amhara region) and participants were included from three different types of public health facilities (hospitals, health centres and health posts). While it could be important to include participants from both public and private facilities, those health providers working in public health facilities were included in this study because of that public health facilities were the predominant providers of FP services. While the Ethiopian government took an important

initiative in LMIC these FP guidelines, no research has been undertaken to assess the barriers to and facilitators of implementing them, although they are important to quality of FP services. The findings provided in this chapter suggest possible solutions to improve the use of FP guidelines in Amhara region and thus improving the quality of FP services in this region.

7.2 Publication

Manuscript currently under revision in *BMJ Open*: Tessema GA, Gomersall, JS, Laurence CO, Mahmood MA (2018) Health provider perspectives on use of family planning guideline in family planning services in Amhara Region, Ethiopia: A qualitative study

Statement of Authorship

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Principal Author

Name of Principal Author (Candidate)	Gizachew Assefa Tessema		
Contribution to the Paper	Conceived and designed the study, conducted the data collection, performed the analysis, interpreted the data, and drafted the manuscript.		
Overall percentage (%)	85%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	12/7/2018

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

- i. the candidate's stated contribution to the publication is accurate (as detailed above);
- ii. permission is granted for the candidate to include the publication in the thesis; and
- iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Healthcare provider perspectives on use of family planning guideline in family planning services in Amhara Region, Ethiopia: A qualitative study

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Abstract

Objective: To explore healthcare providers' views on barriers to and facilitators of use of family planning (FP) guideline in FP services in Amhara Region, Ethiopia.

Design: Qualitative study

Setting: Nine health facilities including two hospitals, five health centres, and two health posts in Amhara region, Northwest Ethiopia.

Participants: Twenty-one healthcare providers working in the provision of FP services in Amhara region.

Primary and secondary outcome measures:

Semi-structured interviews were conducted to understand healthcare providers' views on barriers to and facilitators of FP guideline use in FP services.

Results: While the providers' views point to a few facilitators that promote the use FP guideline, more barriers were identified. The barriers for guideline use included lack of knowledge about the guideline's existence, purpose and, quality, the providers' personal religious beliefs, reliance on prior knowledge and tradition rather than protocols and guideline, lack of or insufficient access, and inadequate training on use of guideline. Facilitators for guideline use were related to access to the guideline, convenience and ease of implementation and of incentives in terms of recognition for providers to use the guideline.

Conclusions: While development of the guideline is an important initiative by the Ethiopian government, continued use of this resource by all healthcare providers requires planning to promote facilitating factors and address barriers related to use of the FP guideline. Training that includes a discussion about providers' beliefs and traditional practices as well as other factors that reduce the use of guideline, provision of sufficient number of copies, and translation in local language would be useful.

Strengths and limitations of this study

- **Strength:** It was the first study to explore the barriers and facilitators of use of the FP guideline in FP services in Ethiopia.
- **Limitation:** the study was conducted with participants from only urban health facilities in one geographic region of Ethiopia.

- Limitation: the use of a single transcriber and translator, however the lead investigator was careful not to impose his own perspectives about barriers/ facilitators of FP guideline use.

Introduction

Similar to other low income countries in Africa, Ethiopia has a high maternal mortality ratio, with 412 deaths per 100,000 live births.⁽⁶⁾ This compares with an average of 196 per 100,000 live births at a global level.⁽²¹⁹⁾ Ensuring that all women can easily access and use appropriate and effective family planning (FP) services is widely regarded as critical in reducing maternal mortality^(13, 220). However, the rate of FP service utilisation remains low in Ethiopia with only 35% of married women using FP services.⁽⁶⁾

Ensuring quality of care is critical in improving and maintaining high levels of FP services utilisation.^(34-38, 201, 221) Developing evidence-based clinical practice guidelines and implementing them throughout the health system, is key to building quality of care.⁽²²²⁻²²⁴⁾ Clinical practice guidelines are “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care⁽²²⁵⁾ p4 options”. Studies conducted in Ethiopia and Kenya have shown that the availability of FP guidelines was positively associated with improved quality of care in FP service delivery.^(206, 226) For example, Stanback et al.⁽²²⁶⁾ showed that when FP guidelines are properly distributed to healthcare facilities offering FP services, the reliable presence of these guidelines helps to improve health providers’ sustained use of the guidelines and thereby the quality FP service delivery. For guidelines to be effectively implemented and support quality care, they should be based on the findings of systematic reviews that include quality evidence; developed by a knowledgeable, multidisciplinary panel of experts and representatives from key affected groups; and consider important patient subgroups and patient preferences.^(225, 227)

To support the improvement of quality of care in FP services, the World Health Organization (WHO) has developed guidelines, including the medical eligibility criteria (MEC) for contraceptive use.^(228, 229) Informed by the MEC, several countries, including Ethiopia, have developed FP guidelines. In Ethiopia, FP guideline was first developed in 1996, and last updated in 2011, and is the only FP guideline available in Ethiopia.^(47, 230) A summary of the 2011 national FP guideline⁽⁴⁷⁾ considered in the present study is provided in Table 1. The guideline is intended to be used by policy makers and health professionals providing FP services at all levels of the health system in Ethiopia.

Table 1. Summary of the 2011 national guideline for FP services in Ethiopia ⁽⁴⁷⁾

Developed by:	<p>A panel of experts from:</p> <ul style="list-style-type: none"> • Government (Ministry of Health of Health) • Addis Ababa University • Non-governmental organisations working in Ethiopia (DKT, EngenderHealth, FHI, Ipas, WHO, Marie Stopes International, IFHP, UNFPA, Venture Strategy, JSI/Deliver)
Intended users:	<ul style="list-style-type: none"> • Policy makers • Health managers • FP program coordinators and managers at all levels • All cadres of health care providers and instructors at health training institutions • FP researchers, monitors and evaluators • Donors, other stakeholders and implementers of FP programs in government, non-government and private sectors
Objectives:	<ul style="list-style-type: none"> • Guide FP programmers and implementers at government, non-government, bilateral and multilateral organisations, private sector as well as charity and civic institutions • Guide to all cadres of health care providers directly or indirectly involved in the provision of FP services including pre-service and in-service training • Set standards for FP programs and services • Standardise various components of FP services at all levels • Expand and improve quality of FP services to be offered • Direct integration of FP services with other reproductive health services, and • Serve as a general directive and management tool.
Main content:	<ul style="list-style-type: none"> • Goals and objectives of the FP Guideline • FP Services* • FP Service Strategies • Services for Clients with Special Needs • Advocacy communications and social mobilisation • Contraceptive supplies and management • Quality of Care in Family Planning • Health Management Information System

Source: Federal Ministry of Health. National Guidelines for FP Services in Ethiopia. Addis Ababa: Federal Ministry of Health, 2011.

**This section describes the range of FP services provided in the health facilities. The services specified are counselling, provision of contraceptive methods, screening services for sexual transmitted infections, HIV and reproductive organ cancers, prevention and management of fertility treatment*

FP- Family Planning, FHI- Family Health International, IFHP- Integrated Family Health Program, JSI- John Snow Incorporation, UNFPA- United Nations Fund for Population Activities, WHO - World Health Organization

A recent study on the factors associated with quality of care in FP services in Ethiopia reports that less than half of the facilities (46%) had FP guidelines/protocols, suggesting inadequate dissemination and uptake of FP guidelines.⁽²⁰⁶⁾ While clinical guidelines are increasingly being developed at local, regional, and national levels^(217, 218), no study has examined factors influencing utilisation of FP guideline in FP services in Ethiopia or other LMIC. Understanding the healthcare provider experiences of using guideline in FP services can help inform initiatives to improve guideline implementation and thus quality of care provision in Ethiopia. The aim of this study was to explore healthcare providers' views on the use of FP guideline in FP services in Amhara Region, Ethiopia, focusing on barriers and facilitators.

Methods

Study design and setting

This study used in-depth interviews guided by a semi-structured interview guide for data collection. The study was conducted in two big cities- Bahir Dar city and Gondar city- located in Amhara region, Northwest Ethiopia between April and June 2017. Study participants were recruited from nine health facilities including two hospitals, five health centres, and two health posts. The Amhara region is the second largest of the 11 administration areas in Ethiopia, with a population of approximately 21 million, 23% of Ethiopia's total population.⁽¹⁸⁹⁾ The region has 19 hospitals, 796 health centres, and 3267 health posts.⁽¹⁹⁰⁾ FP services are provided in all the health facilities in this region. In hospitals, FP services are provided in gynecology departments by midwives, nurses, or doctors. In health centres, FP services are provided through maternal and child health (MCH) departments by nurses, midwives, or health officers. Health Extension Workers provide FP services in health posts.

Participants

Before contacting the study participants, we selected health facilities purposively, to include three types of health facilities - hospitals, health centres, and health posts. In the selected health facilities, potential study participants were approached in staff meetings, where they were provided information about the study and requested to express their willingness to be part of the study. Those staff who expressed willingness to be part of the study were contacted by telephone to further discuss the study including the study objectives, potential risks to participants, other ethical issues, and to arrange a convenient time and place for the interview. To be part of the study, participants had to be healthcare providers who had worked a minimum of six months providing FP services. This helped to explore providers' direct/real

experiences on factors affecting use of FP guidelines in FP services. While it was initially anticipated to include up to 15 study participants, recruitment of participants were conducted until saturation was achieved in that no new barrier or facilitator were identified. As a result, a total of 21 providers (18 female, 3 males) were interviewed. See Table 2 for further details on participant characteristics).

Table 2. Characteristics of participants

Characteristics	Number	Percent
Sex		
Female	18	85.7
Male	3	14.3
Age (years)		
25-30	10	47.6
>30	11	52.4
Mean age	30 (SD=4.9)	
Range	Min=25, max=49	
Profession		
HEW	4	19.0
Midwife	10	47.6
Nurse	7	33.3
Highest qualification		
BSc	8	38.1
Diploma	13	61.9
Facility in which provider provided FP services		
Ayer-marefia Health Post	2	9.5
Azezo Health Centre	3	14.3
Belay Zeleke Health Post	2	9.5
Felege-hiwot Hospital	2	9.5
Gebriel Health centre	2	9.5
Gondar Health centre	1	4.8
Han Health Centre	2	9.5
Maraki Health Centre	2	9.5
University of Gondar Hospital	5	23.8
Types of facility from which participants were recruited		
Health Centre	10	47.6
Hospital	7	33.3
Health Post	4	19.0

Data collection

Data were collected through face-to-face in-depth interviews in the local language (Amharic) by the lead author (GAT). In-depth interviews were used as this approach allows exploring individual experiences/views/perceptions of healthcare providers working in the provision of FP services. Unlike the focus group discussion, the findings in the in-depth interviews are not influenced by the views of other participants.⁽²³¹⁾ All except one of the interviews were audio-recorded. For the one interview in which the participant declined to give consent for audio-recording, notes were taken. The interview guide included questions inquiring about barriers and facilitators of guidelines utilisation in FP services as well as questions on participant characteristics. The interview guide is available from the lead author.

Data analysis

The audio-recorded interviews and notes taken were translated and transcribed into English by the lead author and entered into NVivo 11™ for analysis.⁽²³²⁾ Thematic analysis according to the approach described by Braun and Clarke⁽²³³⁾ was employed. The epistemological framework for this analysis was essentialist/realist, aiming to understand and report the experiences, meaning, and reality of study participants regarding barriers for and facilitators of using FP guideline in the provisions of FP services.⁽²³³⁾ Data analysis was led by GAT who first read and re-read the transcripts to familiarise himself with the data, and then systematically coded the data related to barriers and facilitators. GAT is a reproductive health researcher who has been working in family planning research in Ethiopia. His knowledge about the local culture, values and context of the study setting enhanced the research in terms of enabling probing questions during the interviews and appropriate interpretation of the data and identification of the barriers/facilitators. JSG has knowledge of the context surrounding guidelines utilisation and healthcare delivery in resource-limited African settings which assists with appropriate interpretation of the data collected. COL and MAM are also well-experienced in qualitative research and this helped in data analysis and interpretation of the findings. The coding was conducted inductively; with codes informed by the data rather than pre-existing frameworks. The codes were developed through an iterative process involving the co-authors (JSG, COL, MAM), who having read a sample of three transcripts, discussed the emerging codes. Disagreements and discrepancies around codes, themes, and sub-themes were resolved by consecutive discussions and reference to the original transcript document. Finally, the codes were grouped based on similarities into themes and sub-themes.

Ethical considerations

Ethical approvals were obtained from the Human Research Ethics Committee (HREC) at the University of Adelaide (Protocol # H-2017-023) and the Institutional Review Board (IRB) at the University of Gondar, Ethiopia (Protocol # O/V/P/RCS/05/562/2017). Informed written consent was obtained from each study participant before the start of the interviews.

Results

Overall, six main barriers to and facilitators in using FP guideline in FP services were identified. These barriers and facilitators are summarised as themes and sub-themes in Table 3.

Table 3. Summary of provider perceptions of factors (barriers and facilitators) related to implementation of FP guideline

Theme	Sub-themes
Knowledge and access	<ul style="list-style-type: none"> • Awareness of guideline existence • Understanding of guideline purpose, content and requirements • Dissemination / availability of the guideline • Size of the guideline • Language and layout of the guideline
Quality of the guideline	<ul style="list-style-type: none"> • Scope of the guideline • Content of the guideline
Provider behaviour and values	<ul style="list-style-type: none"> • Beliefs of providers (e.g. views about what should be provided based on religion) • Values (e.g. commitment to use of health standards) • Habits (e.g. practice according to traditional ways of doing things and expert knowledge of providers)
Support and supervision from managers	<ul style="list-style-type: none"> • Supervision • Monitoring of guideline implementation • Incentives created for guideline implementation
Resource availability: time and workforce	<ul style="list-style-type: none"> • Availability of trained providers • Time pressure • Required activities
Training	<ul style="list-style-type: none"> • Frequency of training • Content of training • Peer-learning

Knowledge and access to the guideline

Providers' knowledge of and access to FP guideline were identified as a key theme impacting the use of FP guideline in providing FP services. Lack of awareness about the FP guideline was perceived as a barrier preventing guideline use. In this regard, three participants reported that they were not aware of the existence of the national guideline for the provisions of FP services; as one provider said "*I have not heard about it [national family planning guideline]...*" [In-depth Interviewee (IDI)₁₄].

Several other providers indicated that they were aware of the guideline, but did not understand their purpose adequately. They said that they perceived the guidelines as 'training material/manual', only provided during training, rather than health standards to be used at their health facility. This view of the guidelines was demonstrated when a participant described the guidelines in their facility as 'compilation of printed training materials' provided in FP trainings. Also a participant said:

...it is because of the guidelines... it is large...we got it from Ipas NGO... it was a collection [compilation] of training materials... laminated together in a book form [IDI₁₈].

Other providers who indicated that they were aware of the guidelines, referred to inadequate knowledge about how to use the guideline: "*Since we did not understand on how to use it... we have not been using it [guideline] for so long...*" [IDI₂].

A lack of access to the guideline was described as not having guideline available in the facility, insufficient copies of guideline or guideline not provided in a convenient location in the facility.

I think, this guideline has to be accessible to various rooms. We have only a copy. [IDI₁₉].

We do not have family planning guidelines. We just work by looking into what other providers do and by asking them if there are concerns that we are not sure. That is how we do. [IDI₁₁].

We wish to use it, but we do not have it... that is the reason we are not using. [IDI₁].

In some instances, where the facility provided copies of FP guidelines, participants explained that they were often taken away or lost. In this regard, a midwife expressed a concern that students or someone else removes the guidelines from the facility.

The hospital may prepare it or got it from somewhere else [other organizations] ...but someone may put it at some place for a provider to access it easily. ...and then a provider has accessed it for use but failed to put it back... and lost from the facility... that is my assumption. The participant just put [it] somewhere or may take it to their home and finally forget it... forgot to bring back. It may also mixed up with other documents and then it became a difficult job to find it for use. [IDI₁₅].

Another participant described that although providers received copies of guidelines during training sessions, they kept the guidelines at their homes, rather than using them in the facility.

I had been working in health centre... far from this town...small town. By that time, we [I and colleagues] had been provided the guideline at the training but we dropped it in our homes [instead of bringing it for use in the facility], we did not bring it to the facility. [IDI₁₂].

Lack of easy access to the copies of the guideline for immediate referral during services provision was mentioned as a barrier by some participants – “*One problem is that we are not putting the guideline in our nearby areas*” [IDI₁₂].

Participants expressed that because of the large size of the guideline, they were not only unable to locate specific information in the text but also found it difficult to carry to outreach areas.

...it is somehow difficult to get the exact page where the information we are looking for is located [IDI₂].

It is also difficult to bring the guideline to use in the villages along other stuff. It is heavy for us... we are also carrying our own stuff in the bag. Most of the time, we are forced not to take it with us [IDI₁₃].

The guideline were only provided in English and this was seen by some participants as a barrier to their use, particularly for those healthcare providers who do not understand English well.

There might be some healthcare providers that could not easily understand English. For them, it is better to have Amharic version or guidelines in both languages [Amharic and English] [IDI₄].

In terms of the facilitators for the use of the guideline, providers reported that convenient access to the guideline, ease to use them, format of the guidelines were perceived by the participants as important facilitators for their use. For example, a participant said that when the FP guideline was conveniently available in the facilities for providers it was perceived as a facilitator for its use.

The guideline is always available in our room, it is just located on the table, anyone who want to refer it can found easily [IDI₈].

Moreover, a nurse from a health centre felt that passing the guideline to the next colleague when a provider is changing shifts or travelling to other areas was helpful in improving use of guideline.

I also pass the guideline for the next person if I am going to travel somewhere. That is what I think. I believe, following the guideline would help a provider to provide a proper counselling...which is really a key issue for a client and for providers to remind him to use the guideline. That is what I believe [IDI₂₁].

Ensuring ease of use and its carrying convenience were also demonstrated as a facilitator for the use of the guideline. From a provider's perspective, several participants described that they inclined to use the WHO eligibility criteria than the FP guideline as the former was easier to get the intended information and being smaller in size made it lighter to carry on when they travelled to villages for outreach services.

For example, the WHO guideline is very simple and easy. Just you need to put on the table and then look at the notes inside the circle while national guideline is a book and it needs [us] to search for a page. So making it easier to use is good for providers [IDI₃].

In line with this, some participants suggested that for the guideline to be easier to use by healthcare providers, different colours and pictures need to be used within the guideline.

... it would also be good if they use different colours...green, red, pink to denote which methods should not be taken for some diseases. If you see red, you do not give...but for green marked one... you can do....you know, making it something like the WHO eligibility criteria [IDI₁₂].

I need a guideline having different pictures [figures] ... do you know what I mean, for examplea guideline with a U-shape pictures [to indicate] for five-year family planning [IUCD]. ...sometimes you will forget what you have been told in training... it will not stay long after a year or two... it will be forgotten. The guideline shall also have a clear indications on landmarks [anatomical] for the measurement before inserting the contraceptive methods [IDI₉].

Additionally, the participants indicated that providing copies of guideline in the local language, besides providing an English version, can improve its utilisation.

But, I prefer to have an Amharic version ...and in that case, I can go and read the Amharic version if the English version is not clear for me [IDI₁₅]

Quality of the guideline

Another theme arising from the interviews related to the scope of the guideline, content and currency which the FP information contained.

Participants reported that the guideline, included a large number of health issues beyond FP, making it difficult to navigate.

We have a guideline that included everything in it. It also deals about malaria... HIV... sanitation, nutrition besides family planning for families in the community... It was not possible to easily get the information about family planning services in it [guidelines] [IDI₁₃].

Another barrier to the use of the FP guideline was that the guideline was often considered out of date and not covering the latest contraceptive methods. A nurse from a health centre expressed:

Plus, it [the current guideline] did not include information about the newly developed and available methods... there is a new implant method which is called “Implanon NXT”. This method is now under distribution for health facilities. This method has its own insertion procedure, but you could not get it in the current version of the guidelines [IDI₁₇].

Finally, the guideline did not provide the important information to assist FP providers to undertake their work effectively. For example, no guidance was provided on dealing with community misconceptions about contraception.

In the guideline... I found there is lacking about the common misconceptions [about the family planning methods] in the community... if you know them... you will be ready to address during the counselling session... sometimes, you will face with emergency questions in such a way that... “does it lead to this or that?” ... if these information are available in the guidelines, a provider will be aware of them and getting ready to handle [answer] them [IDI₁₇].

Provider behaviour, values and beliefs

More than half of the participants described that many healthcare providers tend to rely on their prior knowledge and practices learnt throughout their career rather than using the available guideline. The

participants felt those providers keep doing things the usual way, as in the past, even after attending FP trainings involving guideline implementation.

...health professionals are providing family planning services just by tradition...without updating him/herself [by reading guideline]. Especially...the so-called 'chronic staff' ...those staff who upgraded themselves gradually from health assistant to junior nurse and then to [diploma]nurse...and then to bachelor degree nurse...they do not want to be guided by guideline...not at all...they just follow what they have been doing for 10...20 or more years in the past [IDI₂₁].

Some of the participants who had worked for many years in FP services continue to rely on their knowledge and experience rather than referring to guideline.

We are working here by our experiences. I have been working here for long time...so I do not use anything for providing family planning services (IDI₁).

It was also described by some participants that lack of commitment to use health standards by healthcare providers influenced their use of FP guideline.

Additionally [another reason for not using guideline] ...it is because of carelessness of the healthcare provider... providing family planning services just by tradition...without updating himself. [IDI₂₁]

...those providers who got the training are aware of that fact... that they should use the guideline...but they are not following[using] the laws or legislations [guideline]... there is ignorance ... [IDI₁₂].

Other participants expressed that some providers perceive themselves as having sufficient knowledge and a belief that they can provide services without the need of any guideline. For example, a provider expressed “We thought...we know everything in the document [guideline]” [IDI₁₄].”

For some participants, the habit of not reading any material provided was a barrier. One of the participants mentioned that “Most of our people [including providers] do not have a good culture [habit] of reading books... let alone family planning guideline. [IDI₁₆].

It was also noted that some providers were not comfortable reading the guideline in front of clients. They would rather rely on their personal experiences:

When you have clients sitting in front of you, it is boring to do [refer guideline] that. That is why I prefer providing the services from my experiences [IDI₄]

It was not all negative. One participant described his personal change in terms of commencing to use FP guideline:

I am using it [guideline] rather than following the traditional [practice based on prior knowledge]... I tried to abandon [change] the old tradition to work without referring to family planning guideline... [IDI₁₆].

One participant presented the view that the religious beliefs of some providers was a barrier in the utilisation of the FP guideline:

...quite a number of providers do have a negative attitude for family planning and safe abortion. They consider it as a religiously prohibited thing...they always associate it with religion...and they do not accept it. Overall, I can say, their utilisation of the guideline is limited. [IDI₁₆]

The same participant expressed that in some instances providers' motivation to attend FP related training was the provision of per-diems rather than obtaining knowledge about the FP services and available guideline to support FP services:

Many providers are going to the training...not just for learning new knowledge on it [family planning services and use of guideline], it is rather to get the per-diems during the training...They do not seem to provide the [family planning] services properly using the guideline...we are observing that every time [IDI₁₆].

Manager support and supervision

Another theme arising from the interviews is about the role of supervisors, including district managers and staff from non-governmental organisation (NGO). One midwife said that the supervisor's lack of emphasis on the guideline when monitoring service delivery was an issue. More particularly the midwife participant from a health centre expressed that: “[when healthcare managers from the district and regional health bureau visited their facility] *no one has checked whether we have been using it [guideline] or not*” [IDI₁₉].

Another provider also reported that some healthcare managers were not concerned about availability or use of the guideline.

When they come to us they are asking us about the drugs, and contraceptive methods, vaccinations... They are not asking about the guideline or if we use them or not. They are always asking on the

numbers on the report... for example they ask us, “why only few people are getting family planning services in a certain month” [IDI₁₄].

However, some of the participants informed that support by district managers and NGO staff was available and acted as a facilitator to use FP guideline.

