

CONTRACEPTIVE USE AMONG ADOLESCENT GIRLS IN ZAMBIA: A STUDY ON ADOLESCENTS' NEEDS, PREFERENCES AND PERSPECTIVES ON CONTRACEPTION METHODS

MUMBI CHOLA
(217082141)



A thesis submitted to the College of Health Sciences, University of KwaZulu-Natal, Howard College, in fulfilment of the requirements for the degree of Doctor of Philosophy in Medicine
(Public Health Medicine)

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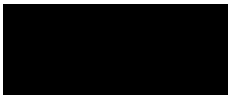
217082141

A thesis by Manuscripts submitted to the Discipline of Public Health Medicine, College of Health Science, University of KwaZulu-Natal in fulfilment of the academic requirements for the degree of Doctor of Philosophy (PhD) in Public Health Medicine.

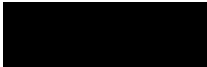
This is to attest that the contents outlined in this thesis are the original research work done and reported by the author (Mumbi Chola). The research work detailed in this thesis has not been previously submitted to any tertiary institution for the award of a degree or diploma. The use of other researchers/scientists' work in the text has been acknowledged accordingly.

As the candidate's supervisors, we have approved this thesis for submission

Supervisor

Signed:  **Name:** Prof. Themba G. Ginindza **Date:** 15/03/2023

Co-supervisor

Signed:  **Name:** Dr Khumbulani W. Hlongwana **Date:** 15/ 03/ 2023

Format of dissertation

This thesis is presented in manuscript format, which includes published and prepared journal articles that have emanated from the research in this field.

Research Ethical Approval

Name of Ethics Committee	Date	Reference number
University of Kwazulu-Natal Biomedical Research Ethics Committee (UKZNBREC)	23 rd September 2019	BE 288/18
University of Zambia Biomedical Research Ethics Committee (UNZABREC)	29 th August 2019	Ref No. 157-2019

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Declaration One: Plagiarism

I, **Mumbi Chola**, declare that;

- i. The research reported in this dissertation, except where otherwise indicated, is my original work.
- ii. This dissertation has not been submitted for any degree or examination at any other university.
- iii. This dissertation does not contain other persons' data, pictures, graphs, or other information unless specifically acknowledged as being sourced from other persons.
- iv. This dissertation does not contain other persons' writing unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
 - a. their words have been rewritten, but the general information attributed to them has been referenced.
 - b. where their exact words have been used, their writing has been placed inside quotation marks and referenced.
- v. Where I have reproduced a publication of which I am an author, co-author, or editor, I have indicated in detail which part of the publication was written by myself alone and have fully referenced such publications.
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Signed:



Date: 10th April 2023


Declaration Two: Publications

Manuscripts	Title	Contributions	Status
Paper 1	Mapping evidence on decision-making on contraceptive use among adolescents: a scoping review protocol	MC conceptualised the study and prepared the manuscript under the guidance and supervision of TG and KH. All authors contributed to the development and design of the study. TG and KH contributed to the methodology and reviewing of the manuscript. All authors contributed to the final version. MC, as the primary author, led all reviews and addressed all comments from the journal with support from KH and TGG until the manuscript was published.	Published
Paper 2	Mapping evidence regarding decision-making on contraceptive use among adolescents in sub-Saharan Africa: a scoping review.	M.C. conceptualised the study and prepared the manuscript under the guidance and supervision of T.G.G. and K.W.H. All authors contributed to the development and design of the study. T.G.G. and K.W.H. contributed to the methodology and review of the manuscript. MC, as the primary author, led all reviews and addressed all comments from the journal with support from KH and TGG until the manuscript was published.	Published
Paper 3	Patterns, trends, and factors associated with contraceptive use among adolescent girls in Zambia (1996 to 2014): a multilevel analysis	MC conceptualised the study, designed the methodology, led the formal data analysis and wrote the initial draft. KH and TGG reviewed the methodology and results of the study and reviewed the manuscript. KH and TGG supervised and approved the work. MC, as the primary author, led all reviews and addressed all comments from the journal with support from KH and TGG until the manuscript was published.	Published
Paper 4	Factors contributing to changes in contraceptive use among adolescent girls in Zambia: a decomposition analysis	MC conceptualised the study, designed the methodology, led the formal data analysis using decomposition analysis and wrote the first draft of the manuscript. KH and TGG reviewed the methodology and results of the study and reviewed the manuscript. As the primary author, MC finalised the manuscript, submitted it to the journal, led the reviews, and addressed comments from the journal. KH and TGG supervised and approved the work.	Published
Paper 5	Understanding the patient experience of adolescent girls in Zambia when	MC conceptualised the study, designed the methodology, led the formal data analysis and wrote the initial draft. MC employed thematic analysis after using NVivo software to manage and code the data. KH and TGG	Under review

	accessing and using contraceptives	reviewed the methodology and results of the study and reviewed the manuscript. KH and TGG supervised and approved the work.	
Paper 6	Motivators and Influencers of adolescent girls' decision-making regarding contraceptive use in four districts of Zambia	MC conceptualised the study, designed the methodology, led the formal data analysis and wrote the initial draft. MC employed thematic analysis after using NVivo software to manage and code the data. KH and TGG reviewed the methodology and results of the study and reviewed the manuscript. KH and TGG supervised and approved the work. MC, as the primary author, led all reviews and addressed all comments from the journal with support from KH and TGG until the manuscript was published.	Published

I (Mumbi Chola), Prof. Ginindza and Dr. Hlongwana conceptualised the above-mentioned publications. I led the data collection, management, and analysis and drafted all the manuscripts. All authors reviewed and edited the papers and made further contributions.

Candidate: Mumbi Chola

Signed: 

Date: 10th April 2023

Dedication

This research is dedicated to my family and all the adolescent girls, those who participated in this research, and those who will benefit from this research.

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My sincere gratitude goes to everyone who helped me in various ways in my studies over the years. Your assistance has helped me complete this work; I am eternally grateful for that.

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ABSTRACT

The fertility rate in Africa is among the highest in the world, and this trend is projected to continue unless drastic interventions are put in place to avert the situation. Contraceptive use among adolescents in sub-Saharan Africa remains very low despite various interventions to improve the uptake. The study aimed to examine the key determinants of contraceptive use among adolescent girls in Zambia; specifically, i) examining patterns, trends and factors that drive poor usage of contraceptives; ii) exploring the motivators and influencers of decision-making regarding contraceptive use among adolescent girls; and finally, iii) understanding their perspectives on existing contraceptive methods.

The study examined patterns, trends and factors associated with contraceptive use among adolescents in Zambia, using data from 1996, 2001/2, 2007 and 2013/14 Zambia Demographic and Health Surveys. Qualitative data was collected through focus group discussions and analysed using thematic analysis. Permission to conduct the study was obtained from the Ministry of Health and the National Health Research Authority. Ethical approvals were provided by the Biomedical Research Ethics Committees (BRECs) of the University of Zambia and the University of KwaZulu-Natal in South Africa.

Results revealed that contraceptive use among adolescent girls in Zambia remained low over the 18 years and increased by only 3%, particularly among younger, uneducated, and unmarried sexually active adolescent girls. Marriage or living with a partner contributed the most to the change in contraceptive use (44%), while living in a rural area accounted for approximately 20%. Adolescent girls' experience with contraceptives was affected by various factors such as knowledge of contraceptives, including sources of information and contraceptives, experience with using contraceptives, challenges with access to contraceptives, and misconceptions about contraceptives. The interaction of factors related to their personal experience, their community and the environment in which they access contraceptive services all contribute to the overall patient experience and influence the adolescent girls' contraceptive decision. Most of the motivators for the use and/or non-use of contraceptives are intrapersonal and interpersonal.

Contraceptive use among adolescent girls remains low and is determined by various factors. Key influencers and motivators for contraceptive use involve people in their lives, such as partners, family and community members. Interventions targeting increasing demand, access

and use of contraceptives among adolescents must be innovative, participatory and implemented within the context of local cultural norms.