We do have NGO partners who are coming regularly to check our services provisions, availability of materials and contraceptive methods. They also checked the presence of family planning guideline [IDI₁₇].

Creating a culture within the facility where the guideline were seen as core to their service provision was suggested by a number of participants as a facilitator. *If one needs providers to use guideline, encouragement is necessary... [IDI₆].*

Resource availability: time and workforce

Resource related issues such as lack of time, shortage of trained providers, and high workload were expressed as barriers to using FP guideline. Several of the participants reported that a high client load interferes with using the guideline. The participants referred to long queues of clients waiting outside of the clinics to receive FP services, which made referring to the guideline during consultations difficult. In addition, the participants reported that limited time available for each client meant that some provider prioritised using the ‘consultation time’ to counsel the client based on what they already know rather than using the guideline. In one participant’s words: *“We do not have time... in order to read a text [guideline], really... you should first get sufficient time” [IDI₁₃].*

Additionally, the lack of appropriately trained staff added to the pressure on the existing staff and so taking time to refer to the guideline was considered a barrier to dealing with patient numbers. For example, participants stated:

In that case [in the absence of trained providers], they [untrained providers] may just provide only counselling to them [clients] and appoint for myself or other trained provider to see them when we get back... these providers are not referring to the document [guideline]. In the facility, we do have only two trained providers, myself and another midwife [IDI₈]

Another area of concern for one participant was the facility’s inability to retain those staff who had been provided with training related to FP services and guideline:

There were many providers who have got the training but they moved to other places from our facility for different reasons...there is a lot of providers' turnover here...that is a big challenge [IDI₁₇].

According to a health extension worker participant, it was difficult to use guideline during provision of FP services because providers were required to provide a number of other healthcare services along with FP services, to be involved with various meetings, and to work in outreach activities in the local community.

We do have meetings all the time, we should give counselling for the clients, we should also need to report to district managers, and health centre... we are not in the office to read available documents, usually in the morning time "we are always out" [IDI₁₃].

Another nurse explained that working on a number of tasks that are not co-located in one room but offered by one provider was also seen as a barrier to guideline use. In her words:

...if a midwife is assigned in one room, there is no reason that she does not use the guideline properly. But, this will not happen here... we are going to antenatal, postnatal care, etc... Sometimes, we are rushing to reach the clients coming for different services. [IDI₁₅].

Training

Providers' lack of or inadequate training on the contents of the FP guideline was described as a barrier to guideline use. For example, one participant mentioned that: *"If you are not trained you cannot use the guideline"* [IDI₃]. Other providers expressed:

I took the training....it was long time ago... I took it in 2005E.C (just before 4 years [IDI₈]

Once we have been provided a training, nobody remembers you for refreshment training... [IDI₂]

In contrast, other participants referred to provision of training that targets the FP guideline as a facilitator; for example one participant explained that discussing the contents of the guideline during FP training provision may help to motivate providers to use the guideline.

They [trainers] have highlighted some concepts in the guideline using PowerPoint presentation. I guess, this can help providers to motivate for using them while getting back to their facilities [IDI₁₆].

As part of the capacity building activity, the participants described that being a FP trainer has helped them to improve their use of guideline.

...our facility is one of the practical attachment location for family planning trainings. I am also part of the trainers' panel for the long term contraceptive methods. ...the guideline are always in my hand for me to use... I am updating myself every time...maybe... I read the book in weekly or monthly basis. I also ask other friends [colleagues] to use it [IDI₁₆].

Some participants acknowledged peer-learning from colleagues and identified this as a facilitator. For example, a participant described that she and her colleagues did not use the guideline until she attended an induction training on how to use the guideline and share the knowledge to her colleagues.

...After I received the orientation [induction] on how to use it, I have also informed [on how to use it] to all my staff and now we are using it in the same language [fashion]. The guideline had been in our facility for three....or... four months without using it [IDI₂].

Discussion

This is the first study conducted to understand providers' perspectives on FP guideline use in Ethiopia. While the providers' views point to both barriers and facilitators affecting FP guideline use in FP services, more factors related to barriers were identified and described than facilitators. Barriers that exist, from providers' perspective, are mainly inadequate knowledge about the purpose of the guideline, relevance of the guideline for specific and practical needs of the providers, personal factors such as beliefs and traditions, and organisational factors such as inadequate resources including time and staff, lack of supervision and support.

Our findings that providers' lack of knowledge about the existence of the FP guideline and unavailability of a copy of guideline for healthcare providers supports our previous quantitative study which found more than half of the health facilities in Ethiopia do not have FP guideline available. ⁽²⁰⁶⁾ Lack of availability of the guidelines in health facilities points to a concern about lack of planning to distribute such resource to health facilities for use by healthcare providers. ⁽²³⁴⁾ Inadequate planning to effectively distribute guidelines and protocols is a persistent concern across other countries as well; for example, a 2012 Ugandan study, found that more than 60% of clinical guidelines developed by the government were not available at the service delivery level despite that these resources were available at national offices level. ⁽²³⁵⁾

When guidelines were available in health facilities, other issues impeded their use, including language and format of guidelines. Other studies have also identified these features of guidelines as factors that negatively impact utilisation. ⁽²³⁶⁻²³⁸⁾

The present study also found that a lack of information in the guideline about common community misconceptions related to FP methods and lack of information about newly-developed contraceptive methods such as *Implanon NXT* impacted on their effective use. In Ethiopia, the current FP guideline was intended to serve various stakeholders ranging from policy makers at the national level to FP providers at the services delivery point. As a result, instead of providing specific and practical information to assist frontline healthcare providers for effective counselling and contraceptive provision, the guideline provide relatively general information about FP services. For example, the current version of the national FP guideline⁽⁴⁷⁾ does not provides information about how to use contraceptive methods and indications/contraindications. This finding suggests that at the health facility level, the guideline needs to include specific information for the healthcare providers to use to provide effective FP services. The guidelines by the Ministry of Public Health and Sanitation of Kenya, for example, addressed this issue and provided current and up to date information on FP methods.⁽²³⁹⁾ These guidelines cover the advantages and disadvantages of FP methods, medical eligibility criteria, management of common side effects, and how to address common community misperceptions about FP methods.

Healthcare providers continuing to apply, even after receiving guidelines and training, the procedures they have been applying in the past is a well-known problem in the healthcare sector, not only in LMIC, but throughout the world.^(240, 241) Therefore, our study findings that providers perceive traditional ways of doing things as a barrier to guideline use is not surprising. This problem may be probably due, in part, to low levels of commitment on the part of providers to implement best practices learned during technical training. A study conducted in rural India found a clear gap between what the providers ‘know’ about the standard practices to be provided/followed for patients and what they ‘do’ in their routine practice during the provision of a healthcare services.⁽²⁴²⁾ Therefore, while our findings suggest that improving healthcare providers’ use of FP guideline will require increased provider knowledge and skill, in light of emerging literature on provider motivation suggesting that these efforts be combined with regular supportive supervision and incentive mechanisms to motivate healthcare providers.

This study informed about organisational factors including the role of management support for providers to use the guideline and insufficient health workforce. Evidence shows that managerial support is important to improve use of clinical practice guidelines.^(225, 243, 244) This alerts to the need for a focus on support and supervision visits by healthcare services managers at the regional level and at the facility level. Lack of sufficient health workforce was identified as a main barrier for guidelines use. A previous study conducted in four low-income countries, Uganda, Ethiopia, Tanzania, and Myanmar, showed that

shortage of health workforce was one of the barriers impeding guidelines implementation in the provision of maternal healthcare services across all these countries. ⁽²⁴⁵⁾ Study participants in our study also expressed that high staff turnover exacerbated the staff shortage problem in health facilities. Our study has also pointed out that time pressure due to client overload and multiple tasks was impeding guideline use in FP services. Several studies reported that time constraint was a barrier for implementing clinical practice guidelines. ⁽²⁴⁶⁻²⁴⁸⁾

Healthcare providers in our study highlighted the importance of training to enhance skills for effective use of guidelines and in turn provide quality of care in FP services. The need for training and skill enhancement is noted in many other studies, across a range of health issues and healthcare services provision. For example, multi-country studies, undertaken in LMIC such as Uganda, Malawi, Tanzania, and Ethiopia conducted to identify the barriers and facilitators for implementing various healthcare services guidelines including maternal healthcare services, ^(234, 245) and mental healthcare services⁽²⁴⁹⁾ showed that lack of or insufficient training was a barrier for implementing clinical guidelines.

Considering limitations of this study, first, the study was conducted with participants from only urban health facilities in one geographic region of Ethiopia. Hence, as expected in qualitative studies, the results may not be representative of rural health facilities and other regions of Ethiopia. However, we continued interviewing until data saturation, and therefore the barriers and facilitating factors that we identified may be similar in other facilities, particularly within the Amhara region. In fact, as facilities being located in rural and remote areas pose additional challenges in terms of adequate human resource, training and access to resources such as guideline, we believe that the barriers highlighted by the study participants in Amhara region may be even more pronounced in rural and remote areas. Second, while the lead author (GAT) has been working in FP research in Ethiopia, there might be a potential bias in the research. However, the lead author was careful not to impose his own perspectives about barriers/ facilitators of FP guideline use during data collection and analysis. The use of a single transcriber and translator limited our ability to conduct a quality assurance of transcript translations. As the co-authors, JSG, COL, AMM, have no experience in Ethiopia and they have little or no bias in the research. They were also careful not to impose their own perspectives about barriers/ facilitators of FP guideline use during data collection and analysis. The use of a single transcriber and translator limited our ability to conduct a quality assurance of transcript translations.

Policy and research implications

The findings of this study have important policy and research implications. While the Ethiopian government took an important initiative in developing the FP guideline its utilisation could be improved by implementing the following steps. (1) The guideline should be translated into the local language and ensure that it is distributed to health facilities. (2) Provision of additional training for healthcare providers to improve their knowledge about the guideline is required. The training should focus more on encouraging/incentivising providers to use the guideline and to build their confidence in referring to the guideline in front of the clients. It should also be emphasised that the guideline is not only to be used as a training material but also are actually a reference guide to be used continuously throughout their career. (3) Steps need to be taken to ensure that the guideline is easily available, and that providers and managers have the time to participate in relevant trainings, as well as to deliver the standard and range of services set out in the guideline. 4) The current national FP guideline are out-of-date in terms of addressing new FP methods and technologies, so the government should consider revising this guideline. During the guideline revision, it could be important to include more practical information required by healthcare providers which includes how to use each FP method, advantages and disadvantages, contraindications, side effects, and common community misconceptions. It would also be useful for the guideline to be more concise and simple to carry, transfer and share and have better indexed content so that providers can find what they need to know more quickly, and with more up to date information so that providers do not fear they are acting on outdated knowledge. 5) It is also necessary to establish better systems for managers to provide effective monitoring and supervision of providers and to use the opportunity to check the availability guideline in the facilities and if the providers are properly implementing the guideline.

Further studies examining providers' perspectives of guideline use involving participants from other regions in Ethiopia may be required to build a comprehensive understanding of barriers and facilitators, and how to support utilisation of the FP guideline throughout the health system. While some of the barriers identified in this study such as lack of managerial support and training could be better explored by including healthcare managers, further study targeting healthcare managers is recommended to provide additional insight on these factors.

Conclusion

Provider perspectives confirmed that a range of barriers contribute to lack of use of the guideline in FP services in some health facilities in Ethiopia. The barriers observed included lack of knowledge about the existence and purpose of the guideline, lack of sufficient copies of the guideline, providers' personal religious beliefs, a desire amongst providers to deliver services based on prior knowledge and tradition rather than protocols and guideline, insufficient time (resource issues), lack of knowledge about the guideline and inadequate training on how to use them. Ensuring that the guideline was easy to access and implement and incentives for their use (e.g. recognition) were the main facilitators identified by providers in this qualitative study. While the Federal Ministry of Health of Ethiopia need to work on revising the current FP guideline, strategies need to be designed to properly distribute the guideline to health facilities providing FP services. Future FP guideline development needs to focus on providing concise, easy to carry guideline with a more practical information for healthcare providers.

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Contributors

GAT contributed to the study concept and design; acquisition, analysis and interpretation of data; drafting and critical revision of the manuscript. JSG, COL, MAM contributed to the study concept and design, as well as the critical revision of the manuscript. All the authors have approved the manuscript.

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Competing interest None

Chapter 8

Discussion and conclusion

The overall aim of this PhD study was to gain an understanding of factors determining the quality of care in FP services in Ethiopia. Using a mix of study methods which included a systematic review, secondary analysis of quantitative data, and a qualitative study design, the thesis investigated the determinants of the quality of care in FP services in Ethiopia, and compared differences between private and public facilities in structural aspects of quality of care in FP services in Ethiopia. In this final chapter, key findings of the thesis are summarised, the significance of the study described, potential areas for future research outlined, strengths and limitations discussed, and finally a conclusion is provided.

8.1 Key findings of the studies

Factors determining quality of care in family planning services in Africa

The systematic review of mixed evidence (Study 1) found limited studies conducted in Africa assessing the factors associated with quality of care in FP services. Of the 11 studies, included in the review, appraised as being moderate to high quality, two ^(184, 188) were conducted in Ethiopia. Neither of the two studies performed in Ethiopia used a nationally representative dataset of health facilities. The review found quality of care in FP services was affected by client, provider, and facility factors, as well as structural and process aspects of the facilities. Overall, short waiting times for clients, the presence of competent healthcare providers, provision/prescription of injectable methods, maintenance of privacy and confidentiality, availability of FP guidelines, good quality of stock⁴ and being a private facility were the most frequently reported factors that were positively associated with quality of care in FP services.

While two systematic reviews assessing factors associated with quality of care in FP services have been conducted in the United States –the first in 2007 ⁽²⁵⁰⁾ and the other in 2015 ⁽²⁵¹⁾, this systematic review remains the only synthesis of the evidence on factors affecting quality of care in FP services in the African context.

⁴ Quality of stock was assessed in terms of FP methods storage areas were protected from water, sunlight, rodents; being well ventilated, organised upon expired date, sufficient space in the stock; FP commodities labelled for strength and expire date.

Since the completion of the systematic review, two new African studies assessing the quality of care in FP services have been published, one in Ethiopia ⁽²⁵²⁾, the other in Mozambique ⁽²⁵³⁾, both of which used client satisfaction as the outcome measure. Baruda et al. ⁽²⁵²⁾ conducted a facility based cross-sectional study in 2015 in southern Ethiopia. The study collected data from six health facilities and 416 reproductive aged women. Chavane et al. ⁽²⁵³⁾ also conducted a cross-sectional study (2011), however used a nationally representative sample of 149 primary level health facilities, including 671 reproductive aged women. The findings of these studies are consistent with the findings of the systematic review reported on in this thesis in that the majority of the factors identified as positively associated with quality of care in FP services were process related factors. These process factors included: provision of clients' FP method of choice and maintenance of client privacy, and good provider-client interaction. However, the study from Mozambique ⁽²⁵³⁾ identified one additional factor, not identified by this systematic review, related to the client, which was women's employment status as positively associated with quality of care in FP services.

Client and facility level determinants of quality of care in family planning services in Ethiopia

Study two, the quantitative analysis of the national level data, found six factors (two factors at the facility-level; and four factors at the client-level) as significantly affecting the quality of care in FP services in Ethiopia with client satisfaction as the outcome measure. At the facility-level, the facility's context and structural factors, namely being located in an urban area and availability of guidelines/protocols were positively associated with quality of care in FP services. At the client-level, excluding clients age, three process factors, including provision of information on potential side effects of contraceptive method, number of history and physical assessments performed, and client waiting time of less than 30 minutes, were positively associated with quality of care in FP services. While short waiting times and the provision of information on FP methods were found to be positively associated with quality of care in FP services in the previous studies conducted in Ethiopia (and included in the systematic review ^(184, 188)), this study found two additional factors – the location of facility in an urban area and guidelines/protocols availability in the facilities – as positively associated with quality of care in FP services in Ethiopia.

Quality and use of family planning services in public and private facilities in Ethiopia

The systematic review (Study 1), identified being a private facility as positively associated with quality of care in FP services in Africa. As a result, Study 3 compared quality of FP services by facility type

(public vs private), and considered characteristics of clients using private versus public facility clients. Focusing only on structural components of care, the study found differences in the quality of FP services across the included private and public facilities. While private facilities were found to have better basic infrastructure such as communication and basic equipment, these facilities offered a more limited range of contraceptive methods had fewer staff trained in FP, were less available guidelines and there were less quality assurance systems in private facilities compared to public facilities. Such differences between facility types have been reported in other LMIC FP services and broader maternal health services. For example, while studies conducted in Kenya ⁽¹⁷¹⁾, Pakistan ⁽²⁵⁴⁾, and Congo ⁽²¹⁰⁾ showed private facilities had better quality of FP services in terms of infrastructure and availability of trained providers, studies conducted in Jamaica ⁽²⁵⁵⁾ and Indonesia ⁽²⁵⁶⁾ showed that public facilities provided better quality of FP and antenatal services respectively.

Health provider perspectives on implementation of family planning guidelines in family planning services

In Study 2, it was found that while less than half of health facilities in Ethiopia have FP guidelines/protocols available, the availability of these guidelines was one of the six factors influencing quality of care in FP services. These findings pointed to the importance of understanding why guidelines are not available in all FP settings and how they are implemented in facilities in which they are available, for supporting quality care in FP services in Ethiopia. Therefore, Study 4 explored health providers' perspectives on barriers to and facilitators of guidelines use in FP services in eight health facilities in one region in Ethiopia using interviews and thematic analysis. While the provider's experience pointed to both barriers and facilitators affecting FP guidelines use, more barriers than facilitators were identified. The barriers undermining use of guidelines included: lack of knowledge (about the guidelines and how to use them) and insufficient access to guidelines; provider behavior (for e.g. related to religious beliefs); lack of managerial support and supervision in relation to guideline utilisation; shortage of health workforce and time pressure; and lack of or insufficient training. The main facilitators identified were access to FP guidelines; incentives for providers to implement the FP guidelines, and provision of training about guidelines. Overall, the findings from the qualitative study showed that personal and organisational factors related to structure were influencing FP guidelines use in FP services provision in Amhara region, again highlighting the importance of structural factors in determining quality of care in FP services in Ethiopia. This overall finding from the exploration of the factors influencing the utilisation of guidelines in FP services in Ethiopia is consistent with that of a

systematic meta-review which has shown provider's and organisational factors in terms of work pressure and available personnel resources were among the barriers that influence clinical guidelines implementation ⁽²⁵⁷⁾.

8.2 Significance of the thesis

To my knowledge, this thesis is the first research that provides a national assessment of the factors affecting quality of care in FP services and the first to explore the barriers and facilitators of FP guidelines use in FP services in Ethiopia.

The thesis used the Donabedian model of quality of care to inform the selection of the potential factors affecting quality of care in FP services in Ethiopia. Recapping from chapter two, Donabedian model informs about three interrelated components of quality of care: structure, process, and outcome ⁽¹³⁶⁾. Structure in terms of FP services refers to factors that affect the conditions of care provision and includes components such as health facility infrastructure, trained staff, FP commodities and equipment and FP guidelines. The structure is prerequisites for the process and outcome aspects of quality of care. Process in the case of FP services provision refers to how the structural components are put into practice for FP services provision. The outcome components of quality of care are about the desired results including client satisfaction (the outcome focused on in this research), change in contraceptive knowledge and behaviour, and reduction in fertility and mortality.

While the 'process' components of the quality of care model, as defined by the Donabedian, could be viewed from the perspective of healthcare providers and users of FP services, the 'structural' components could be assessed not only from the providers and clients perspective but also from healthcare facilities (health centre, hospital) perspective. As providers are tasked with implementing the recommended activities in FP services they are in a good position to reflect on the structural and process components. The providers could also reflect on their own actions [process] such as communicating with FP clients. The clients, on the other hand, could reflect better on those aspects (such as the need for privacy, confidentiality) of the 'process' that increase their satisfaction with the service and ultimately leads to their continued use of the service.

In identifying factors affecting quality of care for a particular country, in an ideal context, all the three components of quality of care i.e. structure, process and outcomes, should be assessed. Additionally, measures for all of the outcomes should be included in the assessment. However, assessing either of these components, particularly in resource-limited countries, can still be useful on its own as it informs

how to improve the quality of care. Assessing the structural component of quality of care are relatively inexpensive and easy to assess whereas process and outcome assessment takes longer time and require more investment. The structural component of quality of care reflects the readiness of health facilities to implement the recommended activities in the FP service provision ⁽²⁵⁵⁾. As such, a number of previous studies in LMIC have focused on assessing structural aspects of quality of care ^(254, 255). Similarly, assessing the process of care provision provides an opportunity to gain an understanding if recommended activities are implemented during care provision. Assessing the outcome of quality of care is also useful not only to evaluate if the goals of care provision are achieved but also reflects on the structure and process of care provision.

With respect to the outcome measure, in the systematic review (quantitative component) and the quantitative analysis, ‘client satisfaction’ is selected for use. This is for the reasons that often data about client satisfaction is available and that its relatively easier to collect data from resource-limited countries ⁽⁹⁶⁾. Overall, the findings in this thesis pointed to that factors related to structure and process component of care provision are key in affecting quality of care in FP services in Ethiopia, thereby supporting the usefulness of the Donabedian framework as a lens through which to approach assessing quality of care in FP services. However, despite the private sector is inferior in scope of services in terms of available trained personnel, available guidelines, and number of FP methods than the public sector, the private sector is still attracting particular types of women. This may result from differences in the process of care provided between these facilities, although the process of care provision was not compared in the thesis.

This thesis shows about the factors related to the structural components of quality of care such as availability of necessary materials and equipment to provide FP services. The inadequacy of these structural components would also compromise the process necessary to provide effective FP services. For example, more than half of the facilities in Ethiopia do not have either FP guidelines or FP trained providers. It means that implementing the recommended activities such as client’s health assessment and provision of information during consultation is affected.

The finding suggest that FP quality improvement programs in Ethiopia need to ensure that health facility’s capacity in terms of having access to FP materials and equipment as well as access to provisions of FP guideline and training opportunities for health providers need to be strengthened.

Previous studies have also shown that structural components of quality of care affect the outcome aspects of quality of care and are associated with process aspects of quality of care ^(258, 259). The process factors affecting quality of care could also reflect the organisation of services and supply of appropriate workforce. An important component of the structure is the health workforce. In Ethiopia, a study showed that due to critical shortage of health workforce, only a few health professionals are required to provide health services to a large number of clients visiting health facilities ⁽²⁶⁰⁾. As a result of this, there are long waiting time for clients. While the WHO recommend a ratio of 2.3 providers per 1,000 population, a workforce ratio of only 0.84 health providers per 1,000 population was reported in Ethiopia ⁽²⁶¹⁾. An important ‘process’ component is the waiting time. Long waiting times (process) for FP services can also occur when the FP services are integrated with other maternal and child health services (structure). In such occasions, FP clients may get less priority compared to the other patients coming with acute illnesses and hence FP clients may have to wait longer times. These findings have implications in terms of the potential need for the government to deploy more FP trained providers in FP services provision departments.

Besides the factors related to the structural and process components of care provision, certain contextual factors play an important role towards quality of care. These contextual factors could be classified into facility level factors (such as geographical location) and individuals level factors such as age educational status. In the thesis, facility’s geographic location and ownership of health facilities were found to be associated with quality of care in FP services. Previous studies conducted in LMIC have also shown that quality of care in FP services varied between health facility across various geographic location such as urban and rural and facility ownership (publicly-owned vs privately-owned) ⁽¹⁶⁹⁻¹⁷¹⁾. The thesis also found a client’s contextual factors particularly client’s age seem to be related to quality of care in FP services in Ethiopia.

The thesis has a number of implications for FP programs for Ethiopia and similar settings in Africa. Firstly, considering the findings of the systematic review, improvement of the quality of FP services require FP programs that address the needs of clients such as shortening client’s waiting time, maintaining client’s privacy and confidentiality, and provision of information about the FP methods. Secondly, it is necessary to ensure the availability of trained providers, FP guidelines, and the range of FP methods available to clients. Health managers in Amhara region should also focus not only on the distribution of FP guidelines but also they should provide training opportunities on guidelines and FP services.