ABBREVIATIONS

ASRH	Adolescent Sexual and Reproductive Health
CPR	Contraceptive Prevalence Rate
LMICs	Low and Medium Income Countries
MoH	Ministry of Health
NGOs	Non-governmental Organisations
NHRA	National Health Research Authority
SSA	sub-Saharan Africa
UKZNBREC	University of KwaZulu-Natal Biomedical Research Ethics Committee
UNZABREC	University of Zambia Biomedical Research Ethics Committee
ZDHS	Zambia Demographic and Health Survey

DEFINITION OF TERMS these terms need a choice of reference

Adolescents: are people aged between 10-19 years with those aged 10-14 considered younger adolescents while those ages 15-19 considered older adolescents. However, the focus of this study was on the older adolescent girls aged 15-19 years.

Age-specific fertility rate: this is the number of births occurring during a given year or reference period per 1,000 women of reproductive age classified in single-or five-year age groups

Contraceptives: devices or methods that are used to prevent pregnancy

Contraceptive Prevalence Rate: this is the percentage of women aged 15-49 years, married or in-union, who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used (WHO definition).

Decision making: the act or processes of making a choice. In the context of this study, this is the act or process of making a decision whether or not to use contraceptives.

Influencers: these are persons or individuals that have an impact on adolescent girls' decisions on whether or not to use contraceptives.

Motivator: In the context of this study, this is an incentive or reason that influences adolescent girls to either use or not use contraceptives.

CHAPTER ONE

INTRODUCTION AND RATIONALE FOR THE RESEARCH

Overview

This chapter covers the background information, problem statement, study justification and the purpose of the study. It also presents the study's aims, objectives, hypotheses, list of manuscripts and summary of all the chapters.

1.1. Background

Adolescent pregnancy remains a global health problem with dire social, health and economic consequences for young mothers and their children. Approximately 21 million girls aged 15-19 years in developing countries become pregnant annually with an estimated 12 million of them giving birth (1). Although adolescent birth rates have been declining, there are disparities across regions and within countries (2), with these rates being higher among those with lower socioeconomic status (1,3).

Contraceptive use remains a key intervention in the prevention of unplanned and unwanted pregnancies. It affords women the chance to decide when to have their children. It has been estimated that over the 20-year period from 1998 to 2008, contraceptive use reduced maternal deaths in developing countries by approximately 40% through the reduction of unwanted pregnancies (4). Analysis of DHS data between 1986 and 2006 showed that based on data from 25 countries, on average, approximately 25% of young women had used contraceptives by the age of 18 years, with ever use of contraceptives by this age being as high as 51-61% in countries such as Bangladesh, Brazil and Colombia (5). Furthermore, 12 out of 16 countries with historical contraceptive data from at least two DHSs showed increases of 2-17% in the proportion of adolescent girls using contraceptives by the age of 19 years (5). Analysis of DHS data from 29 countries in sub-Saharan Africa conducted between 2010 and 2018 showed that 29% of adolescents and young women used modern contraceptives with the largest proportion reported in Lesotho (59.2%) and the lowest in Chad (5.1%) (6).

In Zambia, only 32.5 % of all women aged 15-49 years in Zambia currently use modern contraception methods (7). Contraceptive use was even lower among females aged 15-19 years with the use of any method of contraception in this age at 10.6% with 10.2% using any modern

contraceptive method (7). This is despite knowledge being almost universal and the widely documented consequences or risks of teenage pregnancies. The 2013/14 Zambia Demographic and Health Survey (ZDHS) reported that 98.8% of all women and 99.5% of all men had heard of at least one contraception method (7).

Sexually activity among adolescent girls, coupled with low contraception use, predisposes them to unplanned teenage pregnancy and also poses major health risks, including pregnancy complications, sexually transmitted infections (STIs) and HIV/AIDS. Approximately half (49.7%) of adolescent girls are sexually active, with 75.9% not using contraceptives (8). In terms of timing of sexual intercourse, 21.8% reported having had sexual intercourse in the last 4 weeks, while 17.6% reported having had sex in the last year (7). Beyond the potential health consequences associated with this scenario, these high rates of sexual activity and low use of contraception among adolescents could be contributing considerably to unwanted pregnancies. Adolescent girls and young women in sub-Saharan Africa reported an overall prevalence of unwanted pregnancies of 30.0% with Southern Africa reporting the highest proportion (60.0%) and Eastern Africa reporting the lowest (20.4%) (9). Unwanted pregnancies contribute to high fertility rates among these adolescents. Age-specific fertility rates showed that women aged 15-19 years reported 141 births per 1000 women with 97 births per 1000 women reported in urban areas compared to 184 births per 1000 women in rural areas (7). More than 30% of all women give birth by the age of 18 while among, adolescents aged 15-19 years, approximately 29% are already mothers or pregnant with their first child (10).