8.3 Strengths and limitations of the study

Strength

This thesis has a number of strengths.

Firstly, the studies carried out in this thesis build on each other. The systematic review (Study 1) helped to identify the factors associated with quality of care in FP at a broader level with relatively similar context as most African countries are resource limited and have similar health system. These results were then used to inform the design and outcome for the quantitative analyses (Studies 2 and 3). The qualitative part of this thesis (Study 4), was underpinned by the findings from Study 2, in that the availability to FP guidelines was a key factor of quality of care in FP services.

Secondly, guided by peer-reviewed published review protocol, the thesis employed a systematic review of quantitative and qualitative studies to provide a broader understanding on factors affecting quality of care in FP services in Africa. Related to this, the findings of the systematic review also provided not only a client's perspective on factors of quality of care in FP services, it also provided a provider's perspective on factors of quality of care in FP services.

Third, with the advent of the first ESPA+ 2014 survey, the thesis used a nationally representative sample to investigate client-level and facility-level factors affecting quality of care using multi-level modelling. Unlike previous studies conducted in Ethiopia, the application of multi-level modelling controlled the effects of clustering in that those clients who accessed FP services from the same facility may likely receive similar level of quality of care. Without the application of this model, the effects of the facility-level factors could be masked.

Fourth, the analysis also took into account all types of health facilities in the Ethiopian health care system and provided analysis by facility type. The qualitative part of the study is also unique in that it explored the barriers and facilitators of FP guidelines use for the first time in Ethiopia and provided an understanding of why important determinants of quality of FP services are not adopted in health facilities.

Limitations

While the limitations of each of the studies have been presented in Chapters 4-7, in this section, the overall limitations are presented.

The use of secondary data sources for the quantitative studies meant the analysis was reliant on the variables collected through the ESPA+ 2014 survey. Therefore, other factors that may be important for assessing the quality of care of FP services might have been omitted. For example, it is known that socio-demographic variables are important in the use of FP services but the ESPA+ survey only collected two such variables. Therefore it was not possible to assess if quality of care of FP services varied among different groups of women. Other sources of data (i.e. EDHS data) were used to address this limitation in Study 3, but was not linked to the responses in the ESPA+ 2014 survey and so only descriptive analysis could be conducted.

In the ESPA+ 2014 survey, while the observations of client-provider interaction during FP services provide direct evidence on the process of care provision, it has to be noted that providers are likely to provide good quality of services due to the presence of a third person in the room and so their observed behaviour in the presence of an observer may not reflect their routine practice. Moreover, in the thesis, the outcome variable (i.e. client satisfaction) was measured based on client's responses to a series of 12 questions. While this approach may be less subjective than asking a single question about whether the client was satisfied with the service received or not, clients may provide positive responses to these questions.

Compared to the clients in the public facilities, only a small proportion of client-provider interaction observations were conducted in the private facilities in the ESPA+ survey. This means the data collected for the process variables during the client-provider observations and outcome variables from client-exit interviews were not representative of the actual FP clients that should have been included in the ESPA+ survey, the research did not compare the process and outcome aspects of quality of care in FP services between public and private health facilities.

Although the Donabedian model of quality of care was used to select the variables in the analysis in this thesis, this model has been criticised for not accounting for the cultural and personal characteristics of clients accessing FP services and places undue emphasis on technical skills without considering systems of care ⁽²⁶²⁾.

Even though ESPA+ 2014 data was the latest data available facility-based data to help identify the factors associated with quality of care in FP services in Ethiopia, the data may not reflect the current situation in Ethiopia and hence the findings need to be used with caution. However, in a country with lack of continuous data collection to measure health outcomes, such as Ethiopia, such analysis of nationally representative data can be used to inform health policies. Finally, the data collected for the

qualitative analysis included only providers working in urban public health facilities in one region in Ethiopia.

While the thesis mainly focused on the structural and process components of quality of care, various outcome aspects of quality of care in FP services, apart from client satisfaction, were not explored. In addition, although client- and facility-level factors were assessed quantitatively, the clients' experiences and perceptions on the factors of quality of care were also not assessed. No provider-level factors were assessed in the quantitative analysis, even though the qualitative study explored providers' views on one of the factors affecting quality of care in FP services.

8.4 Implications for further research

The thesis suggests a number of areas for future research. The quantitative study in the thesis (Study 2) captured clients' perspectives of quality of care in FP services, and in Study 1, only two studies have assessed the providers' perspectives of quality of care in FP services in Africa. It would be useful to explore factors of quality of care from health providers and health managers' viewpoint to ensure all levels are assessed. This is particularly important as to gain in-depth understanding on the organisational factors such as in health facility and provider related factors. The study was not able to investigate the role of demographic factors on quality of care and this is an area for further research. Moreover, it is recommended for future ESPA+ surveys be expanded to collect more data on client demographic characteristics. Although the quantitative analysis in the thesis (study 2) showed the key client- and facility-level factors, understanding the real perceptions and experiences of clients' on the factors of quality of care in FP services could be the area of future research.

Future studies are necessary to understand the impact of structural aspects of quality of care on process and outcome aspects of quality of care. While quality of care has several outcomes including short term outcomes such as client satisfaction, change in knowledge and behaviour in terms of contraceptive usage and long term outcomes such as reduction in fertility and maternal mortality^(135, 136), in the thesis, I considered only one short term outcome, i.e, client satisfaction as an outcome measure of quality of care for the quantitative analysis. Hence, future studies need to explore other aspects of other short term outcomes (eg. change in contraceptive behaviour) and long term outcomes (eg. reduction in maternal mortality) of quality of care in FP services. Moreover, the association between structural and process aspects of quality of care and such outcomes other than client satisfaction could be assessed in future research.

8.5 Concluding remarks

The thesis showed that a range of factors related to structural and process of care provision are affecting quality of care in FP services in Ethiopia. The thesis also found that there are shortcomings in structural quality of FP services in both private and public facilities. The guidelines to guide FP services and improving its quality of care provision are not uniformly accessible across health facilities, or well understood and implemented where they are available. The findings suggest some of the solutions to improve the quality of care in FP services and FP guidelines use. Overall, the thesis tried to fill gap in knowledge in factors undermining quality of FP services, and can help inform policies and strategies in the provision of FP services in Ethiopia.

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Appendices

Appendix A-Systematic review protocol and online supplementary documents for Study 1 (Systematic review)

- Systematic review protocol
- PRISMA flow diagram
- PRISMA 2009 checklist
- Search strategy
- Findings and illustrations of the included qualitative studies
- Methodological quality assessment
- Records excluded at full text examination with reasons

Appendix A1-Factors determining quality of care in family planning services in Africa: Protocol for a systematic review

Tessema, GA, Laurence, CO, Mahmood, MA, Gomersall, JS (2016). Factors determining quality of care in family planning services in Africa: protocol for a systematic review. *JBI Database of Systematic Reviews and Implementation Reports*, 8, 103–114

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Contribution to the Paper	Conceived and designed the study and drafted the manuscript.		
Overall percentage (%)	85%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	12/7/2018

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

- i. the candidate's stated contribution to the publication is accurate (as detailed above);
- ii. permission is granted for the candidate to include the publication in the thesis; and
- iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Contribution to the Paper	Contributed to the design of the study and reviewed the manuscript.		
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Contribution to the Paper	Contributed to the design of the study and reviewed the manuscript.		
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Factors determining quality of care in family planning services in Africa: a systematic review protocol

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Review objective and questions: The objective of this systematic review is to identify and synthesize the best available quantitative and qualitative evidence to understand the factors determining quality of care in family planning services in Africa.

The review question for the quantitative component of the review is:

What factors, including facility, provider and client characteristics, are associated with quality of care in family planning services in Africa?

The review question for the qualitative component of the review is:

What are client and provider experiences and/or perceptions of factors that affect quality of care in family planning services in Africa?

Keywords Africa; family planning; mixed method; quality of care; systematic review

Background

Strengthening family planning services is crucial to improving health, human rights, economic development and slowing population growth.¹ Effective family planning is identified as one of the top ten public health achievements of the United States during the 20th century.² However, an estimated 225 million women who want to avoid pregnancy are not using safe and effective family planning methods for various reasons including lack of access to information or services and lack of support from their partners or communities. The majority of these women with an unmet need for contraceptives live in 69 of the poorest countries. This unmet need is fueled by both growing population and a shortage of family planning services.^{3,4} In the last two decades, the contraceptive prevalence among married, reproductive-aged women has increased worldwide. Globally, contraceptive prevalence rose from 55% in 1990 to 63% in 2010.⁵ However, the unmet need for contraception has remained high in developing regions.⁶ In 2013, only

about a quarter of married women were practising family planning in Africa.⁷

Increasing access to family planning services is widely recognized as a priority public health issue at an international level. A number of global partnerships, including the International Conference on Population and Development in 1994,⁸ the Millennium Development Goal summit in 2000⁹ and the London Summit on Family Planning in 2012, endorsed a global partnership known as Family Planning 2020 aimed to enable 120 million more women to use contraceptives by 2020 in 69 of the world's poorest countries.¹⁰

Improving the quality of care in family planning services is known to be key to improving the use of family planning services in developing countries, both by attracting new contraceptive users and by maintaining existing users (i.e. ensuring continued engagement with services).¹¹⁻¹⁸ Providing decision makers in developing countries, including Africa, with the best available evidence on the factors that determine the quality of care in family planning services from the perspective of clients and health-care providers is important to ensure the design and implementation of the most effective, efficient and acceptable quality improvement measures.

In this protocol and systematic review, family planning services is defined as the provision of

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counseling on contraceptive methods and/or provision of contraceptive methods including insertion of intrauterine devices, surgical sterilization services or prescription of contraceptive methods, in circumstances where the methods are not available.¹⁹⁻²¹

Initial searching of the literature relating to quality of care in family planning services in Africa, low- and middle-income countries and the rest of the world revealed that researchers have used various approaches to define and measure quality of care in family planning services. The definition and measurement of quality of care might vary based on the stakeholders' priorities and various perspectives.²² The Donabedian model and Bruce Framework have been the most frequently used approaches, at least since 1990, to inform studies assessing and describing the quality of family planning services.

Donabedian defined quality of care as “the application of medical science and technology in a manner that maximizes the benefits to health without correspondingly increasing the risk”.^{23(p.5)} This model is intended to assess quality of care in various health services including family planning. He identified quality of care as a linear model comprising the three components – structure, process and outcome. The structure dimension includes all factors affecting the conditions of care such as budget, staff training, reward systems, payment methods, facilities and equipment. The process dimension focuses on the providers communication with the client including the client-provider relationship. The last component is the outcome following provider and client interaction in the healthcare delivery site. This includes the client's satisfaction, change in knowledge and other subsequent long-term aspects such as reduction in fertility and mortality. These three parts are interlinked in the model, with good structure presented as increasing the likelihood of good process and good process as increasing the likelihood of a good outcome.^{23,24}

Based on the Donabedian model, Bruce and Jain developed a framework assessing the quality of care in family planning services. They identified six elements for quality of care in family planning programs that they propose to “reflect the six aspects of services that clients experience as critical”. These six elements form the Bruce Jain Framework for assessing quality of care in family planning. The elements

are (1) choice of methods, (2) information given to clients, (3) technical competence of providers, (4) interpersonal relations, (5) follow-up mechanisms and (6) appropriate constellation of services.²⁵ The “Choice of Methods” refers to having a range of contraceptive methods offered to the clients considering their diverse needs influenced by age, gender, contraceptive intention, lactation status, health profile and wealth status. “Information given to clients” refers to the information provided to clients during service interactions that enables clients to choose and use contraception with competence and satisfaction. This includes information about a range of available contraceptive methods, method contraindications, method advantages and disadvantages, how to use the selected method, potential side effects and continuing care from service providers. The “Technical Competence” aspect involves providers' clinical techniques, use of protocols and implementation of aseptic procedures in clinical conditions. “Interpersonal relations” refers to the degree of empathy, trust, assurance of confidentiality and sensitivity of providers to meet the client's needs and expectations. The “Follow-up Mechanism” covers how service providers encourage clients on the continuity of use through well informed mechanisms such as community mass media, client-based follow-up mechanisms (return appointments) or home visits. The last component, “Appropriate Constellation of Services”, refers to the extent to which family planning services are situated in convenient and accessible locations. This includes their accessibility (distance, timing and cost) and the level of integration with other reproductive and maternal health services.

Empirical studies have shown facility-related factors such as managing authority (public or privately owned), availability of a variety of methods and waiting time^{21,26-29} as being associated with quality of care in family planning services. Client-related factors such as age, educational status and client types (new versus repeat)^{30,32} have also been identified in the existing empirical research as associated with quality of care in family planning services. In addition, provider-related characteristics such as sex, year of experience and level of education have been identified as factors associated with the quality of care in family planning services.^{31,32} Overall, the findings indicate that there are no consistent results across studies.

The cursory search of the literature undertaken to inform this protocol identified three systematic reviews addressing the question of quality of care in family planning service and its determinants. All three included only studies conducted in the United States.^{31,33,34} The preliminary literature search identified six primary studies^{19,21,30,35-37} conducted in Africa examining the determinants of quality of care in family planning services. Two of the studies used qualitative method^{35,37} and four used quantitative methods.^{19,21,30,36} Two studies were conducted in Ethiopia,^{30,36} one in Kenya,³⁵ one in Uganda³⁷ and two studies^{19,21} were undertaken in various other African countries. No systematic review of the quantitative, qualitative evidence, or both, on the factors determining quality of care in family planning services in any African countries was identified.

The proposed systematic review is intended to fill the gap in the systematic review evidence base on the determinants of or factors contributing to the quality of care in family planning services in African countries. It should provide policy makers and health-care practitioners working in Africa with evidence that can be used to develop strategies that enhance the quality of care in family planning services.

This review is being conducted as part of the lead author's doctoral research. One intention of the review is also to inform further primary research on the level and determinants of quality of care in family planning services in Ethiopia to be undertaken by the lead reviewer.

Inclusion criteria

Participants

Participants considered for inclusion in this review are clients and/or providers of family planning services in any African country. Female and male clients and providers of all ages, any socio-economic status and from all ethnic and language groups will be considered. Clients and providers of family planning services at all levels (e.g. lower or higher level) and types (public or private) of health services will be considered.

For the quantitative evidence

Exposure of interest

Studies that investigate factors including facility, client and provider characteristics associated with quality of care in family planning services in Africa will be considered for inclusion.

The client characteristics (exposures) will include socio-demographic characteristics of the clients using family planning (age, sex, marital status, education, religion and income).

The facility characteristics (exposures) will include ownership (public versus private), availability of equipment, infrastructure availability and quality, ownership of the facility, follow-up mechanisms and services constellations.

The provider characteristics (exposures) will include factors such as the provider's age, sex, level of education, training and presence of supervision. These factors will be considered as determining factors if there is a report showing the relationship between them and client satisfaction.

Family planning services is defined as counseling on contraceptive methods and/or provision of contraceptive methods including insertion of intra-uterine devices, surgical sterilization services or prescription of contraceptive methods in circumstances where the methods are not available.

Outcomes

Client satisfaction in family planning services is the outcome of interest. To be included studies must either have (1) assessed client satisfaction using proxy questions such as satisfaction with waiting time, privacy, availability of family planning methods, cleanliness of the facility, costs of the services, the staff treatment and developed one aggregate variable using principal component analyses to present the measure as a continuous variable or dichotomized as satisfied or not satisfied or (2) assessed client satisfaction using a Likert scale in five categories from poorest satisfaction to highest satisfaction and calculated a mean score to dichotomize the variable.

Types of studies

All quantitative study designs will be considered. It is anticipated that most will be observational studies. The quantitative components of mixed method studies will be considered.

For the qualitative evidence

Phenomenon of interest

The phenomenon of interest is client and provider experiences and/or perceptions of the factors that determine quality of care in family planning services.

Family planning services is defined as counseling on contraceptive methods and/or provision of contraceptive methods including insertion of intra-uterine devices, surgical sterilization services or prescription of contraceptive methods in circumstances where the methods are not available.

Context

Studies conducted in Africa, published from 1990 onward.

Types of studies

All qualitative study designs will be considered including qualitative components of mixed method studies. To be defined as qualitative study, the authors must have reported their data collection and analysis methods.

Methods

Search strategy

Studies in English published from 1990 onward will be included (including peer-reviewed articles and gray literature). The start date, 1990, was selected for the search because it is the year when quality of care began to be emphasized in family planning services.^{25,38,39}

We will use the three-stage search strategy recommended by the Joanna Briggs Institute (JBI).⁴⁰ First, limited search will be done in PubMed and Cumulative Index of Nursing and Allied Health Literature (CINAHL) using few keywords, and then the text words in the titles, abstracts and the index terms will be assessed. Second, a comprehensive search will be undertaken using all identified keywords and index terms across all included databases, websites and search engines. Third, the reference lists of the articles that will be selected for critical appraisal will be searched for studies matching the inclusion criteria. In addition, researchers and healthcare providers known to the lead reviewer who work in family planning service policy and delivery in Ethiopia will be contacted for relevant studies that may have been missed in the search.

In the searching process, the databases such as PubMed, CINAHL, EMBASE, Scopus, POPLINE the Cochrane Collaboration reports of controlled trials, African Index Medicus and Web of Science will be searched. Furthermore, key search engines such as Google, Google Scholar, World Bank, World

Health Organization, Family Health International, International Planned Parenthood Federation and the DHS program website will be searched specifically for gray literature.

A librarian from University of Adelaide with specialist expertise in searching databases for systematic reviews will be consulted on the search strategies for each of the databases. The reviewed studies that potentially match the inclusion criteria will be exported to Endnote. An Endnote database of the abstract records of studies identified as potentially matching the inclusion criteria will be created and used for the study selection. Citations identified through the search strategy will be initially reviewed for inclusion based on information contained in titles, abstracts, citation information and keywords by the principal investigator. The relevant citations will then be independently screened by two reviewers to determine eligibility. Following this, full-text articles will be obtained for all eligible studies and for those requiring further review to determine eligibility. Articles that, on full-text examination, do not match the inclusion criteria will be excluded, and the reasons for exclusion will be noted. Those articles that fulfill the inclusion criteria will be critically appraised and included in the review.

The following key terms will be used for the initial search: quality of care, quality of healthcare, health care quality, satisfaction, family planning services, family planning, contraceptive services, contraception, Africa and the names of each African country.

Assessment of methodological quality

Studies matching the inclusion criteria for the reviews will be assessed using the most appropriate tool from the suite of critical appraisal tools in the JBI System for the Unified Management, Assessment and Review of Information. More specifically, studies contributing quantitative evidence will be appraised using the most appropriate instrument from the JBI Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix I). Studies contributing qualitative evidence will be appraised using the tool in the JBI Qualitative Assessment and Review Instrument (JBI-QARI) (Appendix II). Two reviewers will critically appraise the included studies and work independently. Any

disagreements will be resolved by discussion with all review authors. The appraisal for cohort/case-control and descriptive studies includes nine items with a yes/no/unclear response option: the “Yes” will be scored “1”, “No” or “Unclear” will be scored “0”. Articles will be scored as follows: low quality (0-3), moderate quality (4-6) and high quality (7-9). The appraisal tool for interpretive and critical research includes 10 items, and qualitative articles will be scored as low quality (0-3), moderate quality (4-6) and high quality (7-10).

Data extraction

The JBI-MAStARI data extraction tool (Appendix IV) will be used to extract data from included quantitative studies, and the JBI-QARI data extraction tool (Appendix III) will be used to extract data from included qualitative studies. Two types of data will be extracted. First, descriptive data which will include citation details and study objective, population and setting, details on the family planning intervention(s), study methods/design including how the quality of care in family planning service was defined and any limitations identified by the study authors in this regard. Second, from the qualitative studies, the findings about how client and providers perceive the factors that determine the quality of care in family planning services, and from the quantitative studies the measures on the factors of the quality of care family planning services. Due to both the possibilities that client satisfaction could be taken as either categorical or continuous variables in the measurement, adjusted odds ratio or regression coefficient (β) of the factors affecting quality of care as measured by client satisfaction will be collected, respectively. In addition, data on possible confounder factors will be sought to be included.

Data synthesis

Quantitative data will, where possible, be pooled in statistical meta-analysis using RevMan Software.⁴¹ Effect sizes expressed as odds ratio for categorical data and mean difference for continuous data, and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard chi-square and I^2 tests and also explored using subgroup analysis. Where statistical pooling is not possible, the findings will be presented

in narrative form including tables and figures to aid in data presentation where appropriate.

The JBI meta-aggregation approach will be used to synthesize findings from the qualitative studies. This will involve first the aggregation of findings into categories based on similarity of meaning and then developing synthesized findings from the categories.

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Appendix I: JBI Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) study appraisal tools

JBI Critical Appraisal Checklist for Comparable Cohort/ Case Control

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Is sample representative of patients in the population as a whole?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the patients at a similar point in the course of their condition/illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has bias been minimised in relation to selection of cases and of controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

Appendix II: JBI Qualitative Assessment and Review Instrument (JBI-QARI) study appraisal tool

JBI Critical Appraisal Checklist for Descriptive / Case Series

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Was study based on a random or pseudo-random sample?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the criteria for inclusion in the sample clearly defined?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If comparisons are being made, was there sufficient descriptions of the groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there congruity between the research methodology and the research question or objectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there congruity between the research methodology and the methods used to collect data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there congruity between the research methodology and the representation and analysis of data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is there congruity between the research methodology and the interpretation of results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there a statement locating the researcher culturally or theoretically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the influence of the researcher on the research, and vice-versa, addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are participants, and their voices, adequately represented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

Appendix III: JBI-QARI data extraction tool

JBI QARI Data Extraction Form for Interpretive & Critical Research

Reviewer Date

Author Year

Journal Record Number

Study Description

Methodology

Method

Phenomena of interest

Setting

Geographical

Cultural

Participants

Data analysis

Authors Conclusions

Comments

Complete Yes No

Appendix IV: JBI-MAStARI data extraction tool

JBI Data Extraction Form for Experimental / Observational Studies

Reviewer Date

Author Year

Journal Record Number

Study Method

RCT Quasi-RCT Longitudinal
Retrospective Observational Other

Participants

Setting _____
Population _____

Sample size

Group A _____ Group B _____

Interventions

Intervention A _____
Intervention B _____

Authors Conclusions:

Reviewers Conclusions:

Study results

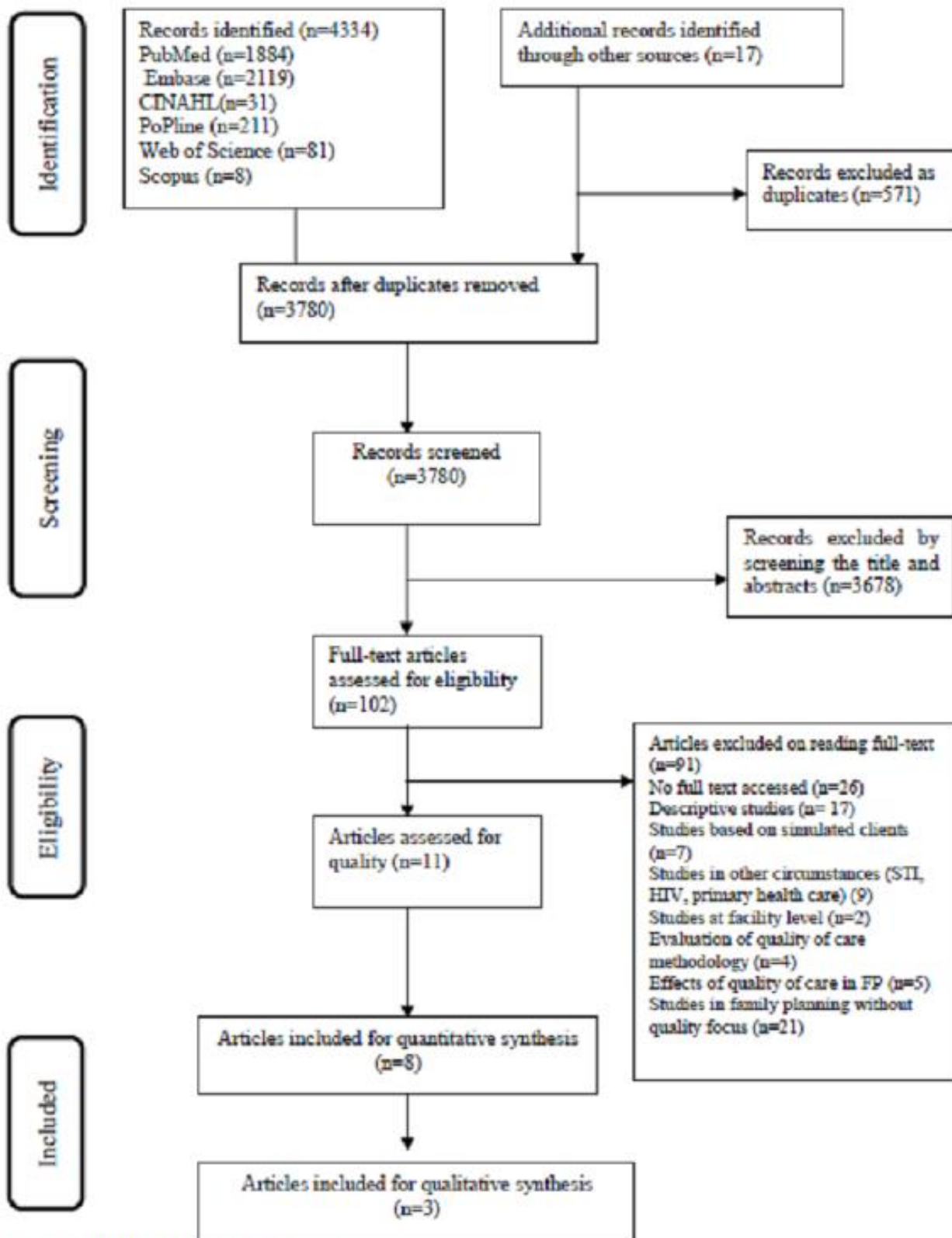
Dichotomous data

Outcome	Intervention () number / total number	Intervention () number / total number

Continuous data

Outcome	Intervention () number / total number	Intervention () number / total number

Appendix A2- PRISAM Flow Diagram



S1 Fig. PRISMA Flow Diagram

Appendix A3-PRISMA 2009 checklist

S1 Table. PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	7 + S2 Appendix
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	S2 Appendix
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	8 + Fig 1
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5-6 + S4 Appendix
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7-8
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A

Page 1 of 2

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097. For more information, visit: www.prisma-statement.org.

S1 Table. Cont.

Section/topic	#	Checklist item	Reported on page #
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ²) for each meta-analysis.	N/A
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	N/A
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	8-9 & fig 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	9 + Table 2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	9 + S4 Appendix
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	10-15
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	15-18
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	17
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	18
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	19

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097. For more information, visit: www.prisma-statement.org.

Appendix A4-Search strategy

S2 Table. Search strategy

“Quality” terms	“Family planning” terms	“Africa” terms
PubMed		
Quality of health care[mh] OR Quality of health care[tiab] OR quality of care[tiab] OR quality of healthcare[tiab] OR health care quality[tiab] OR healthcare quality[tiab] OR quality[tiab] OR Patient satisfaction[mh] OR Satisfaction[tiab] OR Preference*[tiab]	Family planning services[mh] OR Family planning service*[tiab] OR family planning[tiab] OR contraceptive service*[tiab] OR contraception service*[tiab] OR birth control service*[tiab] OR fertility control service*[tiab] OR contraception[mh] OR Pregnancy control*[tiab]	Africa[mh] OR Africa*[tiab] OR Algeria*[tiab] OR Angola*[tiab] OR Benin*[tiab] OR Botswana*[tiab] OR Burkina Faso [tiab] OR Burundi*[tiab] OR Cape Verde*[tiab] OR Cabo Verde [tiab] OR Cameroon*[tiab] OR Cameroon*[tiab] OR Chad*[tiab] OR Comoros*[tiab] OR Congo*[tiab] OR Cote d'Ivoire[tiab] OR Ivory Coast [tiab] OR Djibouti*[tiab] OR Egypt*[tiab] OR Eritrea*[tiab] OR Ethiopia*[tiab] OR Gabon*[tiab] OR Gambia*[tiab] OR Ghana*[tiab] OR Guinea*[tiab] OR Kenya*[tiab] OR Lesotho*[tiab] OR Liberia*[tiab] OR Libya*[tiab] OR Madagascar*[tiab] OR Malawi*[tiab] OR Mali*[tiab] OR Maurit*[tiab] OR Morocco*[tiab] OR Mozambique*[tiab] OR Namibia*[tiab] OR Niger*[tiab] OR Rwanda*[tiab] OR Senegal*[tiab] OR Seychelles[tiab] OR Sierra Leone*[tiab] OR Somalia*[tiab] OR Sudan*[tiab] OR Swaziland*[tiab] OR Tanzania*[tiab] OR Togo*[tiab] OR Tunisia*[tiab] OR Uganda*[tiab] OR Zambia*[tiab] OR Zimbabwe*[tiab]
Embase		
'health care quality'/exp OR 'health care quality':ti,ab OR 'healthcare quality':ab,ti OR 'quality of health care':ab,ti OR 'quality of healthcare':ab,ti OR 'patient satisfaction'/de OR 'satisfaction'/exp OR 'satisfaction':ab,ti OR 'preference':ab,ti	'family planning'/exp OR 'family planning':ab,ti OR 'contraceptive service':ab,ti OR 'contraceptive services':ab,ti OR 'birth control service':ab,ti OR 'birth control services':ab,ti OR 'contraception service':ab,ti OR 'contraception services':ab,ti OR 'fertility control services':ab,ti OR 'contraception'/exp	Africa/exp OR Africa*:ti,ab OR Algeria*:ti,ab OR Angola*:ti,ab OR Benin*:ti,ab OR Botswana*:ti,ab OR 'Burkina Faso':ti,ab OR 'Burkina Faso':ti,ab OR Burundi*:ti,ab OR 'Cape Verde':ti,ab OR 'Cape Verdean':ti,ab OR 'Cabo verde':ti,ab OR Cameroon*:ti,ab OR Cameroon*:ti,ab OR Chad*:ti,ab OR Comoros*:ti,ab OR Congo*:ti,ab OR 'Cote d'Ivoire':ti,ab OR 'Ivory Coast':ti,ab OR Djibouti*:ti,ab OR Egypt*:ti,ab OR Eritrea*:ti,ab OR Ethiopia*:ti,ab OR Gabon*:ti,ab OR Gambia*:ti,ab OR Ghana*:ti,ab OR Guinea*:ti,ab OR Kenya*:ti,ab OR Lesotho*:ti,ab OR Liberia*:ti,ab OR Libya*:ti,ab OR Madagascar*:ti,ab OR Malawi*:ti,ab OR Mali*:ti,ab OR Maurit*:ti,ab OR Morocco*:ti,ab OR Mozambique*:ti,ab OR Namibia*:ti,ab OR Niger*:ti,ab OR Rwanda*:ti,ab OR Senegal*:ti,ab OR Seychelle*:ti,ab OR 'Sierra Leone':ti,ab OR 'Sierra Leonean':ti,ab OR Somalia*:ti,ab OR Sudan*:ti,ab OR Swaziland*:ti,ab OR Tanzania*:ti,ab OR Togo*:ti,ab OR Tunisia*:ti,ab OR Uganda*:ti,ab OR Zambia*:ti,ab OR Zimbabwe*:ti,ab
CINAHL		
MH “quality of health care” OR TI “quality of health care” OR AB “quality of health care” OR TI “quality of healthcare” OR AB “quality of healthcare” OR TI “healthcare quality” OR AB “healthcare quality” OR TI “health care quality” OR AB “health care quality” OR MH “patient satisfaction” OR TI “satisfaction” OR AB “satisfaction”	MH “family planning” OR TI “family planning” OR AB “family planning” OR TI “contraceptive service” OR AB “contraceptive service” OR TI “birth control service” OR AB “birth control service” OR AB “fertility control service” OR TI “contraception service” OR AB “contraception service” OR MH ‘contraception’	MH Africa OR TI Africa* OR AB Africa* OR TI Algeria* OR AB Algeria* OR TI Angola* OR AB Angola* OR TI Benin* OR AB Benin* OR TI Botswana* OR AB Botswana OR TI “Burkina Faso” OR AB “Burkina Faso” OR TI Burundi* OR AB Burundi* OR TI “Cape Verde” OR AB “Cape Verde” OR TI Cameroon* OR AB Cameroon* OR TI Chad* OR AB chad* OR TI Comoros* OR AB Comoros* OR TI Congo* OR AB Congo* OR TI “Cote d'Ivoire” OR AB “Cote d'Ivoire” OR TI “Ivory Coast” OR AB “Ivory coast” OR TI Djibouti* OR AB Djibouti* OR TI Egypt* OR AB Egypt* OR TI Eritrea* OR AB Eritrea* OR TI Ethiopia* OR AB Ethiopia* OR TI Gabon* OR AB Gabon* OR TI Gambia* OR AB Gambia* OR TI Ghana* OR AB Ghana OR TI Guinea* OR AB Guinea* OR TI Kenya* OR AB Kenya* OR TI Lesotho* OR Lesotho* OR TI Liberia* OR AB Liberia OR TI Libya* AB Libya* OR TI Madagascar* OR AB Madagascar* OR TI Malawi* OR AB Malawi* OR TI Mali* OR AB Mali* OR TI Maurit* OR AB Maurit* OR TI Morocco* OR AB Morocco* OR TI Mozambique* OR AB Mozambique* OR TI Namibia* OR AB Namibia* OR TI Niger* OR AB Niger* OR TI Rwanda* OR AB Rwanda* OR TI Senegal* OR AB Senegal* OR TI Seychelles* OR TI “Sierra Leone” OR AB “Sierra Leone” OR TI Somalia* OR AB Somalia” OR TI Sudan* OR AB Sudan* OR TI Swaziland* OR AB Swaziland* OR TI Tanzania* OR AB Tanzania* OR TI Togo* OR AB Togo* OR TI Tunisia* OR AB Tunisia OR TI Uganda* OR AB Uganda* OR TI Zambia* OR TI Zambia* OR TI Zimbabwe* OR AB Zimbabwe*

"Quality" terms	"Family planning" terms	"Africa" terms
Scopus		
"Quality of health care" OR "quality of healthcare" OR "health care quality" OR "healthcare quality" OR "quality of care" Or "quality" OR "Satisfaction" OR Preference	"family planning" OR "family planning service*" OR OR"contraceptive service*" OR "birth control service*" OR "fertility control service*" OR "contraception service*" OR 'contraception'	Africa OR Algeria* OR Angola* OR Benin* OR Botswana*OR "Burkina Faso" OR Burundi* OR "Cape Verde*" OR "Cabo Verde" OR Cameron* OR Cameroon* OR Chad* OR Comoros* OR Congo* OR "Cote d'Ivoire" OR "Ivory Coast" OR Djibouti* OR Egypt* OR Eritrea* OR Ethiopia* OR Gabon* OR Gambia* OR Ghana* OR Guinea* OR Kenya* OR Lesotho* OR Liberia* OR Libya* OR Madagascar* OR Malawi* OR Mali* OR Maurit* OR Morocco* OR Mozambique* OR Namibia*OR Niger*OR Rwanda* OR Senegal* OR Seychelles OR Sierra Leone* OR Somalia* OR Sudan* OR Swaziland* OR Tanzania* OR Togo* OR Tunisia* OR Uganda* OR Zambia* OR Zimbabwe*
POPLINE		
Quality OR ("Quality of care") OR ("quality of health care") OR ("healthcare quality") OR ("health care quality")	("family planning") OR ("Family planning services") OR ("contraceptive services") OR contraception OR ("fertility control") OR ("contraception services") OR 'contraception'	Africa

Date limiter: Date: 01/01/1990; language: English; Date of search: April 30, 2016

Appendix A5-Findings and illustrations of the included qualitative studies

S3 Table. Findings and illustrations of the included qualitative studies

Lewis N. Quality of care in family planning service delivery in Kenya: Clients' and providers' Perspective 1995.

<p>Finding: ... Participants identified proximity to facility and cost as important considerations for choosing a source; the mode of travel and time to source were never mentioned directly as reasons for choosing a facility.</p> <p>Illustration: "Actually, the reason I had gone to Murang'a hospital is because it was near and free" (FGD 1, Switcher, Location 1) Page 33</p> <p>Illustration: "I chose Maragua Rural Health Center because it was the nearest service delivery point. You see, I come from Kiriani where the providers used to bring a mobile family planning clinic from Muririnjas [they stopped] so Maragua is the nearest service delivery point." (FGD 6, Current, Location 2) Page 33.</p>
<p>Finding: Proximity was stated as a reason for choice of service delivery points in two ways. Sometimes the respondents gave it as the sole reason for choice or in a combination with other reasons.</p> <p>Illustration: "You should start with the location, it should be well located... It was not easily accessible and the number of clients who used to come there used to be very few. When it rained, the paths were not accessible... The location should be number one" (Indepth, Provider 8, Location 2). Page 33</p> <p>Illustration: "I think one thing it has to be near and the transport has to be accessible, it has to be clean and then the relationship between the staff and the client in general" (Indepth, Provider 5, Location 1). Page 33.</p>
<p>Finding 3: From the combination of reasons for which choice is made, it is clear that proximity is a facilitating factor but not sufficient to sustain use at a health facility.</p> <p>Illustration: "There is a clinic very near to where I live but I used to hear bad stories about it." (FGD 2, Current, Location 1) Page 33.</p>
<p>Finding: Among the private clinics, the clients were also able to rank facilities according to the cost of services.</p> <p>Illustration: "Yes, the thing I can say is that their charges are very low and because that clinic is only for family planning, they are very good at family planning"(FGD 5, Switcher, Location 1) Page 34.</p> <p>Illustration: "When we take our children to the City Council, we do not pay for the services, but if you go to a private clinic, you must pay" (FGD 1, Current, Location 1) Page 34</p>
<p>Finding: Though clients complain about cost, they recognise the higher quality of services at Non-Governmental health facilities. Serah represented this point of view in her wish as....</p> <p>Illustration: "I would like to change this clinic because of the 20 shillings that is required per visit. Actually if I find another clinic with as good services as this one and it is not charging I would change to that "(FGD 2, Current, Location 1) Page 34.</p>
<p>Finding: Like the clients, the providers believed that their clinics were chosen partly because of their competitive fees.</p> <p>Illustration: " ...like we used to have so many clients but when we increased the charges slightly from 10 shillings to thirty some of them stopped coming here. They were saying that the charges were so high... They also don't mind paying because the charges are very minimal compared to the services we offer" (Indepth, Provider 8, Location 2) Page 34.</p>
<p>Finding: ...the providers were critical of some of their inconsiderate actions at the clinics...</p> <p>Illustration:"The long waiting time. We come and start chatting - giving stories and the clients are waiting and nobody is attending to them" (Indepth, Provider 2, Location 1) Page 36.</p>
<p>Finding: ...what irritates clients is when they think the providers are idling while they wait...</p>

<p>Illustration: " I would like to spend just about half an hour, that would be my wish. But the providers have other things to prepare before they call clients... so in consideration for this the providers should be given time to prepare" (FGD 6, Current, Location 2). Page 37.</p> <p>Illustration: " I have not experienced that but what I don't like is the slow attendance. They make us wait for too long in the queue and that time we are so many. You see the doctors are concentrating on their talks and others are sleeping and when you go in ... they send you out" (FGD 5, Switcher, Location 1). Page 37</p>
<p>Finding: The private sector clinics have a better image with respect to waiting time.</p> <p>Illustration: " There are some people who might be discouraged because of the congestion here... they prefer to go to private clinics where they will not be kept waiting"(INDEPTH, Switcher 1, Location 1) Page 38.</p>
<p>Finding:no woman sought family planning services before the birth of a child.</p> <p>Illustration: "I started thinking about family planning in 1979 when I had my second child. Actually, they were too close together as I got pregnant when my first child was only six months... so I made a decision to space my children" (FGD 6,Current, Location 2) Page 38.</p>
<p>Finding:Sometimes the client is just told to use a certain method and she accepts.</p> <p>Illustration: "... I did not go back to the clinic in July, 1989 but September 1989. The provider told me this was the best method and I decided to use it [the coil]".(current user) Page 39.</p> <p>Illustration: "A friend of mine told me that the injection was the best and I should use it "(FGD 4, Discontinuer, Location 1) Page 39.</p>
<p>Finding: Privacy and confidentiality also came up when the topic of client home visits was raised.</p> <p>Illustration: The clients are shy and need privacy... I would like to emphasize that one to one counselling is important ". (family planning user) Page 40.</p>
<p>Finding: Both clients and providers dwelt extensively on the importance of friendly and pleasant relations at the clinics.</p> <p>Illustration: "I want to be properly welcome at the clinic, I would like to feel wanted and look like a bother" (FGD, Current, Location 1) Page 41.</p>
<p>Finding: ...Though the providers in public institutions are talked of negatively, it should also be pointed out that there are some of them well commended by clients.</p> <p>Illustration: "...The last time I found a Kisii lady... her advice was good, she was polite like a fellow woman... she showed some signs of respect to me. That is what I like in that clinic (INDEPTH, Discontinuer 1, Location 1) Page 42.</p>
<p>Finding: This group of women argued that as long as the provider had mastered family planning knowledge and skills, the basic qualification such as nursing/midwifery and medicine did not matter.</p> <p>Illustrations: "...doctors are too busy and therefore in too much of a hurry to finish each case and go the next". Page 43.</p>
<p>Finding: An important factor for the recipient of services was the age and maturity of the providers.</p> <p>Illustration: "... I have heard women saying that they will not go to seek family planning services because the providers are younger than themselves and they have no wish to show their nakedness to young providers" (FGD 6, Current, Location 2). Page 43.</p>
<p>Finding: ...both clients and providers as an important component of family planning service provision which affects choice, continuation and satisfaction with services.</p> <p>Illustration: "The provider checks whether the coil is in situation. Then urine is sent to the laboratory to exclude infections. I appreciate this service" (FGD 10, Current, Location 3) Page 44.</p> <p>Illustration: "I have seen a client coming from town [to our clinic] and she already was provided with pills but she said she was not examined. She told her friend who told her that one normally is supposed to be examined...So I think they value examinations - general examinations and pelvic" (INDEPTH, Provider 11, Location 2) Page 44.</p>
<p>Finding: ... the high degree of dissatisfaction with methods and lack of provider responsiveness to the clients' problems and needs.</p>

Illustration: "I went and found that the doctor was there but people were not being attended to, there was no injection but those for pills were being given. Then I went to look for a place to buy the injection and I couldn't get it. .. I went home but the next day I went looking for the injection but I stayed for about one week because I was very annoyed of what they had done to me. It was then that I went and bought the injection but on going back to the clinic, I was told to wait, they do a check-up whether I am pregnant - things like that. So I felt bad and from that time I decided that I will not go back so I switched." (Indepth, Switcher 9, Location 4) Page 46.

Finding: ...discontinued from Makuyu Health Centre when she found she was not given the injectable, the method that she had wanted. The secondary reason is that the providers asked her to return to the clinic when she was on menses - to make sure that she was not pregnant.

Illustration: "I was not satisfied with the pill. I took it for about 9 months. I used to feel weak, nauseous. I could not work and so I felt that I couldn't continue using something which could not help me and so I decided to stop." (Indepth, Discontinuer 6, Location 3) Page 48.

Finding: ... While depo Provera received positive comments, the use of IUCD seemed to be fraught with unpleasant experiences...

Illustration: "I used to bleed a lot and having lower abdominal pains. I also used to have watery discharge and a lot of itching...This itching also gave me sores. I thought that it was the IUCD which was giving me all these problems. I went to the general hospital to have it removed but anytime I went there, they used to have so many problems and telling me that it couldn't be removed. I saw a lady friend of mine who told me that she would bring me here to Marie Stopes. She brought me and on that first day it was removed. After explaining to them my problems, they promised that they would remove it. I couldn't walk straight because of the pain I had. I have not had any problem with the pill." (Indepth, Switcher 5, Location 2) Page 49.

Keesara SR, Juma PA, Harper CC. Why do women choose private over public facilities for family planning services? A qualitative study of post-partum women in an informal urban settlement in Kenya. BMC Health Serv Res. 2015;15:335.

Finding: Even though family planning services were free at the public hospitals, one woman explained that she was willing to pay for contraception at private facilities to avoid waiting in long lines.

Illustrations: *There are many private clinics around here that some women prefer to go to because if you go to Mathare North dispensary [public facility] you will have to queue for long. Some women prefer to pay 100 KES at the private clinic and be over with it (Focus Group Participant) Page 3.*

Finding: Women reported that private facilities offered long and convenient service hours that accommodated women's busy schedules. One woman explained that public facilities often closed before they attended to everyone.

Illustration: *I can go [to the private hospital] at any time. At public health facilities they take long to give service. Some people would wait and even give up and go back home, or some don't even feel like going there because you would go in the morning and leave at 1:00... So some opted to go to private health facilities because if you wanted an injection you would just walk there and pay then receive the injection, and walk out, and they don't take a lot of your time and you can go and do other things. (Age 32, 3 children) Page 3.*

Finding: Some women said that they had wasted time waiting at the public facilities for free services, only to find that their preferred method was not available. One woman began to obtain her contraception at a private facility when she found that public facilities did not stock all methods consistently.

Illustration: *I have only used the injection and pills. I used to buy the pills at the chemist [pharmacist] so I didn't have to come to the hospital. The first time I started using pills, when I went to the hospital, they didn't have pills and I had to buy from the chemist so I continued buying from the chemist. (Age 38, 4 children) Page 3.*

Finding: Women explained that workers at private facilities always provided whichever method was requested. One woman complained that nurses at the public facility prevented her from switching to the injectable contraceptive, so she went to a private facility where they administered her desired method

Illustration: *I used pills after my first delivery but within the first two days I really got sickly and I stopped using them. I threw them away because I had headaches, I didn't feel like doing anything. I went to the [public] hospital they told me that I should persevere and finish the dose. I got upset and I threw them away and went to the private clinic and went for the injection. (Age 34, 2 children) Page 3.*

Finding: Another woman explained that she chose a private facility because she wanted to bypass obstructive processes that she foresaw at the public facility. She had planned to obtain the contraceptive implant at a public facility during her six-week postpartum visit. However, when she received her period four weeks after delivery, she opted for a private facility.

Illustration: *...When my periods came [at 4 weeks], I felt like it was an emergency, and I didn't want to waste more time because, like I mentioned, these men are unpredictable and they might demand for it [sex] at any time. I had planned on going for the [public] clinic, but when my menses came I asked a friend if they will allow me to take up family planning at the clinic [early] and she told me that they cannot accept. That is why I went for the method at a private health facility. (Age 27, 3 children) Page 4.*

Finding: Respectful treatment was an added benefit of private facilities. Women believed that private facilities treated their customers with care and attention compared to public facilities where participants experienced verbal harassment, inattention, and rudeness. Respectful behaviour included answering questions kindly and allowing sufficient time for each client. One woman described how rude behaviour at public facilities drove clients to private clinics.

Illustration: *For instance if I was using a method and it was not working for me, then I come back to the hospital and the nurse starts yelling at me like, "You woman, don't be foolish." You know such things are making many women go to the private facilities because when you go there people respect you. They should respect us and address us like adults and not insult us. (Focus group participant) Page 4.*

Finding: Women said they used private facilities when they required more confidentiality. One woman related a story of a friend who chose to receive family planning at a private facility to hide her use from her husband.

Illustration: *Her husband didn't want her to take family planning but he was not giving her any valid reasons why she shouldn't take that up, so she just went privately. It was difficult, but she went to a chemist so that she can be able to go when the husband is not around. (Age 24, 2 children) Page 4.*

Finding: Focus groups participants noted that the private facilities prioritized profit over providing safe medical treatment. While some women mentioned that private providers at non-governmental organization (NGOs) answered questions fully, most women said that private most facilities did not provide counseling or decision support when administering a method.