Use and Non-use of Contraception

Contraceptive use is influenced by a multitude of factors, especially among adolescents. A study among adolescents aged 15 - 19 years found that perceptions associated with contraceptive use outcomes included adolescent approval of contraceptive use, knowledge of how to use contraceptives, ability to get contraceptives for self, and sexual partner communication (11). It has also been found that both individual and community characteristics were important predictors of whether an adolescent would use contraceptives or not (12,13). At the individual level, the odds of contraceptive use were more than thirteen times higher for adolescent women with one or more children ever born and almost three times higher for those ever married (12). Having medium and high access to media also increased the odds of using contraceptives use in Zimbabwe (12). A qualitative study conducted among young women and men aged 13–25 years in South Africa found that there were six factors hindering condom use,

and these were lack of perceived risk, peer norms, condom availability, adult attitudes to condoms and sex, gendered power relations and the economic context of adolescent sexuality (14).

Lack of comprehensive knowledge about contraceptives and cultural barriers also contribute to low contraceptive use among adolescents (15). Studies have revealed that while adolescents were aware of the availability of contraceptive services, they lacked comprehensive knowledge about contraception and contraceptives (14,15). This led to negative attitudes towards using the services (16). Cultural barriers related to communication about sex-related matters also contributed to the non-use or incorrect use of contraception (16). Cultural norms related to sexual health issues form a barrier to open discussions about issues related to sexual health and consequently contraception. Cultural norms surrounding fertility tend to influence and affect contraceptive use among women, particularly where male dominance in marriages or relationships and opposition to contraceptive use prevail (17). Adolescents, therefore, often use contraceptives without the knowledge of their parents or guardians, often hiding the pills from their parents (18) which makes them forget to take them leading to unwanted pregnancy (16).

Providing reliable access to quality contraceptive products is a major challenge for many developing countries (19). As such, adolescent girls, like older women, face many concrete barriers to accessing family planning services. Clinics, for example, are not easily accessible for rural residents (17,20); furthermore, many have difficulties in maintaining quality staff (20,21) and keeping contraceptives in stock (22). The cost of contraceptives is also a significant barrier for young women – who must also deal with unique age-related needs for privacy and, in some cases, laws that prohibit access to contraceptives for unmarried women (21,22). The lack of information on contraception and misconceptions about the effects of contraception is also another challenge. Medically inaccurate notions about how conception occurs and fears about the effects of contraception on fertility and menstruation are among the barriers to sustained contraceptive use and these are not taken seriously by nurses (23). Nurses' attempts to stigmatise teenage sexuality, their scolding and harsh treatment of adolescent girls, and their unwillingness to acknowledge adolescents' experiences as contraceptive users, undermined the effective use of contraception by girls (23).

In many poor communities of Low and Medium Income Countries (LMICs), contraceptive methods are not available to adults or adolescents (19). Even when contraceptive methods are available, laws and policies prevent their provision to unmarried adolescents or those under a

certain age (19). Even where there are no legal restrictions, health workers in many settings refuse to provide unmarried adolescents with contraceptive information and services because they do not approve of premarital sexual activity. And when they do provide contraceptive methods, they often limit this to condoms, with a misconception that long-acting hormonal methods and intrauterine devices are inappropriate for nulliparous women (16).

1.2. Statement of the problem

Contraceptive use among adolescent females in Zambia remains low, with only 10.6 % using any contraceptive method (7). Several studies have shown that many factors, both at individual and cultural/ societal levels, affect and influence the decision-making regarding contraception use among adolescents (11,16,24). In Zambia, however, there is a lack of understanding of the patterns and trends of contraception use among adolescents and associated factors, including how they have changed over the past two decades. Existing information focuses on individual Zambia Demographic and Health Surveys and compares adolescents with adult women across various countries (5). In general, many studies on contraception use in LMICs have focused more on barriers to accessing conception (14,19,25).

Meanwhile, mixed methods studies exploring adolescents' decision-making on using contraceptives, as well as their needs, preferences and perspectives regarding existing and future contraception methods, are lacking. This information is vital to developing intervention strategies to improve contraception uptake among adolescents in Zambia. This study will provide much-needed data on adolescents' perspectives regarding their needs, preferences, and decision-making processes concerning contraceptive use.

1.3. Purpose of the Study

The purpose of this study was to generate information on the factors that influence contraceptive use among adolescent girls aged 15-19 years in Zambia as well as generate insights into the key influencers and motivators of their decision-making on whether or not to use contraceptives. This information is essential for policymakers and program managers in addressing poor contraception usage among adolescents in Zambia. It is meant to provide a better understanding of what has been driving the existing patterns and trends and insights on how to better influence adolescent girls' contraceptive behaviour in Zambia. This information is also important in enhancing sexual reproductive health (SRH) policies and programmes with a focus on adolescents in Zambia.

1.4. Research Questions

1. What is the current evidence on adolescent girls' decision-making regarding contraceptive use in sub-Saharan Africa:
2. What are the patterns and trends and associated factors of contraception use among adolescents in Zambia?
3. What are the factors associated with contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014)
4. What are the contraceptive experiences, needs, preferences, and perspectives of adolescents in Zambia regarding existing and future contraception methods?
5. How do adolescents make decisions on whether or not they will use a contraceptive and what factor influence their decisions?

1.5. Study Aim and Objectives

Aim

To examine contraceptive use patterns and trends among adolescents and associated factors, understand adolescent contraceptive use experiences, and explore factors that motivate and influence adolescent girls' decisions regarding contraceptive use.

Specific Objectives

1. To map evidence on adolescent girls' decision-making regarding contraceptive use in sub-Saharan Africa through a scoping review.
2. To examine levels, patterns, and trends of contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).
3. To determine the factors associated with contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).
4. To understand the adolescent girls' experience with accessing and using in Zambia and the perspectives and preferences that adolescent girls have regarding existing and future contraceptive methods.
5. To explore the motivators and influencers of adolescent girls' decision-making on whether or not to use contraceptives.

1.6. Significance of the study

Conducting this study was important in order to better understand adolescent girls' contraceptive behaviours, and factors that influence and motivate their decision-making regarding contraceptive use. The results of this study are useful and highlight important factors to consider in programmes that target increasing contraceptive use among adolescent girls in Zambia. This study makes an important contribution to the field of contraception use in Zambia, especially given the dearth of local research that delves into understanding what drives adolescent girls' contraceptive decisions.

1.7. Thesis Outline

Chapter One: Introduction. This chapter provides background information about contraceptive use among adolescent girls. The chapter also discusses the rationale and significance of this study and describes the research questions and objectives.

Chapter Two: Literature review. This chapter includes searching, evaluating, and narrating available literature on contraceptive use among adolescent girls in Zambia and other sub-Saharan African countries.

Chapter Three: Systematic scoping review. This chapter builds on the literature review presented in Chapter Two, and reports on the scoping review of existing evidence focusing on adolescent decision-making regarding contraceptive use. This review examined existing literature to better understand the factors that motivate and influence adolescent girls in their decisions on whether or not to use contraceptives. This chapter addresses objective one of the study. The chapter includes a systematic scoping review protocol and the actual systematic scoping review manuscript. Both the protocol and the actual scoping review have been published.