Illustration: *In private clinics it's about money. They don't have time to counsel you. They don't offer good services. By the time you go to the clinic, you have a method in mind, so they just administer. (Focus Group Participant) Page 4.*

Finding: In individual interviews, women elaborated on their perceptions of the deficiencies in private facilities, which included questionable medications, poor eligibility screening, poorly qualified staff, and poor quality counseling.

Illustration: *When you visit the private health facilities, they will just ask you what method you want and they won't offer counseling services. They will not even ask how old the baby is, they will give you what you went for. They will just ask you when you had your last menses and go ahead and maybe you are pregnant they don't run tests, they will just inject you. (Age 23, 2 children) Page 4.*

Finding: Other women were concerned about the competency of private facility providers. This woman explained her concerns about private providers and her preference for well-qualified public providers.

Illustration: *In public facilities the doctors are qualified but in private facilities it could be a quack, or the doctor might be qualified, but he could be using his wife to assist him, but the wife is not qualified. But in public facilities you always find qualified staff from the doctor to all the other employees. So their services are genuine and you don't get scared when they are attending to you. (Age 34, 4 children) Page 4.*

Finding: While it was expected that private facilities would provide a consistent stock of contraceptive supplies, women worried that these facilities administered fraudulent and expired medications to unaware clients. A few women stated that private facilities were more likely to stock expired contraceptives because their inventory exceeded their client flow. This woman attributed two incidences of failed contraception to fraudulent medication provided at private facilities.

Illustration: Some women are injected with water and you keep feeling safe that you have used family planning while you are unsafe and you eventually you end up pregnant. That has happened to two women. One had gone to the chemist and another one at a private facility. They ask you for money but they don't render the services. (Age 23, 1 child) Page 4.

Finding: Because of the concern for poor quality medical treatment at private facilities, some women said that they preferred to endure long waits at public facilities.

Illustration: After that story I had heard from those women about private hospitals, I was reluctant to do it [go to private providers] because maybe their medication for family planning is also expired, I was comparing them to the chemists because they are all private businesses. And so I decided to be patient and go to the Government clinics (Age 25, 3 children) Page 5.

Finding: woman in the individual interviews said they preferred public facilities when they needed more decision-making support or guidance for initial selection of a contraceptive method. This woman explained her decision to seek services at public facilities to decide about her method of contraception after delivery.

Illustration: I got more information from the [Nairobi] City Council hospitals. Private [hospitals] don't have time for such talk [counseling about family planning]. They are more concerned about their time. So after delivery, regardless of where I have delivered I visit [Nairobi] City Council clinics and they provide training on that. (Age 34, 3 children) Page 5.

Finding: When you walk to a private clinic, you will tell them that you need an injection and when you walk there asking for an injection that is what you will be given.

Illustration... They don't do any tests to establish whether you should have used the pills or coil or Norplant and then you end up developing side effects. (Focus Group Participant) Page 5.

Finding: Because of concern for side effects, almost every woman described an ideal family planning visit as one with ample counseling about side effects and support from the provider to choose a method that minimized side effects.

Illustration: A good family planning visit is whereby when you enter the room you are counseled first, then you get to choose one and she tells you the side effects and she recommends what you should use suiting your body and not just allowing you to go for a method you had already decided to use even if it's not good. (Age 21, 1 child) Page 5.

Finding: Minimization of side effects was one of the highest priorities when choosing a contraceptive method. While public facilities were able to provide a broad overview of side effects, they were not able to provide individualized attention. Due to crowded facilities in public healthcare settings, some women were not given the opportunity to address problems with their current method. One woman described her disappointment about not receiving adequate counseling from a public facility when she returned with irregular vaginal bleeding.

Illustration: I expected her to counsel me more about family planning, but the first thing she did when she met us was whine that we were late. She only asked me what method I wanted and I told her the injection and that was it. (Age 23, 1 child) Page 5.

Mugisha JF, Reynolds H. Provider perspectives on barriers to family planning quality in Uganda: a qualitative study. Journal of Family Planning & Reproductive Health Care. 2008;34(1):37-41 5p.

Findings: Lack of supplies was the most commonly cited barrier to quality family planning services. The few providers who reported that they had enough contraceptive supplies still said they lacked disinfectant, gloves, family planning cards and educational materials. Some stock-outs of contraceptives and other supplies were reported to last 3–6 months and led to discontinuation.

Illustrations: “We had no Depo-Provera, for a long time ... over 6 months actually. [Question: So what were you doing by that time?] Those who wanted Depo were not being served because most people here do not like oral contraceptives.” (Manager) Page 38.

Finding: Almost all providers felt that the quality of care they could offer was compromised because they were overloaded with work, and managers confirmed some clinics were understaffed. Individual providers take on multiple responsibilities such as antenatal care, labour and delivery, voluntary HIV counselling and testing (VCT) and childhood vaccinations, in addition to family planning services. The work overload was complicated by the tendency of large numbers of clients to visit clinics on open market days and immunisation days.

Illustration: “We are overloaded. We are small doctors [laughter]. There are clients for VCT there ... in the labour ward; there are two mothers waiting and then there are clients in antenatal clinic ... If these mothers wait for so long, they have to go elsewhere and if they do not get their method they will never come back.” (Bushenyi, FGD) Page 39.

Finding: Providers and managers agreed that many family planning clinics did not stock implants and intrauterine devices because they lacked trained providers who could insert them. Furthermore, lack of training resulted in some providers imposing menstruation barriers—meaning a client must be menstruating before starting a contraceptive method—because they were concerned about inadvertently giving a method to a pregnant woman. Managers agreed this practice occurred and admitted this could result in unintended pregnancies.

Illustration: “To me, some providers believe that once a client is not in her menses they should go back [home without contraceptives].” (Manager) page 39

Illustration: “[The client] said that ‘last time I went to the health facility for family planning and they told me to come back when I am in my menses, by the time I went back I was already pregnant!’” (Manager) Page 39.

Finding: Providers reported that many women secretly used contraceptive methods. A woman who hides use and experiences a side effect is at risk of stopping the method rather than switching to a method that might be detected by her husband, they said. Informed choice loses much of its meaning when the primary use criterion is a method that cannot be detected.

Illustration: “They come and get services except they may want a method which we don't have. Now this lady is escaping from the husband. Then you tell her go to Jinja and does not get counselled, she will not come back.” (Iganga, FGD) Page 39.

Finding: Perceptions of clients’ ability to pay for services influenced the type of care providers offered. Sometimes providers would not bother to make referrals for contraceptive methods or medical treatment if they believed that financial support was lacking.

Illustration: “... goes back home and she conceives because she cannot afford the method she wanted”. (Mpigi, FGD) Page 39.

Finding: Providers were frustrated with continually being faced with clients’ misconceptions, which included associating contraceptives with infertility, loss of manhood (in the case of vasectomy), loss of libido, disability, menstrual blood accumulating in the body, and fibroids, among others. Providers reported that these misconceptions were, in part, propagated by politicians and the media, especially radio campaigns that promulgated negative attitudes about family planning, and were thought by providers to cause many clients to discontinue family planning methods.

Illustration: “[I] do not think that there is political will. The top leadership of Uganda has never talked about family planning and its benefits.” (Manager) Page 39.

Appendix A6-Methodological quality assessment

S4 Table. Methodological quality assessment

First author, year of publication and reference number	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Overall quality of the study
Critical appraisal for included quantitative studies											
Tewab et al., 2002 ⁽²⁶³⁾	N	Y	Y	Y	Y	N	Y	Y			6/8 (moderate)
Agha et al., 2009 ⁽¹⁷¹⁾	N	Y	Y	Y	U	N	Y	Y			5/8(moderate)
Hutchinson et al. 2011 ⁽¹⁶⁹⁾	N	Y	Y	Y	Y	N	Y	Y			6/8 (moderate)
Tafese et al., 2013 ⁽¹⁸⁴⁾	Y	Y	Y	Y	Y	N	Y	Y			7/8 (high)
Wang et al., 2014 ⁽¹⁷⁰⁾	N	Y	Y	Y	Y	N	Y	Y			6/8(moderate)
Argago et al., 2015 ⁽¹⁸⁸⁾	Y	Y	Y	Y	U	N	Y	Y			6/8(moderate)
Assaf et al., 2015 ⁽²⁶⁴⁾	N	Y	Y	N	Y	N	Y	Y			5/8(moderate)
Nasr et al., 2016 ⁽²⁶⁵⁾	N	Y	N	Y	Y	Y	Y	Y			6/8(moderate)
Number of studies that achieved compliance	2	8	7	7	6	1	8	8			
Critical appraisal for included qualitative studies											
Ndhlovu L. 1995 ⁽¹⁸²⁾	N	Y	Y	Y	Y	N	N	Y	N	Y	6/10(moderate)
Mugisha et al., 2008 ⁽¹⁸³⁾	N	Y	Y	Y	Y	N	N	Y	Y	Y	7/10 (high)
Keesara et al., 2015 ⁽²⁶⁶⁾	N	Y	Y	Y	Y	N	N	Y	Y	Y	7/10 (high)
Number of studies that achieved compliance	0	3	3	3	3	0	0	1	1	1	

Criteria were adapted from the JBI Critical Appraisal Checklist for descriptive/case series research⁽²⁶⁷⁾. **For quantitative studies:** (1) Was the study based on a random or pseudo-random sample? (2) Were the criteria for inclusion in the sample clearly defined? (3) Were confounding factors identified and strategies to deal with them stated? (4) Were outcomes assessed using objective criteria? (5) If comparisons were being made, was there sufficient description of the groups? (6) Were the outcomes of people who withdrew described and included in the analysis? (7) Were outcomes measured in a reliable way? (8) Was appropriate statistical analysis used? **For qualitative studies:** (1) Was there congruency between the stated philosophical perspective between the research and the methodology? (2) Was there congruity between the research methodology and the research question or objectives? (3) Was there congruity between research methodology and data collection methods (4) Were there congruity between research methodology and representation and analysis of data (5) Were there congruity between research methodology and interpretation of results? (6) Was there a statement locating the researcher culturally or theoretically? (7) Was the influence of the research on the research and vice versa addressed? (8) Were participants and their voices adequately represented? (9) Was the research ethical according to current criteria or, for recent evidence of ethical approval by an appropriate body? (10) Did the conclusions drawn in the research report flow from the analysis or interpretation of the data? Each item was rated Y = Yes, N = No or U = Unclear. Unclear was awarded where not enough information was provided. High quality: meets ≥ 7 criteria, Moderate quality: meets ≥ 4 criteria, Low quality: < 4 criteria.

Appendix A7-Records excluded at full text examinations with reasons

S1 Text: Records excluded at full text examinations with reasons

1. Agha, S. et al. The impact of a quality-improvement package on reproductive health services delivered by private providers in Uganda. *Stud Fam Plan* 41(3):205-215
Reason: *it assessed the effectiveness of quality improvement packages. It did not identify the potential factors affecting the quality of care in FP*
2. Ali MM Quality of care and contraceptive pill discontinuation in rural Egypt. *J Biosoc Sci.* 2001;33(2):161-72
Reason: *the study aimed to see the effects of quality of care [quality of care was deemed as exposure of interest]*
3. Askew et al. Quality of care in family planning programmes: A rapid assessment in Burkina Faso. *Health Policy Plann*1993;8(1): 19-32
Reason: *methodological assessment*
4. Baumgartner JN, et al. Service delivery characteristics associated with contraceptive use among youth clients in integrated voluntary counseling and HIV testing clinics in Kenya. *AIDS Care* 24(10): 1290-301
Reason: *it looked at the FP integration with the HIV program. The outcome of interest was not client satisfaction.*
5. Brown L, et al. Quality of care in family planning services in Morocco. *Stud Fam Plann* 1995, 26(3)154-68
Reason: *descriptive study without identifying the factors*
6. Daff B et al.: Informed push distribution of contraceptives in Senegal reduces stockouts and improves quality of family planning services. *Global Health Sciences Practice* 2014, 2(2):245-52
Reason: *it assessed the contribution of early distribution of family planning commodities but did not assess the quality of care wither from users or providers perspective.*
7. Dusabe J. et al. "There are bugs in condoms": Tanzanian close-to-community providers' ability to offer effective adolescent reproductive health services. *J Fam Plann Reprod Health Care* 2015, 41(1)e2
Reason: *TBAs were not our population of interest*
8. Fantahun M. Quality of family planning services in Northwest Ethiopia. *Ethiop J Health Sci* 2005, 19(3): 195-200

Reason: *descriptive study focusing on what exists in terms of quality. It did not identify what affects quality of care in family planning services.*

9. Finocchiaro-Kessker S, et al. "I may not say we really have a method, it is gambling work": knowledge and acceptability of safer conception methods among providers and HIV clients in Uganda. *Health Care Women Int* 2014, 35(7-9): 896-917.

Reason: *this study focusses on the alternative approaches of contraception in HIV patients. Did not assess quality of care*

10. Gilson, L, et al. The structural quality of Tanzanian primary health facilities. *Bull World Health Organ* 1995; 73(1): 105-14

Reason: *Assessed quality from facilities point of view. The analysis is not of clients.*

11. Hailemariam A, et al. Quality of Care in the Delivery of Family Planning Services in Ethiopia: A baseline assessment at selected service delivery facilities of two non-governmental organizations FHI Addis Ababa 1999.

Reason: *this is a descriptive study that did not examine the potential factors for quality of care.*

12. Hancock, NL. Evaluation of service quality in family planning clinics in Lusaka, Zambia. *Contraception*, 92 (4): 345-49

Reason: *descriptive study that did not identify the factors.*

13. Hebert, LE, et al. Family planning providers' perspectives on family planning service delivery in Ibadan and Kaduna, Nigeria: a qualitative study *J Fam Plann Reprod Health Care*, 2013: 39 (1), 29-35

Reason: *it looked into the barriers of family planning use but not on specific notion of quality of care in the services*

14. Global network of people living with HIV: Quality of family planning services and integration in the prevention of vertical transmission context 2014

Reason: *it was conducted in three countries and assessed the integration of family planning in HIV care, not the factors related to quality of care*

15. Hong R, et al. Family planning services quality as a determinant of use of IUD in Egypt. *BMC Health Serv Res* 6: 79

Reason: *it assessed the effect of quality of care in family planning, not on what affects the quality of care itself.*

16. Huntington D, et al. User's perspective of counselling training in Ghana: the "mystery client" trial *Stud Fam Plan* 1990, 21(3): 171-77

Reason: *This was both a descriptive study and based on mystery clients*

17. Kakoko DC, et al. Provision of family planning services in Tanzania: a comparative analysis of public and private facilities. *Afr J Rep Health* 2012, 16 (4): 140-48

Reason: *it compared quality of care at facilities level not at client's level.*

18. Kelner A, et al. Perceptions of clients regarding family planning service delivery in a clinic of the Greater Johannesburg Metropolitan Council *Curtionis* 2010 33(2): 13-24

Reason: *it looked into whether women's expectations in family planning were met or not. It lacks information on the factors about quality of care.*

19. Khamis K, et al. Patients' level of satisfaction on quality of health care at Mwananyamala hospital in Dar es Salaam, Tanzania. *BMC Health Serv Res* 2014, 14:8

Reason: *it looked into the quality of care delivered at primary care setup. It is general and did not target family planning*

20. Leon FR, et al. Quality of delivery of the Standard Days Method as compared with contraceptive pills in Rwanda. *J Fam Plann Rep Health Care* 2006, 32(4): 231-33

Reason: *simulated clients study*

21. Letaief M, et al. Implementing a quality improvement programme in a family planning centre in Monastir, Tunisia *East Mediterr Health J* 2008 14(3):11

Reason: *descriptive assessment for some aspects of quality of care*

22. Loha E, et al. Assessment of quality of care in family planning services in Jimma Zone, Southwest Ethiopia. *Ethiop J Health Sci.* 2003, 18(1): 8-18

Reason: *descriptive study*

23. Maharaj P, et al. The quality of integrated reproductive health services: perspectives of clients in KwaZulu-Natal, South Africa. *Curationis* 2005, 28(1) 52-58

Reason: *it focused on the level of integration of family planning with other services.*

24. Mancici DC, et al. The effect of structural characteristics on family planning program performance in Cote d'Ivoire and Nigeria. *Soc Sci Med.* 2003; 56(10):2123-37.

Reason: *this study examined what factors influence family planning services provision but not a specific component of family planning.*

25. Marlow HM, et al. Postpartum Family Planning Service Provision in Durban, South Africa: Client and Provider Perspectives. *Health Care for Women Int* 2014, 35(2) 175-199

Reason: *it focused on family planning use, not on its quality component.*

26. McHome, Z. et al. A 'mystery client' evaluation of adolescent sexual and reproductive health services in health facilities from two regions in Tanzania. *PLoS One*, 10(3),e0120822

Reason: it was based on mystery clients that were not real family planning clients in addition to the fact that they envisaged adolescents experiences in reproductive health services not limited to family planning services.

27. McKenna K, et al. Policy and programmatic considerations for introducing a longer-acting injectable contraceptive: perspectives of stakeholders from Kenya and Rwanda. *Glob Health Sci Pract* 2014, 2(4), 459-71

Reason: it focused on single family planning methods; not on the whole family planning services

28. Mekonnen G, et al. Prevalence and factors affecting use of long acting and permanent contraceptive methods in Jinka town, Southern Ethiopia: a cross sectional study. *Pan Afr Med J*, 18: 98

Reason: This study identified factors for family planning rather than quality of services.

29. Melaku Y, et al. Sexual and reproductive health communication and awareness of contraceptive methods among secondary school female students, northern Ethiopia: a cross-sectional study. *BMC Public Health*, 2014, 14;252

Reason: it was a family planning study but not related with quality of care.

30. Mensch B, et al. Using situation analysis data to assess the functioning of family planning clinics in Nigeria, Tanzania, and Zimbabwe. *Stud Fam Plann* 1994, 25(1): 18-31

Reason: This study is a descriptive study that did not identify the factors affecting quality of care.

31. Miller RA, et al. The Situation Analysis Study of the family planning program in Kenya. *Stud Fam Plann* 1991, 22(1):131-43

Reason: descriptive study

32. MLE project. Trends in family planning service quality in Kisumu, Kenya: A Research Brief. 2013

Reason: descriptive study

33. Mohamed SS. Involvement of Sudanese community pharmacists in public health activities. *Int J Clin Pharm*. 2013, 35(3):393-400

Reason: This study focused on describing the roles of community workers

34. Mohan, Y, et al. Providing family planning services to remote communities in areas of high biodiversity through a Population-Health-Environment programme in Madagascar. *Reprod Health Matters*, 2014, 22(43): 93-103

Reason: *This study provided information on the importance of integrating family planning with other programs. It did not assess the factors associated with quality of care*

35. Mroz TA, et al. Quality, accessibility, and contraceptive use in rural Tanzania. *Demography*, 1999, 36(1):23-40

Reason: *This study assessed the effects of quality of care on contraceptive use*

36. Muhammed KA, et al. Understanding the barriers to the utilization of primary health care in a low-income setting: Implications for health policy and planning. *J Public Health Afr*, 2013, 4(2): 64-67

Reason: *Focused on primary health care services*

37. Murashami J, et al. Quality of Family Planning Services in HIV/AIDS Care and Treatment Clinics in Tanzania. University of North Carolina, USA, 2013

Reason: *descriptive study*

38. Mwaniki MK. Improving service uptake and quality of care of integrated maternal health services: the Kenya Kwale district improvement collaborative. *BMC Health Serv Res*, 2014, 14:9

Reason: *It assessed antenatal care services, not family planning services*

39. Myburgh, NG, et al. Patient satisfaction with health care providers in South Africa: the influences of race and socioeconomic status. *Int J Qual Health Care*, 2005, 17(6), 473-77

Reason: *Assessed general patient satisfaction in the whole health services*

40. Nalwadda G. Quality of care in contraceptive services provided to young people in two Ugandan districts: a simulated client study. *PLoS One*, 6(11):e27908

Reason: *used simulated clients*

41. Nguyen H, et al. Assessing public and private sector contributions in reproductive health financing and utilization for six sub-Saharan African countries. *Reprod Health Matters*, 19(37): 62-74

Reason: *did not assess quality of services*

42. Obare F, et al. Community-level effect of the reproductive health vouchers program on out-of-pocket spending on family planning and safe motherhood services in Kenya. *BMC Health Serv Res* 2015, 15:343

Reason: *did not assess quality of services*

43. Olowu F. Quality and costs of family planning as elicited by an adolescent mystery client trial in Nigeria. *Afr J Rep Health* 1998, 2(1): 49-60

Reason: *used mystery clients besides its descriptive nature*

44. Pitorak, H, et al. "It Depends on Your Pocket:" Findings From a Qualitative Study in Uganda Exploring Women's and Health Care Providers' Perspectives on Family Planning. *Health Care Women Int.* , 2014, 35(3),234-248
Reason: *it focused on family planning services not specific to quality of care*
45. RamaRao S. The quality of family planning programs: Concepts, measurements, interventions, and effects. *Stud Fam Plann*, 2003, 34(40): 227-248
Reason: *descriptive study and did not identify factor*
46. Sanogo D, et al. Improving quality of care and use of contraceptives in Senegal. *Afri J Repr Health.* 7(2): 57-73
Reason: *descriptive study*
47. Shabangu NP. The quality of family-planning services in Swaziland. *Afr J Nurs Midwifery* 2005, 7(1): 23-29
Reason: *descriptive study*
48. Shah NM, et al. Comparing private sector family planning services to government and NGO services in Ethiopia and Pakistan: how do social franchises compare across quality, equity and cost? *Health Policy Plann*, 2011, 26 (1): i63-71
Reason: *did not identify the factors*
49. Sieverding M, et al. User experiences with clinical social franchising: qualitative insights from providers and clients in Ghana and Kenya. *BMC Health Serv Res*, 2015, 15:49
Reason: *Explored social franchising network; the phenomenon of interest did not much with our study*
50. University of Southampton. Quality of family planning services in Malawi: What can exit interviews tell us. Fact Sheet 16 Reproductive Health Research funded by DFID,
Reason: *descriptive study*
51. Speizer IS, et al. Demand generation activities and modern contraceptive use in urban areas of four countries: a longitudinal evaluation. *Glob Health Sci Pract*, 2014,2(4): 410-26
Reason: *the outcome of interest was not quality of care*
52. Stein K. Using situation analysis to assess women's perception of quality of maternal-child health and family planning services. *Reprod Health Matters*, 1998, 6(11):45-54
Reason: *methodological assessment*
53. Sullivan TM, et al. Skewed contraceptive method mix: why it happens, why it matters. *J Biosoc Sci*, 2006, 38(4), 501-21
Reason: *it did not assess quality of care*

54. Tapsoba P, et al. Quality of care and client willingness to pay for family planning services at Marie Stopes International in Burkina Faso. 2013, Ouagadougou, Burkina Faso, Population Council
Reason: *descriptive study*
55. Tavrow P, et al. Measuring the quality of supervisor-provider interactions in health care facilities in Zimbabwe. *Int J Qual Health Care*. 2002, 14(1): 57-66
Reason: *not specific to family planning services*
56. Thatte N, et al. Does human resource management improve family planning service quality? Analysis from the Kenya Service Provision Assessment 2010. *Health Policy Plan*, 2015, 30(3): 356-67
Reason: *the outcome variable was not client satisfaction*
57. Thamas JC, et al. Integration opportunities for HIV and family planning services in Addis Ababa, Ethiopia: an organizational network analysis. *BMC Health Serv Res*, 2014, 14:22
Reason: *did not assess quality of care*
58. Tumlinson K, et al. Simulated clients reveal programmatic factors that may influence contraceptive use in Kisumu, Kenya. *Glob Health Sci Pract* 2013, 1(3): 407-16
Reason: *it was based on simulated clients*
59. Tumlinson K, et al. Quality of Care and Contraceptive Use in Urban Kenya. *Int Perspect Sex Reprod Health*, 2015, 41(2), 69-79
Reason: *quality of care was taken as independent variable; not as an outcome of interest*
60. Tumlinson, K, et al Accuracy of standard measures of family planning service quality: findings from the simulated client method. *Stud Fam Plann*, 2014, 45(4): 443-70
Reason: *methodological assessment*
61. Tuoane M et al. Use of Family Planning in Lesotho: The Importance of Quality of Care and Access. *Etude Popul Afr* 2003 18:2
Reason: *client satisfaction was not the outcome for assessing quality of care*
62. Ujuju C, et al. An assessment of the quality of advice provided by patent medicine vendors to users of oral contraceptive pills in urban Nigeria. *J Multidiscip Healthc*, 2014, 7: 163-71
Reason: *the study was conducted using simulated clients*
63. Vahdat HL, et al. There are some questions you may not ask in a clinic: providing contraception information to young people in Kenya using SMS. *Int J Gynaecol Obstet* 2013, 123(1): e2-6
Reason: *did not assess quality of care*

64. Van EL, et al. The challenge of measuring quality of care at health centre level in Africa: The example of Tsholotsho health district in Matabeleland North, Zimbabwe. *Int J Health Plann Manage.* 2007, 22(1): 63-89

Reason: *client satisfaction was not the outcome of interest*

65. Westaway MS, et al. Satisfaction with family planning services: interpersonal and organisational dimensions. *Curationis* 1998, 21(4): 3-7

Reason: *methodology assessment study*

Appendix B-Information sheet, consent forms, expression of interest form, interview guide for Study 4

- Expression of interest form
- Information sheet (English version)
- Information sheet (Amharic version)
- Interview consent form (English version)
- Interview consent form (Amharic version)
- Interview guide (English version)
- Interview guide (Amharic version)

Appendix B1-Expression of interest form

Project Title: Health providers' perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Northern Ethiopia: A qualitative study

Human Research Ethics Committee Approval Number: H-2017-023 and O/V/P/RCS/05/562/2017

Student Researcher: Gizachew Tessema

Supervisors' Names: A/Prof Caroline Laurence, Dr Afzal Mahmood, Dr Judith Gomersall

Research Collaborator: Abebaw Addis

Name of provider who is willing to be part of the study _____

Contact detail: Phone number: Work _____ Mobile _____

Signature _____

Appendix B2-Information sheet (English version)

Project Title: Health providers' perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Northern Ethiopia: A qualitative study

Human Research Ethics Committee Approval Number: H-2017-023 and O/V/P/RCS/05/562/2017

Principal Investigator: Caroline Laurence

Student Researcher: Gizachew Tessema

Student's Degree: PhD

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

Family planning is one of key maternal health services. In order to learn about and strengthen family planning services, it is important to understand providers' perspectives about the factors that promote use and the factors that act as barriers in implementing best practice guidelines in family planning services. In the larger PhD project, analysis of the levels and determinants of quality of care are being investigated using the data generated by a larger national survey called Ethiopia Services Provision Assessment Plus (ESPA+). This survey was conducted by the Ethiopian Public Health Institute (EPHI) in 2014. The national level survey has provided information about what client and facility factors are associated with quality of care in family planning services. This study in which your participation is requested will help explore what health care staff believe are the factors that increase or decrease the implementation of family planning guidelines. Therefore, this study aims to explore the perspectives of health providers regarding the barriers to and facilitators of implementing best family planning guidelines in their own clinical settings.

Who is undertaking the project?

This project is being conducted by the University of Adelaide, School of Public Health. The investigators are:

Gizachew Assefa Tessema, PhD Candidate at School of Public Health, The University of Adelaide, Australia, and staff at the Institute of Public Health, University of Gondar, Ethiopia

Assoc Prof Caroline Laurence, School of Public Health, The University of Adelaide, Australia, Primary Supervisor

Dr Mohammad Afzal Mahmood, School of Public Health, The University of Adelaide, Australia, Co-supervisor

Dr Judith Streak Gomersall, School of Public Health, The University of Adelaide, Australia, Co-supervisor

Mr Abebaw Addis, Institute of Public Health, University of Gondar, Ethiopia, Research collaborator

Why am I being invited to participate?

As you are a health provider providing family planning services, we would like to know about your experiences in the use of family planning guidelines, particularly what are the barriers to your use. We are requesting you for an interview because of this experience. The results will be used to identify appropriate strategies in improving the implementation of best practice guidelines and thereby the quality of care in family planning services in Ethiopia.

What will I be asked to do?

You will be asked to share your personal experiences (year of services, availability of training), and your reflections on barriers and facilitators for implementing family planning guidelines in the provision of family planning services. The interview will be recorded using a digital audio recorder. The participation is entirely voluntary. The interview will take approximately 40-60 minutes. There is no right or wrong answer. This interview would take place either face-to-face in your health facility or via telephone at a time that will be convenient to you.

How much time will the project take?

The participation in the project will take between 40-60 minutes.

Are there any risks associated with participating in this project?

The themes addressed within the in-depth interviews are not intended to cause discomfort in any way. There are no physical or other risks associated with this study.

What are the benefits of the research project?

The findings of study may help improve quality of care in family planning programs and other related areas and in turn providing health benefits to users of family planning services in particular and the community in general. We will also provide a copy of the national family planning guidelines when the facilities found with no guidelines to guide family planning services.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can still withdraw from the study at any time. Participation or non-participation in this study will not affect your employment or relationship with the Regional Health Bureau or Federal Ministry of Health.

What will happen to my information?

During the research process all transcripts, tape-recorded audios and participants' personal details and information will be stored in a locked and firewalled rooms in the researchers' offices at the University of Adelaide. All electronic transcripts will be saved on the primary investigators' University computer, which are password protected.

The data produced from the in-depth interviews will be thematically analysed and results will be published in an open access peer-reviewed journals that will be accessible to the Ethiopian researchers and stakeholders. All identifiable information of the participants will be removed prior to any form of public circulation. Should you want a copy of the results, you will get the opportunity to receive the results in a report form or journal article. The data we obtain will be securely stored at the University of Adelaide for a maximum of five years, after which it will be destroyed. Personal information such as your name, contact details, workplace will not be included in any report or paper in the future.

Who do I contact if I have questions about the project?

If you have any questions about the project you can contact a member of the research team. The contact details of the research team are listed below

Gizachew Assefa Tessema, School of Public Health, University of Adelaide and Institute of Public Health, University of Gondar, Ethiopia (Primary Contact): Mobile Ph ; Viber

(email: gizachew.tessema@adelaide.edu.au), A/Prof Caroline Laurence (email:

Caroline.laurence@adelaide.edu.au), Dr Afzal Mahmood (email afzal.mahmood@adelaide.edu.au), Dr Judith Gomersall ([email: judith.gomersall@adelaide.edu.au](mailto:judith.gomersall@adelaide.edu.au)), Mr Abebaw Addis (email:

)

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (Approval number H-2016-023) and Research and Ethics Committee at University of Gondar, Ethiopia. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. Contact the Human Research Ethics Committee's Secretariat on phone +61 8 8313 6028 or by email to hrec@adelaide.edu.au. Contact the Research and Ethics Committee at University of Gondar on phone +251 58 111 6221 if you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do?

If you wish to participate in the in-depth interview, please sign enclosed consent form

Yours sincerely

Assoc Prof Caroline Laurence, Gizachew Tessema, Dr Afzal Mahmood, and Dr Judith Gomersall, Mr Abebaw Addis

Appendix B3-Information sheet (Amharic version)

የተሳታፊዎች የተሳትፎ ፈቃድ ማረጋገጫ ፎርም

የፕሮጀክት ርዕስ: በአማራ ክልል የሚገኙ የጤና ባለሙያዎች የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀም ላይ ያላቸውን ምልከታ ግንዛቤ: ኩአሊታቲቭ ጥናት

የኢትዮጵያ ኮሚቴ ማረጋገጫ ቁጥር: H-2017-023 እና O/V/P/RCS/05/562/2017

ዋና ተመራማሪ: ካሮላይን ላውርንስ

ተመራማሪ ተማሪ ስም: ግዛቸው ተሰማ

ውድ ጥናቱ ተሳታፊ፣

ከዚህ በታች በተብራራው ጥናት ላይ እንድሳተፉ ተጋብዘዋል፡፡

ጥናቱ በምን ላይ ያተኩራል?

የቤተሰብ እቅድ አገልግሎት ዋናው የእናቶች ጤና አገልግሎት ነው፡፡ የቤተሰብ እቅድ አገልግሎትን ለማጠናከርና የተሻለ ግንዛቤ ለመውሰድ ጤና ባለሙያዎች የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ ለመጠቀም ያሉባቸውን እልቅፋቶች እና የሚያበረታቱ ሁኔታዎችን ማወቅ ጉልህ አስተዋጾ አለው፡፡ ይህ እርስዎ እንድሳተፉ እየተጠየቁ ያሉበት ጥናት የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀም ያሻሽላሉ ወይም ይቀንሳሉ ብለው የሚያስቡአቸውን ሁኔታዎች ለማወቅ ይረዳል፡፡ በዋናው የPhD ፕሮጀክት የቤተሰብ እቅድ አገልግሎት ጥራት ላይ ያሉ ተግዳሮቶች በኢትዮጵያ የጤና አገልግሎት አሰጣጥ የዳሰሳ ጥናት ዳታን በመጠቀም ተለይተዋል፡፡ የቤተሰብ እቅድ አገልግሎትን ለማጠናከርና የተሻለ ግንዛቤ ለመውሰድ ጤና ባለሙያዎች የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ ለመጠቀም ያሉባቸውን እልቅፋቶች እና የሚያበረታቱ ሁኔታዎችን ማወቅ ጉልህ አስተዋጾ አለው፡፡ ይህ ጥናት የቤተሰብ እቅድ አገልግሎት ጥራት ከተጠቀሙ እና ከተጠቃሚዎች ሁኔታ ጋር እንደሚገናኝ ይጠቁማል፡፡ ይህ ጥናት ተሳታፊ የሚያደርገው (የሚጋብዘው) በቤተሰብ እቅድ አገልግሎት ስራ ላይ የተሰማሩ የጤና ባለሙያዎችን ስለሆነ እርስዎ ለጥናቱ ከተመረጡ ተሳታፊዎች መካከል አንዱ/አንዱ ሲሆኑ በጥናቱ እንዲሳተፉ በአክብሮት ጋብዘንዎታል፡፡ ስለሆነም ትናቱ ዋና አላማ በቤተሰብ እቅድ አገልግሎት ላይ የተሰማሩ የጤና ባለሙያዎች በቤተሰብ እቅድ አገልግሎት እንዲሁም የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀም ላይ ተፅእኖ ሊፈጥሩ የሚችሉ ጉዳዮችን ማወቅ አስፈላጊ ነው፡፡

ጥናቱን የሚያካሂዱት እነማን ናቸው?

ይህ ጥናት የሚካሄደው በአድላይድ ዩኒቨርሲቲ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት ሲሆን ተመራማሪዎቹም የሚከተሉት ናቸው፡፡

ግዛቸው ተሰማ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፣ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት እጩ የዶክተራት ድግሪ ተማሪ እና በጎንደር ዩኒቨርሲቲ የሕብረተሰብ ጤና አጠባበቅ ተቋም ባልደረባ

ተባባሪ ፕሮፌሰር ካሮላይን ላውርንስ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፤ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት ዶ/ር አፍዛል ማህሙድ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፤ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት ዶ/ር ጁዲ ስትሪክ ጎመረሳል፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፤ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት አቶ አበባው አድስ፣ በጎንደር ዩኒቨርሲቲ የሕብረተሰብ ጤና አጠባበቅ ተቋም ባልደረባ

እርስዎ ለምን ተሳታፊ ሆኑ?

እርስዎ የጤና ባለሙያ እንደመሆንዎ መጠን ለዚህ ጥናት ተሳታፊ የሆኑበት ምክንያት የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀም ላይ ያለዎትን ልምድ በተለይም ለመጠቀም ያሉትን እንቅፋቶች ለማዎቅ እንወዳለን። የዚህ ጥናት ዉጤት ወደፊት የቤተሰብ ዕቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀምን እንድሁም የቤተሰብ እቅድ አገልግሎት ጥራትን ለማሻሻል ያገለግላል።

ምን አይነት ጥያቄዎችን ሊጠየቁ ይችላሉ?

በቃለ-ምልልሱ ወቅት የርስዎን ልምድ በተመለከተ (የስራ ልምድ፣ የስልጠና ሁኔታ) እንድሁም የቤተሰብ ዕቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያን ለመጠቀም እንቅፋት የሆኑና የሚያበረታቱ ሁኔታዎችን እንዲያባራሩልን እንጠይቀዎታለን። የምናደርገው ቃለ-ምልልስ በመቅረጸ-ድምጽ የሚቀረጽ ይሆናል። ተሳትፎዎ በፈቃደኝነት ላይ የተመሰረተ ነው። ቃለ-ምልልሱን ለመጨረስ ከ40 እስከ 60 ደቂቃ ይወስድብናል። የምጠይቅዎት ጥያቄ ትክክለኛ ወይም የተሳሳተ መልስ የለውም ስለዚህ የርስዎን ግንዛቤ ያስረዱን። ቃለ-ምልልሱን የምናካሂደው ገጽ ለገጽ ተገናኝተን ወይም በስልክ ሊሆን ይችላል።

ቃለ-ምልልሱ ምን ያክል ጊዜ ሊወስድ ይችላል?

ቃለ-ምልልሱን ለመጨረስ ከ40 እስከ 60 ደቂቃ ይወስድብናል።

ሊከሰቱ የሚችሉ ስጋቶችና የምችት መጓደሎች ይኖሩ ይሆን?

በዚህ ቃለ ምልልስ መሳተፍዎ ምናልባት ጊዜዎን ሊሻማብዎት ይችል ይሆናል። ከዛ ውጪ ሌላ ጉዳት ምንም ዓይነት ስጋት ወይም አካላዊ ችግር አያስከትልም።

የትናቱ ጥቅም ምንድን ነው?

የእርስዎ በጥናቱ ላይ መሳተፍዎ የቤተሰብ እቅድ አገልግሎትን ጥራት በማሻሻል ለማህበረሰቡ በተለይም የቤተሰብ እቅድ አገልግሎትን ለማሻሻል ሊረዳ ይችላል። በተጨማሪም የቤተሰብ ዕቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ ለሌላቸው የጤና ተቋማት የቤተሰብ ዕቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ እንሰጣለን።

ቃለ-ምልልሱን ማቀረጥ ይቻላል?

በዚህ ጥናት ላይ መሳተፍ ሙሉ በሙሉ በርስዎ ፈቃደኝነት ላይ የተመሰረተ ነው። ለመሳተፍ ከተሰማሙም በኋላ የማቋረጥ መብትዎ የተጠበቀ ነው። የርስዎ በዚህ ጥናት ላይ መሳተፍም ሆነ አለመሳተፍ አርስዎ ከክልሉ ወይም ከፌዴራል ጤና ጥበቃ ጋር ያለውን የቅጥርም ሆነ ሌላ ግንኙነት አይጎዳም።

በቃለ-ምልልሱ የምሰጠው መረጃ ምን ይደረጋል?

በቃለ-ምልልሱ ወቅት የሚሰጡን የተቀረፀ መረጃ እንድሁም እርስዎን የሚመለከቱ ማንኛውም መረጃዎች በአድላይድ ዩኒቨርሲቲ በሚገኝ በዋና ተመራማሪው ቢሮ ውስጥ ይቀመጣል። ሚስጥራዊነቱ በተጠበቀና ከሳት አደጋ ነፃ በሆነ ክፍል እንደምንይዝ ላረጋግጥልዎ እፈልጋለሁ። ማናቸውም ኤሌክትሮኒክ መረጃዎች በዋና ተመራማሪው ኮምፒውተር በሚስጥራዊ ቁልፍ ይቀመጣል።

በጥልቅ ቃለ-ምልልሱ ወቅት የተገኘው መረጃ በፈርጅ በፈርጅ ከተሰናዳ በኋላ የምርምር ውጤቱ ደረጃውን በጠበቀና ለኢትዮጵያ ተመራማሪዎችና የፖሊሲ አርቃቂዎች አመች በሆነ የምርመር ጆርናሎች ይታተማል። ማንኛውም ተሳታፊን ጠቋሚ የሆኑ መረጃዎች በህትመት ወቅትም ሆነ በሌላ ሁኔታዎች አይካተትም። የማናገኘው መረጃ በአድላይድ ዩኒቨርሲቲ አስተሰማማኝነቱ በተጠበቀ ሁኔታ ለአምስት አመታት ከተቀመጠ በሃላ ይወገዳል። ማናቸውም የግለሰብ መረጃዎች ለምሳሌ ያክል የርስዎ ስም፣ አድራሻ፣ የስራ ቦታ በሪፖርት ወይም በህትመት ወቅት አይጠቀስም።

ጥያቄ ቢኖረኝ ማንን ማግኘት እችላለሁ?

ከጥናቱ ጋር በተያያዘ ማናቸውንም ጥያቄ ለምርምር ቡድኑ ማቅረብ ይችላሉ። የምርምር ቡድኑ የስልክና የኢሜል አድራሻ ከዚህ በታች የተጠቀሰው ነው።

ግዛቸው ተሰማ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፣ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት፣ ስልክ ቁ. +251 ; ስልክ (ቫይበር) (ኢሜል: gizachew.tessema@adelaide.edu.au); ተባባሪ ፕሮፌሰር ካሮላይን ላውራንስ ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፣ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት (ኢሜል: caroline.laurene@adelaide.edu.au); ዶ/ር አፍዛል ማህሙድ፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፣ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት (ኢሜል: afzal.mahmood@adelaide.edu.au); ዶ/ር ጁዲ ስትሪክ ጎመረሳል፣ በአድላይድ ዩኒቨርሲቲ፣ አውስትራሊያ፣ የሕብረተሰብ ጤና አጠባበቅ ት/ቤት (ኢሜል: judith.gomersall@adelaide.edu.au); አቶ አበባው አድስ፣ በጎንደር ዩኒቨርሲቲ የሕብረተሰብ ጤና አጠባበቅ ተቋም ባልደረባ (ኢሜል:) ስልክ

ቅሬታ ወይም አቤቱታ ቢኖረኝ ምን ማድረግ እችላለሁ?

ይህ እርስዎ የሚካፈሉበት ጥናት በአድላይድ ዩኒቨርሲቲ የሰብአዊ ጥናት ምርምርና የስነ - ምግባር ኮሚቴ እና በጎንደር ዩኒቨርሲቲ ጥናትና ምርምር የስነ-ምግባር ኮሚቴ ታይቶ ፈቃድ አግኝቷል። ይህንን ጥናት አስመልክቶ ሊያቀርቡ የሚፈልጉት ጥያቄ ወይም ሌላ ተያያዥ ችግር ቢኖር፣ ወይም ጥናቱን አስመልክቶ የሚያነሱት አቤቱታ ቢኖር ዋና ተመራማሪውን ማማከር ይችላሉ። በተጨማሪም በአድላይድ ዩኒቨርሲቲ የሰብአዊ ጥናት ምርምርና የስነ - ምግባር ኮሚቴ ሴክሬታሪያትን በስልክ ቁጥር +61 8313 6028 ወይም በኢሜል አድራሻ hrec@adelaide.edu.au ማግኘት ይችላሉ። እንድሁም በጎንደር ዩኒቨርሲቲ ጥናትና ምርምር የስነ-ምግባር

ኮሚቴ ስብሰባዬን በስልክ ቁጥር +251 58 11162221 መደወል አለበለዚያም በአካል ቀርበው አቤቱታዎትን ማቅረብ ወይም የዩኒቨርሲቲውን የሰብአዊ ጥናቶች ፖሊሲ መረዳት ይችላሉ። የሚያቀርቡት ማናቸውም አቤቱታ ወይም ቅሬታ ሚስጥራዊነቱ በተጠበቀ ሁኔታ ምርመራ የሚካሄድበት ሲሆን ወጤቱም ይገለጽለዎታል።

በጥናቱ ላይ ለመሳተፍ ብፈልግ ምን ማድረግ አለብኝ?

በቃለ-ምልልሱ ላይ ለመሳተፍ ፈቃደኛ ከሆኑ ከዚህ ከጥሎ የተያያዘውን የፈቃደኝነት ማረጋገጫ እንድፈርሙ እንጠይቀዎታለን።

ከአክብሮት ጋር

ተባባሪ ፕሮፌሰር ካሮላይን ላውርንስ፣ ግዛቸው ተሰማ፣ ዶ/ር አፍዛል ማህሙድ፣ ዶ/ር ጁዲ ስትሪክ፣ አበባው አድስ

Appendix B4-Interview consent form (English)

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title	Health providers' perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Northern Ethiopia: A qualitative study
Ethics Approval number	H-2017-023 and O/V/P/RCS/05/562/2017

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.
3. Although I understand the purpose of the research project it has also been explained that involvement may not be of any benefit to me.
4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.
5. I understand that I am free to withdraw from the project at any time.
6. I agree to the interview being audio recorded. Yes No
7. I agree to be interviewed face-to-face, Yes No ; OR through telephone interview, Yes No
8. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:

Name: _____ Signature: _____ Date: _____

Appendix B5-Interview consent form (Amharic)

የቃለ-ምልልሱ ስምምነት መግለጫ የተዘጋጀ ቅፅ

1. ጥናቱን አስመልክቶ የተሰጠውን ማብራሪያ ያነብብክንኩና በጥናቱ ላይ ለመሳተፍ ተስማምቻለሁ።

ርዕስ	በአማራ ክልል የቤተሰብ እቅድ አገልግሎት የስራ/ያገልግሎት መስጫ መመሪያ አጠቃቀም ላይ የጤና ባለሙያዎች ያላቸውን ምልክታ ግንዛቤ፣ ኩሊታቲቭ ጥናት
የስነ-ምግባር ግምገማ ማረጋገጫ ቁጥር	H- 2017-023 እና O/V/P/RCS/05/562/2017

2. የጥናትና ምርምሩን በተመለከተ በቂ የሆነ ማብራሪያ ከተመራማሪዬ አግኝቻለሁ።ጥናቱ ከኔም ላይ ሊኖረው የሚችለውን ሁኔታ ተረድቻለሁ። ይህንን የስምምነት ማረጋገጫ የምሰጠው በፈቃድ ነው።
3. ምንም እንኩንም የጥናቱን ዓላማ አስመልክቶ ማብራሪያ ቢሰጠኝም የኔ በጥናቱ መሳተፍ ለኔ የሚሰጠው ጥቅም የለም።
4. የዚህ የጥናት ውጤት ለህትመት በሚበቃበት ወቅት እኔ የሰተሁት መረጃ የሚካተት ሲሆን እኔን የሚመለከቱ መረጃዎች አይካተትም።
5. በማንኛውም ጊዜ ከጥናቱ መውጣት እንደምችል ግንዛቤ ያሰጃለሁ።
6. ቃለ-ምልልሱ በመቅረጸ-ድምጽ እንድቀዳ ፈቃድን ሰጥቻለሁ። አወ የለም
7. ቃለ-መጠይቁ ፊት ለፊት እንድካሄድ ፈቅጃለሁ። አወ የለም ወይም በሰልክ እንድካሄድ ፈቅጃለሁ። አወ የለም
8. የዚህ ስምምነት ማረጋገጫ ፎርም እና ጥናቱን አስመልክቶ የቀረነውን ማብራሪያ ቅጅ እንደሚሰጠኝ አወቁያለሁ።

በተሳታፊ የሚሞላ

ስም:

ፊርማ: _____ ቀን: _____

Appendix C6-Interview guide (English version)

A. Background information

1. Participant ID: Date:
2. Sex M F
3. Age in Years _____
4. Professional category: Medical Doctor Midwife Nurse Health officer Health Extension Worker Other specify _____
5. Qualification level: MSc BSc Certificate Other _____
6. Name of the facility _____
7. Location of facility: Urban Rural
8. Type of facility _____
9. A) Total number of years/months working _____year(s)/month(s).
B) Years/months of working in the current facility _____ year(s)/months(s).
C) Years/months of working in family planning services provision _____year(s)/month(s)
10. Number of working hours per day/week in current position _____
11. Do you implement guidelines or protocols to guide the delivery of family planning services in your facility? Yes No

B1. Questions to structure the interview for providers who implement guidelines

1. Please describe the type of family planning services provided in your facility?

[Prompts: Which family planning methods are commonly provided and prescribed?]