- Chola M, Hlongwana K, Ginindza TG. Mapping evidence on decision-making on contraceptive use among adolescents: a scoping review protocol. *Syst Rev*. 2018 Nov;7(1):201. Available from: <https://doi.org/10.1186/s13643-018-0881-8>
- Chola, M.; Hlongwana, K.W.; Ginindza, T.G. Mapping Evidence Regarding Decision-Making on Contraceptive Use among Adolescents in Sub-Saharan Africa: A Scoping Review. *Int. J. Environ. Res. Public Health* 2023, 20, 2744. <https://doi.org/10.3390/ijerph20032744>

Chapter Four: Overall methodology. This chapter describes in detailed the overarching methodology used in the study. This includes the study setting, design, population, and sample size, including the description of the study variables. Data management and analysis methods and techniques that were used are also described as well as the ethical considerations in the study.

Chapter Five: First primary manuscript. This chapter examines the patterns, trends, and factors associated with contraceptive use among adolescents in Zambia over the period 1996–2014. Using data from the Zambia Demographic and Health Survey, this paper describes factors associated with contraceptive use and which factors have contributed to observed changes in contraceptive use over the period 1996-2014. The manuscript has been published in BMC Women’s Health journal and addresses objectives two and three.

- Chola M, Hlongwana K, Ginindza TG. Patterns, trends, and factors associated with contraceptive use among adolescent girls in Zambia (1996 to 2014): a multilevel analysis. BMC Womens Health. 2020 Aug;20(1):185. <https://doi.org/10.1186/s12905-020-01050-1>

Chapter Six: Second primary manuscript. This chapter addresses objective three and builds on the findings from primary paper one in chapter five. This chapter examines the contribution of the different factors observed in primary paper one to the observed change in the contraceptive prevalence rate over the period 1996 to 2014. This study was aimed at investigating factors that contributed the most to the observed change in contraceptive use over the period 1996 – 2014, using decomposition analysis. This paper was published in the Journal of Public Health in Africa.

Chola M, Hlongwana K, Ginindza TG. Factors contributing to changes in contraceptive use among adolescent girls in Zambia: a decomposition analysis. J Public Health Afr <https://doi.org/10.4081/jphia.2023.2261>

Chapter Seven: This is the third primary manuscript and addresses objective 4. This chapter explores Zambian adolescent girls’ experiences regarding access and use of contraceptives, as well as their perspectives and preferences that adolescent girls have regarding existing and future contraceptive methods. This manuscript is under peer-review in BMC Public.

Chapter Eight: Fourth primary manuscript. This chapter addresses objective five and explores the motivators and influencers of adolescent girls' decision-making on whether or not to use contraceptives. This manuscript has been published.

- Chola, M.; Hlongwana, K.W.; Ginindza, T.G. Motivators and Influencers of Adolescent Girls' Decision Making Regarding Contraceptive Use in Four Districts of Zambia. *Int. J. Environ. Res. Public Health* **2023**, *20*, 3614. <https://doi.org/10.3390/ijerph20043614>

Chapter Nine: Integrative synthesis. This chapter synthesizes the main findings from the different research outputs and sought to address the overall study objectives. This chapter also discusses the implications of the findings from this study and their implications for practice and future research.

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CHAPTER TWO

LITERATURE REVIEW

Overview

This chapter highlights the literature that was reviewed. It includes details on the searching, examination, and narrating of the available literature on contraceptive use among adolescent girls. It presents literature examined at the global level and regional levels, highlighting published research on factors that affect contraceptive use among adolescent girls. The review of literature and the study overall is underpinned by the Socio-Ecological Model. The framework was first suggested by Broffenbrenner (1) in the 1970s and later refined by McLeroy et al (2) as a framework to promote health-related behavioural change. The framework includes 5 levels of influence namely: (1) intrapersonal, (2) interpersonal, (3) organizational, (4) environmental, and (5) policy. This framework was used as a guide for organizing and summarizing the evidence regarding contraceptive use among adolescent girls. The framework provides a firm basis for critically assessing and using the range of factors associated with contraceptive use and decision making thereof among adolescent girls.