2. What guidelines / protocols for guiding family planning service provision exist in your facility?

[Prompts: Do you or your facility have national guidelines or protocols that have been devised for your own facility by adapting from other sources? Is there more than one guideline describing how family planning services should be provided and what services should be delivered?]

3. Can you describe to me what is included in the family planning guidelines?

[Prompts: What is in the guidelines? Are there information about what client history (client's age, menstrual history, last time of delivery, history of breastfeeding, any history of chronic illness, desired number of children) should be collected and which physical examination aspects (blood

pressure and body weight measurement) need to be done or types of information (information about the method use, side effects, and when to return) should be delivered to the clients?]

4. What kind of training have you received on family planning service delivery in your facility? Did the training include the use of best practice guidelines that you and other staff are expected to follow?
5. What is your experience of accessing and interpreting family planning guidelines?

[Prompts: Are you able to view the guidelines when you want to? Are there requirements/recommendations of the guidelines easy to understand?]

6. How easy/difficult would you say it is to follow guidelines for family planning services in your particular health facility?

[Prompts: Do you find all or some of the requirements difficult to follow? Are there aspects of relevant guidelines that in your experience it is particularly easy to follow?]

7. What are barriers that limit or prevent you from following any, some or all of the requirements in relevant family planning guideline(s) and from delivering quality of care?

[Prompts: Do you have the required materials (for e.g. sample family planning) or equipment (BP and weight measures) to implement the recommendations in the guidelines? Do you have the required time to implement the recommendations?]

8. What in your view would support or help you and other providers to better meet the requirements of family planning guidelines and to deliver quality of care more generally?

[Prompts: Are there things that you think are under you and others who work in your team have influence over, that you can and should change? What are these things? What do you think other stakeholders, for example zonal or district offices or the Ministry of Health, can do to assist you to follow the guidelines?]

9. What in your view is the benefits/importance and appropriateness of the family planning guidelines?

[Prompts: Are there aspects of the guidelines that you think are inappropriate? How would these can be changed in the guidelines, and why? Or do you think they are good, and if so why, what is their benefit?]

10. Can you describe any initiatives/support that are undertaken on a continual basis to assess the extent to which guidelines for best practice family planning services are implemented?

[Prompts: Are there initiatives/institutional support to identify strategies to support you and others in the facility to better implement the guidelines?]

11. Is there anything else you would like to tell me about most important enablers and barriers you experience in your attempt to follow best practice guidelines and deliver quality of care more generally?

B2. Questions to structure the interview for providers who do not implement guidelines

1. Please describe the type of family planning services provided in your facility?

[Prompts: Which family planning methods are commonly provided and prescribed?]

2. Can you please tell me a little about what informs how you deliver family planning services?

[Prompts: Are you guided by your own experience and knowledge, or client preferences?]

3. What clients' history and physical assessment aspects are conducted while you provide family planning services for your clients?

[Prompts: Do you collect clients' clinical history (such as client's age, menstrual history, last time of delivery, history of breastfeeding, any history of chronic illness, desired number of children) and conduct physical examination (blood pressure and body weight measurement)? What type of information do you provide for clients? Does it include information about the method use, side effects, and when to return?]

4. What kind of training have you received on family planning service delivery in your facility? Did the training include the use of best practice guidelines that you and other staff are expected to follow?

5. Why do you think your facility does not implement guidelines in the delivery of family planning services?

[Prompts: Can you mention to me your reasons for not implementing guidelines in your facility?]. In your perception, what barriers in your and other facility would prevent or limit providers from implementing family planning guidelines? Do you have any of the guidelines in your facility?

6. Do you believe implementing guidelines is useful to guide family planning services?

[Prompts: If so, how these guidelines can be helpful? Do you believe implementing these guidelines have disadvantages? If so, can you mention these disadvantages?]

7. How do you think providers in family planning services start implementing best practice guidelines in the delivery of family planning services?

[Prompts: How providers who do not implement guidelines can get the opportunity to implement guidelines?]

8. Is there anything else you would like to tell me about most important enablers and barriers that you perceive could influence the implementation best practice guidelines and delivery of quality of care more in family planning services generally?

Appendix C7-Interview guide (Amharic version)

የውይይት መመሪያ

ሀ. የመግቢያ መረጃ

1. የተሳታፊ መለያ ቁጥር _____ ቀን _____
2. ጾታ ወንድ ሴት
3. እድሜ: _____ ዓመት
4. የትምህርት ዘርፍ ህክምና ዶክተር አዋላጅ ነርስ ነርስ ጤና መኮንን የጤና ኤክስቴንሽን ባለሙያ
ሌላ ይጠቀስ.....
5. የትምህርት ደረጃ: የሁለተኛ ዲግሪ የመጀመሪያ ዲግሪ ድፕሎማ ሰርተፊኬት ሌላ
ይጠቀስ _____
6. የጤና ተቋም ስም _____
7. ጤና ተቋም የሚገኝበት ቦታ ከተማ ገጠር
8. የጤና ተቋም አይነት _____

ሀ. አጠቃላይ የአገልግሎት ዘመንዎ ምን ያህል ነው? _____ ዓመት _____ ወር

ለ. በዚህ ጤና ተቋም የአገልግሎት ዘመንዎ ምን ያህል ነው? _____ ዓመት _____ ወር

ሐ. በቤተሰብ ምጣኔ አገልግሎት መስጫ ክፍል ለምን ያህል ጊዜ አገለገሉ? _____ ዓመት _____ ወር

9. አሁን ባሉበት የስራ ኃላፊነት በቀን /በሳምንት ለምን ያህል ሰዓት ይሰራሉ? _____

10. በጤና ድርጅታችሁ የምትሰጧቸውን የቤተሰብ እቅድ አገልግሎት ለመከታተል የሚያስችለውን የስራ/ያገልግሎት መስጫ መመሪያ ይጠቀማሉ? አዎ አልጠቀምም

ለ1. የስራ/ያገልግሎት መስጫ መመሪያ ተግባራዊ ከሚያደርጉ ጤና ባለሙያዎች ጋር የሚደረገውን ቃለ-መጠየቅ አቅጣጫ የሚያሰዙ ጥያቄዎች

1. የትኞቹን የቤተሰብ እቅድ አገልግሎት አይነቶች በእናንተ ጤና ድርጅት እደሚሰጡ ይግለጹ

[ያውጣጡ: የትኞቹን የቤተሰብ እቅድ አገልግሎት አብዛኛውን ጊዜ ትሰጧላችሁ/ታዝዛላችሁ?]

2. የትኛውን የቤተሰብ እቅድ አገልግሎት መስጫ መመሪያ በእናተ ጤና ድርጅት ትጠቀማላችሁ?

[ያውጣጡ: እርስዎ ወይም የሚሰሩበት ጤና ድርጅት ከሌላ ምንጭ ተሸሽሎ የተወሰደ በጤና ድርጅታችሁ ስትጠቀሙት የቆየ ሀገር አቀፍ መመሪያ አለ? የቤተሰብ እቅድ አገልግሎት እዴት መሰጠት እዳለበት እና ምን አገልግሎት መሰጠት እዳለበት የሚገልጹ ከአንድ በላይ መመሪያዎች አሏችሁ?]

3. በቤተሰብ እቅድ አገልግሎት መመሪያዎች ምን ምን እድተካተተ ሊገልጹልኝ ይችላሉ?

[ያውጣጡ፡ በመመሪያው ምን ምን ተካቷል? ስለ ደንበኛዎ ግላዊ ታሪክ ማለትም እድሜ፤ የወር አበባን በተመለከተ፤ ከአሁን በፊት ስለነበረው የወሊድ ሁኔታ፤ ጡት ማጥባትን የሚመለከት፤ የቆየ ህመምን የሚመለከት፤ ሊኖራቸው ስለሚፈልጉት የልጅ ብዛት የሚዳስስ/የሚጠይቅ መረጃን የያዘ. እና የትኛውን የምርመራ አይነት (የደም ግፊት ልኬትና የክብደት ምርመራ) መደረግ እዳለበት ወይም ምን አይነት መረጃ (ስለሚጠቀሙት የእርግዝና መከላከያ አጠቃቅም፤ የተጌዳኝ ችግሮች እና መቸ መመለስ እዳለባት)? ለደበኞቻችን /ለአገልግሎት ተጠቃሚዎች/ መሰጠት እንዳለበት የሚዳስስ/የሚጠይቅ መረጃዎች በመመሪያው ተካተዋል?]

4. በሚሰሩበት ጤና ድርጅት የቤተሰብ እቅድ አገልግሎት አሰጣጥን በተመለከተ ምን አይነት ስልጠናዎችን ወስደዋል?

ስልጠናው እርስዎ እና ሌሎች የስራ ባልደረቦች እድትከተሏቸው የሚገባ/የሚጠበቅ/ የጥሩ ተሞክሮ መመሪያ አጠቃቅምን ያካተተ ነበር?

5. በቤተሰብ እቅድ መመሪያዎች ተደራሽነት እና አተረጋጎም ላይ ያለውን ልምድ ምን ይመስላል?

[ያውጣጡ፡ ሲያስፈልገውት መመሪያውን ማየት ይችላሉ? መመሪያዎችን በቀላሉ ለመረዳት የሚያስችሉ አስፈላጊ ሆኔታዎች/አስተያይቶች አሉ?]

6. እርስዎ በሚሰሩበት ጤና ድርጅት የቤተሰብ እቅድ አገልግሎት መመሪያዎችን ለመከተል/ለመተግበር/ ምን ያህል ቀላል ወይም ከባድ አደሆነ ሊገልጹልኝ ይችላሉ?

[ያውጣጡ፡ ለመተግበር አስቸጋሪ የሆኑ የተወሰነም ይሁን አጠቃላይ አስፈላጊ ሆኔታዎች አሉ? ካለዎት ልምድ ለመከተል/ለመተግበር ቀላል የሆኑ ጠቃሚ መመሪያዎች አሉ?]

7. ጠቃሚ በሆኑ የቤተሰብ እቅድ መመሪያዎች ምን አይነት እንቅፋቶች ናቸው ማንኛውንም፤ ትቂት ወይም ሁሉን አስፈላጊ ሆኔታዎችን ለመከተል/ለመተግበር/ እና ጥራት ያለው አገልግሎት ለመስጠጥ እየከለከሉ ያሉ?

[ያውጣጡ፡ በመመሪያው ላይ ያሉ አስተያይቶችን ለመተግበር የሚረዱ አስፈላጊ መገልገያዎች (ለምሳሌ ናሙና የቤተሰብ ምጣኔ ዘዴዎች) ወይም እቃዎች (የደም ግፊት እና የክብደት መለኪያዎች) አሉዎት?]

8. በእርስዎ እይታ የቤተሰብ እቅድ መመሪያ አስፈላጊ ሆኔታዎችን ለማሟላት/ለማሳካት/ እና ባጠቃላይ የተሸለ ጥራት ያለው አገልግሎት ለመስጠት እርስዎን እና ሌሎች አገልግሎት ሰጭዎችን ሊያግዝ ይችላል?

[ያውጣጡ፡ በእርስዎ ሆነ ከእርስዎ ጋር በሚሰሩ ሰዎች መቀየር የሚችል እና መቀየር አለበት የሚሉት ነገር አለ? እነዚህ ነገሮች ምንድን ናቸው? ሌሎች ባለድርሻ አካላትን (ለምሳሌ የዞን መምሪያ ወይም የወረዳ ጽ/ቤት፤ የጤና ጥበቃ ሚኒስትር) የቤተሰብ እቅድ መመሪያውን እርስዎም አዲጠቀሙ የሚያግዝ ነገር ማድረግ ይችላሉ ብለው ያስባሉ?]

9. በእርስዎ እይታ የቤተሰብ እቅድ መመሪያዎች ጥቅም /አስፈላጊነት እና አግባብነት ምንድን ነው?

[ያውጣጡ፡ ከቤተሰብ እቅድ መመሪያዎች አግባብ ያልሁኑ ክፍሎች አሉ? ከቤተሰብ እቅድ መመሪያዎች እነዚህ እዴት ሊቀየሩ ይችላሉ? ለምን? ወይም ጥሩ ናቸው ብለው ያስባሉ? አዎ ካሉ እዴት? ጥቅማቸው ምንድን ነው?]

10. የቤተሰብ እቅድ አገልግሎት መመሪያዎች ለቤተሰብ እቅድ አገልግሎት ጥሩ ተሞክሮ የሚለውን መተግበሩን ለማጥናት በመደበኛ/በተከታታይ/ሊያግዝ የሚችል ተነሳሽነት/ ድጋፎችን ሊያብራሩልኝ ይችላሉ?

[ያውጣጡ፡ የቤተሰብ እቅድ አገልግሎት መመሪያዎች በተሸለ ሁኔታ ተግባራዊ ለማድረግ እርስዎን ና በጤና ተቋሙ ውስጥ ያሉ ሌሎችን ድጋፍ ለማድረግ ስልቶችን ለመለየት የሚያስችል ተነሳሾች/ተቋማዊ ድጋፍ አሉ?

11. የጥሩ ተሞክሮ መመሪያና የተሻለ ጥራት ያለው አገልግሎት ባጠቃላይ ለመስጠት ሙከራ ሲያደርጉ ያጋጠመዎት ሊነግሩኝ የሚፈልጉት ምቹ ሁኔታዎች እንቅፋቶች አሉ?

ለ2. የስራ/ያገልግሎት መስጫ መመሪያ ተግባራዊ ከማያደርጉ ጤና ባሙያዎች ጋር የሚደረገውን ቃለ-መጠየቅ አቅጣጫ የሚያሰቁ ጥያቄዎች

1. የትኞቹን የቤተሰብ እቅድ አገልግሎት አይነቶች በእናንተ ጤና ድርጅት እደሚሰጡ ይግለጹ

[ያውጣጡ፡ የትኞቹን የቤተሰብ እቅድ አገልግሎት አብዛኛውን ጊዜ ትሰጣላችሁ/ታገዛላችሁ?]

2. የቤተሰብ እቅድ አገልግሎት እዴት መስጠት እዳለብዎት እዴት አወቁ?

[ያውጣጡ፡ በስራ ላይ እያሉ ባካበቱት ልምድ እና ባለዎት እውቀት ነው የሚመሩት ወይስ በደንበኞች ምርጫ/ፍላጎት ነው አገልግሎቱን የሚሰጡት?]

3. ለደንበኛዎት የቤተሰብ እቅድ አገልግሎት ሲሰጡ ምን ምን መጠይቆችን እና አካላዊ ምርመራዎችን ያደርጋሉ?

[ያውጣጡ፡ የአገልግሎት ተጠቃሚ ደንበኞችን የህክምና/የጤና ታሪካቸውን (ለምሳሌ የደንበኛ እድሜ ፤ ሥላ የወርአበባቸው፤ ከአሁን በፊት የወለዱበት ቀን፤ ስለጡት አጠባባቸው፤ የቆዩ በሽታዎችን በተመለከተ ፤ የሚፈልጉት የልጅ መጠን) እና አካላዊ ምርመራ (የደም ግፊትና የከብደት ልኬት) ያደርጋሉ? ለደንበኛዎት ምን አይነት መረጃዎችን ይሰጣሉ? ስለ መቆጣጠሪያ ዘዴ አጠቃቅም፤ ስለ መዳሀኒቱ የተጻፉ ችግሮች እና መቻ መመለስ እዳለባቸው ለደንበኛዎት ይነግሯቸዋል?]

4. የቤተሰብ እቅድ አገልግሎት አሰጣጥን በተመለከተ ምን አይነት ስልጠና ወስደው ያውቃሉ? ስልጠናው እርስዎ እና ሌሎች ጤና ባለሙያዎች አዲጠቀሙት የሚጠበቀው የጥሩ ተሞክሮ መመሪያ አጠቃቅምን ይመለከታል?

5. የቤተሰብ እቅድ አገልግሎት ስትሰጡ የእናንተ ጤና ድርጅት የአገልግሎት መስጫ መመሪያ የማትጠቀሙት ለምን ነው ብለው ያስባሉ?

[ያውጣጡ፡ የአገልግሎት መስጫ መምሪያ የማትጠቀሙበት ምክንያት ለምን እንደሆነ ሊነግሩኝ ይችላሉ? ሲያስበው ምን አይነት እንቅፋቶች/ችግሮች ናቸው በጤና ድርጅታችሁ የአገልግሎት መስጫ መምሪያውን ተግባራዊ እዳታደርጉ የሚከለክሏችሁ? በጤና ድርጅታችሁ ማንኛውም አይነት ይሁን መምሪያ አላችሁ?

6. የቤተሰብ እቅድ አገልግሎት አሰጣጥን በትክክል ለመምራት መምሪያ መጠቀም አስፈላጊ ነው ብለው ያምናሉ?

[ያውጣጡ፡ የአገልግሎት መስጫ መምሪያ መጠቀም አስፈላጊ ነው ብለው ካሰቡ መምሪያው እዴት ሊጠቅም ይችላል? እነዚህን መምሪያዎች መጠቀም ጉዳት አለው ብለው ያስባሉ? አዎ ካሉ ምን አይነት ጉዳቶች ያመጣል?

7. የቤተሰብ እቅድ አገልግሎት መስጫ ክፍል እየሰሩ ያሉ ሙያተኞች የቤተሰብ እቅድ አገልግሎት ሲሰጡ የጥሩ ልምድ መምሪያዎችን መጠቀም የመጀመሩ ጉዳይ ላይ እንዴት ያዩታል?

[ያውጣጡ፡ የአገልግሎት መስጫ መምሪያ የማይጠቀሙ ሙያተኞች መምሪያውን አዲጠቀሙ ለማድረግ ምን አይነት ኢጋጣሚዎች ይረዳሉ ብለው ያስባሉ?

8. በአጠቃላይ የጥሩ ልምድ መምሪያዎችን ተግባራዊ ለማድረግና ጥራት ያለው የቤተሰብ እቅድ አገልግሎት ለመስጠት የሚያስችሉ ሁኔታዎችና እና ለመተግበር እንቅፋት ይሆናሉ ብለው የሚሰበሱ ሌሎች ነገሮች አሉ? ቢዘረዝሩልኝ፡፡

Appendix C-Ethical approvals

- Ethical waiver from the HREC for the secondary data analysis of the EPHI data
- Ethical approval from the SERO for the secondary data analysis of the EPHI data
- Ethical approval from the HREC to conduct qualitative study among healthcare providers in Ethiopia
- Ethical approval from the IRB at the University of Gondar to conduct qualitative study among healthcare providers in Ethiopia

Appendix C1-Ethical waiver from the HREC for the secondary data analysis of the EPHI data



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OFFICE OF RESEARCH ETHICS, COMPLIANCE
AND INTEGRITY

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CRICOS Provider Number 00123M

9 November 2015

Associate Professor C Laurence
Public Health

Dear Associate Professor Laurence

PROJECT TITLE: **Quality of care in family planning services in Ethiopia:
Levels,differences, and determinants**

App. No: **0000021084**

The ethics application for the above analysis has been reviewed by the Office of Research Ethics, Compliance and Integrity's Human Research Ethics Secretariat and it is deemed the work meets the requirements of the *National Statement on Ethical Conduct in Human Research (National Statement 2007)* involving negligible risk to research participants.

According to provisions within the *National Statement*, the University of Adelaide classifies research that carries only negligible risk and involves the use of existing data that contains only non-identifiable data about human beings, to be exempt from ethical review. The research conducted as part of this project meets these requirements and has been authorised as exempt from requiring ethical review.

Yours sincerely

per **Michelle White**
Manager
Office of Research Ethics, Compliance and Integrity

Appendix C3-Ethical approval from the HREC to conduct qualitative study among healthcare providers in Ethiopia



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CRICOS Provider Number 00123M

1 March 2017

Associate Professor C Laurence
School: Public Health

Dear Associate Professor Laurence

ETHICS APPROVAL No: H-2017-023

PROJECT TITLE: Health providers' perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Ethiopia: a qualitative study

The ethics application for the above project has been reviewed by the Low Risk Human Research Ethics Review Group (Faculty of Health and Medical Sciences) and is deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* involving no more than low risk for research participants. You are authorised to commence your research on **01 Mar 2017**.

Ethics approval is granted for three years and is subject to satisfactory annual reporting. The form titled *Annual Report on Project Status* is to be used when reporting annual progress and project completion and can be downloaded at <http://www.adelaide.edu.au/research-services/oreci/human/reporting/>. Prior to expiry, ethics approval may be extended for a further period.

Participants in the study are to be given a copy of the Information Sheet and the signed Consent Form to retain. It is also a condition of approval that you **immediately report** anything which might warrant review of ethical approval including:

- serious or unexpected adverse effects on participants,
- previously unforeseen events which might affect continued ethical acceptability of the project;
- proposed changes to the protocol; and
- the project is discontinued before the expected date of completion.

Please refer to the following ethics approval document for any additional conditions that may apply to this project.

Yours sincerely,

Sabine Schreiber
Secretary, Human Research Ethics Committee
Office of Research Ethics, Compliance and Integrity



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CRICOS Provider Number 00123M

Applicant: Associate Professor C Laurence

School: Public Health

Project Title: Health providers' perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Ethiopia: a qualitative study

The University of Adelaide Human Research Ethics Committee
Low Risk Human Research Ethics Review Group (Faculty of Health and Medical Sciences)

ETHICS APPROVAL No: H-2017-023 **App. No.:** 000022125

APPROVED for the period: 01 Mar 2017 to 31 Mar 2020

Thank you for the detailed response and amended application dated 28.2.17 to the matters raised. It is noted that this study will involve Gizachew Assefa Tessema, PhD candidate.

Sabine Schreiber
Secretary, Human Research Ethics Committee
Office of Research Ethics, Compliance and Integrity

Appendix C4-Ethical approval from the IRB at the University of Gondar to conduct qualitative study among healthcare providers in Ethiopia

<p>ገንደር ዩኒቨርሲቲ የምርምርና ህብረተሰብ አገልግሎት ምክትል ፕሬዝዳንት ገንደር ኢትዮጵያ</p>		<p>University of Gondar Vice President Research & Community Service Gondar, Ethiopia</p>
<p>R. No.- <u>ON/P/RCS/051/562/2017</u> Date:- <u>15th Feb.</u> 2017.</p>		
<p>To Mr. Gizachew Assefa <u>University of Gondar</u></p>		
<p>Subject: - Ethical Clearance</p>		
<p>Your research project proposal entitled “Health providers’ perspectives on the implementation of best practice guidelines in family planning services in Amhara Region, Ethiopia: A qualitative study.” has been reviewed by the Institutional Ethical Review Board of University of Gondar for its Ethical soundness, and it is found to be ethically acceptable.</p>		
<p>Thus, the Research and Community Service Vice President Office has awarded this Ethical Clearance for the above stated study to be carried out by Mr. Gizachew Assefa, as Principal Investigator and Associate Prof. Caroline O Laurence (PhD), Dr. Mohammad Afzal (PhD), Dr. Judith Streak (PhD), as Co-investigator as of 2nd January, 2016.</p>		
<p>These investigators are expected to submit their research progress report to the Vice President for Research and Community Service Office of the University of Gondar.</p>		
<p>Best Regards</p>		
<p>Merfesa Chanle Kebede (Professor) Vice President Research and Community Service</p>		
<p>C.C. Office of Research and Publication Directorate Office of Institutional Research Review Board <u>University of Gondar</u></p>		
<p>የፖ. ጣቅ P.O. Box 196 ገንደር ኢትዮጵያ Gondar, Ethiopia</p>	<p>ቴሌፎን ቁጥር Cable A.A.U. PH. Fax - 251-058-114 1240</p>	<p>ስልክ Telephone 058111 01 74 President office 058 114 1231 V/P/for Academic 058-8 1191-61 V/P Research & Community Service 058-811-90-69 V/P Research & Community Service 058-114-03-07 URL Address:- www.gondar.edu.et</p>

Appendix D-Data sharing agreement and official support letters

- Data sharing agreement between The Ethiopian Public Health Institute (EPHI) and The University of Adelaide for obtaining access to ESPA+ data
- Support letter to conduct qualitative study in Amhara region from Dean's of College of Medicine and Health Sciences at the University of Gondar
- Support letter to conduct qualitative study in Amhara Region Health Research and Technology Transfer Core Process Officer
- Support letter to conduct qualitative study in Amhara region from Bahir Dar City Administration Health Department
- Support letter to conduct qualitative study in Amhara region from Gondar City Administration Health Department

Appendix D1-Data sharing agreement between the Ethiopian Public Health Institute and The University of Adelaide

DATA SHARING AGREEMENT between The Ethiopian Public Health Institute and The University of Adelaide

For the research project entitled "Determinants of Quality of Care in Family Planning Services in Ethiopia" ("Project")

This Agreement is made and entered into this 4th date of December, 2015 between the Ethiopian Public Health Institute (EPHI) and the University of Adelaide ABN 61 249 878 937 of North Terrace, Adelaide SA ("University").

EPHI is conducting or has conducted a study or sample collection known as Ethiopian Services Provision Assessment Plus (ESPA+). EPHI has developed a set of data pertaining to the study subjects, practices, and results involved in the said research. EPHI is the full owner of such data that exists from the said project.

Gizachew Assefa Tessema ("**Researcher**"), an employee of the University of Adelaide wishes to acquire access to the data for the purpose of the Project. The EPHI, University and Researcher are collectively known as the "parties".

The EPHI agrees to share data related to the Family planning part of the ESPA+ research study ("**Data**") with the Researcher on the terms and conditions set out in this Agreement, and the Researcher and the University agree to comply with the terms and conditions of this Agreement. The data is considered Health Facility data.

The parties agree as follows:

1. Researcher will report results, findings, and conclusions originating from the Project ("**Results**") to EPHI at the conclusion of the Project in December 2018. If applicable, no personal health identifiers will be included in the Results. The Data will be provided to the Researcher in an encrypted format with the encryption key stored separate from the dataset. The parties agree to maintain this dataset either on the supplied CD or on a secure server.
2. The parties agree to establish and maintain appropriate confidentiality and privacy safeguards for the Data and the Results to prevent unauthorized use or access to it and to ensure compliance with applicable privacy legislation and any other legislation that applies to the Data and the Results. The parties and the Researcher agree that only non-identifiable information may be released by a party.
3. The parties agree to the conditions of the original proposal initially submitted by the Researcher with the data request form under which data sharing was initiated. That is, neither party shall re-specify the proposed response variables, or the proposed covariates, without prior approval of the other. Moreover, each party agrees to cooperate with the Researcher in selective reporting of focused results so as to protect the integrity of subsequent research activities and uses of the shared data by the originating party. The parties agree to acknowledge support of the pertinent grant awards as part of published acknowledgments section for any paper or presentation produced with data shared under this agreement. This agreement extends to the activities and behavior of research assistants, research

fellows, or other members of the research staff who are working with the shared data. All publications arising from this shared data set must be reviewed and approved by the Researcher of the study and the EPHI Director General or his/her designee.

4. The Data shall be utilized by Researcher only for the objective of the Project that was approved by scientific and ethical committee of EPHI. After the conclusion of the Project, including publication of research articles arising from the Project, the Researcher and the University shall destroy all copies of the Data.

5. The Data is accessible to the Researcher free of cost.

6. This Agreement shall be in full force and effect from the first date written above for a period of 18 months. This Agreement may be terminated upon thirty (30) days written notice by either party or mutual agreement of the parties. Termination of the Agreement will terminate Researcher's access to EPHI's data.

7. The terms and provisions of this Agreement represent the entire understanding of the parties with respect to the subject matter of this Agreement.

8. The undersigned individuals represent that they are fully authorized to execute this Agreement on behalf of the respective parties, perform the obligations under this Agreement, and make all representations, warranties, and grants as set forth herein.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed effective as of the first date written above.

DECLARATION OF AGREED AND ACCEPTED PARTNERS

SIGNED for and on behalf of

The University of Adelaide

by its duly authorised officer:
Professor Richard Russell AM

Pro Vice-Chancellor (Research Operations)

(Print Name)

Title

Date: 22.12.15

SIGNED for and on behalf of

Ethiopian Public Health Institute

by its duly authorised officer:

(Print Name)

Title

Date: Dec 22, 2015

Researcher: I have read and understand the conditions outlined in this agreement and I understand that I must abide by them to receive and use the Data.

Name: Gizachew Assef Tessema

Signature: _____ Date 22 Dec 2015



Appendix D2- Support letter to conduct qualitative study in Amhara region from Dean's of College of Medicine and Health Sciences at the University of Gondar

ጎንደር ዩኒቨርሲቲ
ህክምናና ጤና ሳይንስ ኮሌጅ
 ዲን ጽ/ቤት



University of Gondar
College of Medicine & Health Sciences
 Dean Office

ቁጥር: ሀጤ/ሰ/08/1169/107
 Ref No.: CMHS
 ሚያዝያ 25/2009 ዓ.ም

ለ ----- ሆስፒታል/ጤና ጣቢያ

ጎንደር

ጉዳዩ :- ትብብርን ይመለከታል

በጎንደር ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ በሀብረተሰብ ጤና አጠባበቅ ተቋም የሰራ ባልደረባ የሆኑት አቶ ግዛቸው አሰፋ ተሰማ በአሁኑ ሰዓት በአደላይድ ዩኒቨርሲቲ አውስትራሊያ የይክትራት ዲግሪያቸውን በመስራት ላይ ይገኛሉ።

ስለሆነም በአሁኑ ወቅት " Health Providers' perspective on the implementation of best practice guidelines in family planning services in Amhara Region Ethiopia A qualitative study" በሚል ርዕስ በተመረጡ የጤና ተቋማት ስለሚሰሩና የእናንተ ጤና ተቋም በጥናቱ ስለተካተተ አስፈላጊውን ትብብር እንድታደርጉላቸው እየጠየቅን ጥናቱን ለማክናወን ይረዳቸው አንድ በአደላይድ ዩኒቨርሲቲና በጎንደር ዩኒቨርሲቲ የተሰጣቸውን Ethical Clearance አያይዘን መላካችን እንገልጻለን።

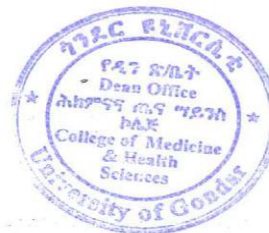
ከሰላምታ ጋር

ግልባጭ

ለአካላዊ ምርመራ/ሀብ/አገ/ምክትል ዲን

ለሀብረተሰብ ጤና አጠባበቅ ተቋም

ጎንደር ዩኒቨርሲቲ



ዲ/ር ሰላላ ይዩ
 ተባባሪ ፕሮፌሰር
 Sisay Yifru (Dr.)
 Associate Professor

ህክምናና ጤና ሳይንስ
 ኮሌጅ ዲን
 Dean of College of Medicine
 & Health Sciences

የግ.ሣ.ቁ
 P.O. Box - 196

ጎንደር ኢንተርኔት
 Gondar, Ethiopia
 E-mail: aog@cmhs.uog.edu.et
 Web: www.uog.edu.et
 እብክን መልስ ሲሰጡ የእኛን የደብዳቤ ቁጥር ይጥቱ
 In replay please refer to our Ref. No.



Fax	058 114 1240	President Office	058 114 1231
	058 111 1479	Dean, CMHS	058 111 0243
		Aca/Res/Com/Serv/Vice Dean, CMHS	058 111 7679
		College Administrator	058 111 0157
		Associate Registrar	058 111 0166
		Associate Student Dean	058 111 0667

Appendix D4-Support letter to conduct qualitative study in Amhara region from Bahir Dar City Administration Health Department

ባህር ዳር ከተማ አስተዳደር
ጤና ጥበቃ መምሪያ



Bahir Dar City Administration
Health Department

ቁጥር ባክአጤ/172.6/08/መ.2
ቀን 17/09/09 ዓ.ም

ለባህር ዳር ጤና ጣቢያ
ለአባይ ጤና ጣቢያ
ለሃን ጤና ጣቢያ
ለሽምብጥ ጤና ጣቢያ
ለሹም አቦጤና ጣቢያ
ለግንቦት 20 ጤና ጣቢያ
ለሹም አቦ ክፍለ ከተማ
ለፋሲሎ ክፍለ ከተማ
ባህርዳር

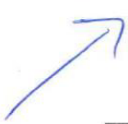
ጉዳይ :- የጥናታዊ ጽሁፍ ትብብርን ይመለከታል ፣

በጉንደር ዩኒቨርሲቲ የህክምናና ጤና ሳይንስ ኮሌጅ በህብረተሰብ ጤና አጠባበቅ ተቋም የሥራ ባልደረባ የሆኑት አቶ ግዛቸው አሰፋ ተሰማ በአሁኑ ስዓት በአደላይድ ዩኒቨርሲቲ አውስትራሊያ የዶክተራት ዲግሪውን በመስራት ላይ የሚገኙ መሆኑን ገልጾ “ በHealth Providers” Perspective on the Implementation of Best Practices Guidelines in Family Planning services In Amhara Region Ethiopia Qualitative study ” በሚል ርዕስ በተቋሙ ላይ ጥናታዊ ጽሁፋቸውን እንዲሰሩ በዩኒቨርሲቲ በEthical review committee ንግግላቸው ታይቶ የፀደቀላቸው ስለሆነ አስፈላጊው የስራ ትብብር እንዲደረግላቸው በማለት የአብክመ ጤና ጥበቃ ቢሮ በቁጥር ጤ/ም/ቴሽ/1/690/09 በቀን 16/09/09 ዓ.ም በተፃፈ ደብዳቤ ተገልጾልናል ።

ስለሆነም ጥናታቸው የተሳካ ይሆን ዘንድ አስፈላጊውን የመረጃና የስራ ትብብር እንዲደረግላቸው እያሳወቅን ጥናቱ ሲጠናቀቅ ውጤቱ ለጤና ተቋማት ጥቅም ላይ ለማዋልና መዋሉን ለመከታተል እንችል ዘንድ አንድ ቅጽ ለጤና ምርምር ቴክኒሻን ግር ዋና የስራ ሂደት እንዲቀርብ ጥናቱን ለሚያከናውን ቡድን በግልባጭ እናሳውቃለን ።

ለጤናችን በጋራ እንስራ

ግልባጭ//



❖ ለአቶ ግዛቸው አሰፋ ተሰማ
ባህር ዳር



Handwritten signature in blue ink

A/B

☎ 058-220-1013

ለጤናችን በጋራ እንስራ!!!
FAX- 058-220-4647



Appendix D5-Support letter to conduct qualitative study in Amhara region from Gondar City Administration Health Department

በአማራ ብሔራዊ ክልላዊ መንግስት
 የጎንደር ከተማ አስተዳደር ጤና ጥበቃ መምሪያ
 ☎ 058114169/0581122066



Amhara National Regional state
 Gondar City Administration Health department
 FAX 0581122066

ቁጥር ንክጤ/መም/ገጭ/ጎ /ሱ-04
 ቀን 30/8/2009

ለ.....ጤና ጣቢያ
ጎንደር፣

ጉዳዩ:- ትብብርን ይመለከታል

በርዕሱ እንደተጠቀሰው በጎንደር ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ በህብረተሰብ ጤና አጠባበቅ ተቋም የስራ ባለደረባ የሆኑት አቶ ግዛቸው አሰፋ ተሰማ በአደላይድ ዩኒቨርሲቲ አውስትራሊያ የዶክተራት ዲግሪያቸውን በመስራት ላይ ይገኛሉ። ስለሆነም በአሁኑ ወቅት "Health providers perspective on the implementation of best practice guidelines in family planning services in Amhara Region Ethiopia A qualitative study " በሚል ርዕስ በተመረጡ የጤና ተቋማት በመንቀሳቀስ ጥናታዊ ጽሁፍ እንዲሰሩ ኘሮፖዛላቸው በዩኒቨርሲቲው ETHICAL Review Committee ታይቶ የፀደቀላቸው መሆኑን በቁጥር ህጤሳኮ/1169/09 በቀን 25/8/2009 ዓ/ም በተፃፈ ደብዳቤ የጎንደር ዩኒቨርሲቲ ያሳወቀን ስለሆነ በእናንተ በኩል አስፈላጊው የሥራ ትብብር እንዲደረግላቸው እናሳስባለን።

« ከሠላምታ ጋር»

ቅጂ//
 - ለመምሪያ ም/ኃላፊ
 ለአቶ ግዛቸው አሰፋ
ጎንደር ፣



የእናንተ ሞት የሰጥኩ ሞት ስለሆነ ሰጠኝ ሰጠኝና ሰጠኝ ጤና ተኮረት ስንስጥ !!

Appendix E-Supplementary document for Study 3

- RECORD Statement
- Description of variables used in the analysis

Appendix E1-RECORD Statement

Supplementary file 1. Checklist of recommendations for reporting of observational studies using the REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement ⁽²⁰⁸⁾

	Item No.	STROBE items	Location in manuscript where items are reported	RECORD items	Location in manuscript where items are reported
Title and abstract					
	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found		RECORD 1.1: The type of data used should be specified in the title or abstract. When possible, the name of the databases used should be included. RECORD 1.2: If applicable, the geographic region and timeframe within which the study took place should be reported in the title or abstract. RECORD 1.3: If linkage between databases was conducted for the study, this should be clearly stated in the title or abstract.	Abstract Methods
Introduction					
Background rationale	2	Explain the scientific background and rationale for the investigation being reported			Introduction
Objectives	3	State specific objectives, including any prespecified hypotheses			Introduction
Methods					
Study Design	4	Present key elements of study design early in the paper			Methods
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection			Methods

*Reference: Benchimol EI, Smeeth L, Guttmann A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.

*Checklist is protected under Creative Commons Attribution ([CC BY](https://creativecommons.org/licenses/by/4.0/)) license.

Supplementary file 1. Cont.

	Item No.	STROBE items	Location in manuscript where items are reported	RECORD items	Location in manuscript where items are reported
Participants	6	<i>Cross-sectional study</i> - Give the eligibility criteria, and the sources and methods of selection of participants		<p>RECORD 6.1: The methods of study population selection (such as codes or algorithms used to identify subjects) should be listed in detail. If this is not possible, an explanation should be provided.</p> <p>RECORD 6.2: Any validation studies of the codes or algorithms used to select the population should be referenced. If validation was conducted for this study and not published elsewhere, detailed methods and results should be provided.</p> <p>RECORD 6.3: If the study involved linkage of databases, consider use of a flow diagram or other graphical display to demonstrate the data linkage process, including the number of individuals with linked data at each stage.</p>	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.		RECORD 7.1: A complete list of codes and algorithms used to classify exposures, outcomes, confounders, and effect modifiers should be provided. If these cannot be reported, an explanation should be provided.	Methods and supplementary file 1
Data sources/ measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group			Methods and supplementary file 2
Bias	9	Describe any efforts to address potential sources of bias			Methods
Study size	10	Explain how the study size was arrived at			Methods
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why			Methods and supplementary file 1

*Reference: Benchimol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.

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Supplementary file 1. Cont.

	Item No.	STROBE items	Location in manuscript where items are reported	RECORD items	Location in manuscript where items are reported
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses			Methods
Data access and cleaning methods		..		RECORD 12.1: Authors should describe the extent to which the investigators had access to the database population used to create the study population. RECORD 12.2: Authors should provide information on the data cleaning methods used in the study.	Methods & Author's Contributions
Linkage		..		RECORD 12.3: State whether the study included person-level, institutional-level, or other data linkage across two or more databases. The methods of linkage and methods of linkage quality evaluation should be provided.	N/A
Results					
Participants	13	(a) Report the numbers of individuals at each stage of the study (<i>e.g.</i> , numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed) (b) Give reasons for non-participation at each stage. (c) Consider use of a flow diagram		RECORD 13.1: Describe in detail the selection of the persons included in the study (<i>i.e.</i> , study population selection) including filtering based on data quality, data availability and linkage. The selection of included persons can be described in the text and/or by means of the study flow diagram.	Methods

*Reference: Benchimol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The Reporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.

*Checklist is protected under Creative Commons Attribution ([CC BY](https://creativecommons.org/licenses/by/4.0/)) license.

Supplementary file 1. Cont.

Descriptive data	14	(a) Give characteristics of study participants (<i>e.g.</i> , demographic, clinical, social) and information on exposures and potential confounders (b) Indicate the number of participants with missing data for each variable of interest (c) <i>Cohort study</i> - summarise follow-up time (<i>e.g.</i> , average and total amount)			Results
Outcome data	15	Report numbers of outcome events or summary measures			Results
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (<i>e.g.</i> , 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period			Results
Other analyses	17	Report other analyses done— <i>e.g.</i> , analyses of subgroups and interactions, and sensitivity analyses			N/A
Discussion					
Key results	18	Summarise key results with reference to study objectives			Discussion
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias		RECORD 19.1: Discuss the implications of using data that were not created or collected to answer the specific research question(s). Include discussion of misclassification bias, unmeasured confounding, missing data, and changing eligibility over time, as they pertain to the study being reported.	Discussion

*Reference: Benchimol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.

*Checklist is protected under Creative Commons Attribution ([CC BY](https://creativecommons.org/licenses/by/4.0/)) license.

Supplementary file 1. Cont.

Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence			Discussion
Generalisability	21	Discuss the generalisability (external validity) of the study results			Discussion
Other Information					
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based			Funding
Accessibility of protocol, raw data, and programming code		..		RECORD 22.1: Authors should provide information on how to access any supplemental information such as the study protocol, raw data, or programming code.	Data Access

*Reference: Benchimol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.

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Appendix E2-Description of variables used in the analysis

Supplementary file 2. Description of variables used in the analysis

Variable	Type of variable and/or definitions
ESPA+ 2014 DATASET	
Facility type and location	
Facility type	Binary (public, private); public included government and military facilities (health post, health centre, and primary hospital), whereas private included private for profit, private for-not-profit (lower clinic, medium clinic, higher clinic and primary hospital)
Urban/rural location	Binary (urban, rural), classified based on the whether the facility is located in urban or rural areas
Region	Categorical, 11 administrative regions
Facility's structural aspect	
Material resources	
Basic amenities/infrastructure	
Availability of electricity/generator	Binary (yes, no); whether or not the health facility possessed electricity/generator
Availability of functional landline telephone	Binary (yes, no); whether or not the health facility possessed functional telephone/cell phone
Availability of cell phone	Binary (yes, no); whether or not the health facility possessed functional cell phone
Availability of functional computer	Binary (yes, no); whether or not the health facility possessed functional computer
Access to email for two hours in a day	Binary (yes, no); whether or not the health facility get email for two hours/day
Access to water supply	Binary (yes, no); whether or not the health facility possessed water supply
Equipment and supplies	
Availability of body weight measurement tool	Binary (yes, no); whether or not the facility showed functioning weight scales.
Availability of Blood Pressure (BP) measurement tool	Binary (yes, no); whether or not the facility showed functioning BP measurement apparatus.
Availability of stethoscope	Binary (yes, no); whether or not the facility showed functioning stethoscope
Availability of examination light	Binary (yes, no); whether or not the facility showed functioning examination light
Availability of exam couch	Binary (yes, no); whether or not the facility showed examination couch for examining clients

FP- Family planning, BP- Blood Pressure

Supplementary file 2. Cont.

Variable	Type of variable and/or definitions
Availability of sample FP methods	Binary (yes, no); whether or not the facility showed sample FP methods for counselling
Availability of visual aid and leaflet	Binary (yes, no); whether or not the facility showed visual aid and leaflet for demonstration during counselling
Availability of pelvic model for demonstrating IUD use demonstration	Binary (yes, no); whether or not the facility showed pelvic model for demonstrating IUD use demonstration
Availability of model for demonstrating condom use	Binary (yes, no); whether or not the facility showed model for demonstrating condom
Mean number of contraceptive methods offered and/or prescribed	Continuous (0-12); the mean number of contraceptive methods offered or prescribed in the facility. The contraceptive methods included combined oral contraceptive pills, progestin only pills, progestin only injectables, male condom, female condom, implant, IUD, periodic abstinence, emergency pills, female sterilization, and vasectomy (male sterilization), and lactational amenorrhea.
Mean number of infection prevention precaution measures	Continuous (0-14); the mean number of infection prevention precaution measures involved in the facility. It included availability of running water, handwashing soap, alcohol based hand rub, waste receptacle, safety box, disposable latex glove, disinfectant/antiseptics, syringe, medical masks, gowns, eye protection goggle, standard precaution guidelines, and boots.
Human resources and organisational structure, and provision of other reproductive and child health services	
Health availability of twenty four hours/seven days	Binary (yes, no); whether or not facilities have health providers available to provide services for twenty four hours of day (day, night, and week shifts)
Trained provider availability	Binary (yes, no); whether or not the provider received FP related training in the past 24 months before the survey
Organisational structure	
Quality assurance system	Binary (yes, no); whether or not the facility routinely carry out periodic audit of registers to see facility-wide review of clients/patients data
FP guidelines/protocols	Binary (yes, no); whether or not the facility possessed FP guidelines/protocols on the date of survey
Client chart/record	Binary (yes, no); whether or not the facility possessed client chart or recoding for taking notes about the clients during history taking and physical assessment
Supervision in the past six months	Binary (yes, no); Whether or not the facility received supervisory visit from district/regional/ zonal/federal offices in the past six months before the survey

FP- Family planning, IUD- Intrauterine Device

Supplementary file 2. Cont.

Variable	Type of variable and/or definitions
Private room for providing counselling services	Binary (yes, no); whether or not the facility's possessed private room for counselling during FP services
Presence of user fee for FP services	Binary (yes, no); whether or not the facility collected users' fee for FP services.
Mean number of days/week that FP was provided	Continuous; mean number of days that FP services were provided in a week
Provision of other reproductive and child health services	
Antenatal care services	Binary (yes, no); whether or not the facility provided antenatal care services during the survey
Normal delivery services	Binary (yes, no); whether or not the facility provided normal delivery services during the survey
Services for under-five children	Binary (yes, no); whether or not the facility provided under five services during the survey
Services for the prevention of mother-to-child transmission (PMTCT) of HIV	Binary (yes, no); whether or not the facility provided HIV test services during the survey
Diagnosis and treatment STI	Binary (yes, no); whether or not the facility provided diagnosis and treatment STI services during the survey
EDHS 2016 DATASET	
Sources of FP method by facility types	Categorical; public (government health station/centre, government health post, and public pharmacy, and other public sector), private (private clinics, pharmacy, Non-Governmental organisation's health facilities, private clinics, and private pharmacies, and other private medical)
Characteristics of women	
Age category in years	Categorical; 15-24, 25-34, 35+
Marital status	Binary (yes, no); currently married (married or in sexual union), currently unmarried (never married, divorced, widowed, separated)
Place of residence	Binary (yes, no); Urban, rural
Region	Categorical; 11 administrative regions
Religion	Categorical; Orthodox, Muslim, Protestant, others
Highest educational status	Categorical; none, primary, secondary+
Highest partner educational status	Categorical; none, primary, secondary+
Wealth index	Categorical; poorest, poorer, middle, richer, richest
Number of living children	Categorical; 0, 1-2, 3-4, 5+

FP- Family planning, STI- Sexual transmitted Infections, HIV- Human Immunodeficiency Virus

Supplementary file 2. Cont.

Variable	Type of variable and/or definitions
Exposure to FP media	Binary (yes, no); Whether or not a woman heard or read about FP methods in radio/television/newspaper/mobile message
Women decision making	Binary (yes, no); whether or not a woman able to make decisions alone or with her partner regarding about her health care, large household purchase, and visiting her families or relatives

FP- Family planning