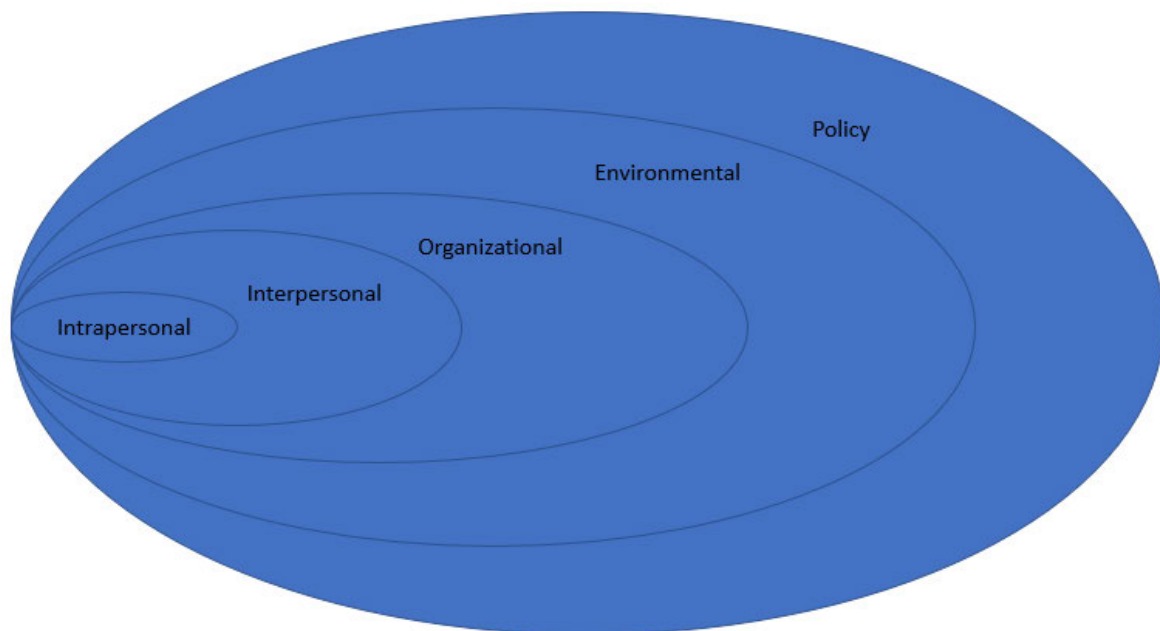


Figure 1: Illustration of the socio-ecological model by McLeroy et al. (2)

2.1.Contraception Use among Adolescents – Global Perspective

Contraception prevalence rates globally remain low, particularly in the least developed countries such as those in Africa (3–5). According to the 2015 United Nations report on Trends in Contraceptive use, 64% of married or in-union women of reproductive age, worldwide, were using some form of contraception (4). However, contraceptive use was as low as 40% and 33% in the least developed countries and Africa, respectively (4). Statistics revealed even lower figures among female adolescents (6,7), with the overall contraceptive prevalence rate (CPR) among female adolescents aged 15-19 in the developing world being about 21 % for all methods (modern and traditional) (8). This is despite the benefits of contraceptive use, such as the freedom to decide the number of children to have, and how to space them, as well as improvements in health-related outcomes, including a reduction in maternal mortality and infant mortality (9–11) and improvements in schooling and economic outcomes, especially for girls and women (12,13).

2.2.Patterns and Trends of Contraceptive Use in sun-Saharan Africa

In sub-Saharan Africa, use of modern contraceptives among young adolescent women has been increasing (14,15). As shown in a study among young adult women from 18 African countries, the median percentage of condoms for pregnancy prevention use increased from 5 percent to 19 percent between 1993 and 2001 (16). Significant heterogeneity across countries and within countries has also been reported depending on adolescents needs for spacing, limiting and method preference. For example, levels of modern contraceptive use in the East/South Africa region are higher among young parous women compared to young nulliparous women, while in the West/Central Africa region, levels are higher for young nulliparous women compared to young parous women (17). Disparities in contraceptive use have also been observed within countries by factors such as age, rural-urban residence, education, wealth, and marital status (18). This is consistent across various sub-Saharan countries and is discussed further detail below.

2.3.Factors affecting adolescent contraception use in sub-Saharan Africa

Various factors affect contraceptive use, or in this case non-use, among adolescents. Some of these factors are related to obtaining contraceptives and others pertain to using contraceptives. With regard to obtaining contraceptives, adolescents face numerous barriers some of which are similar to adult women, but others are specific to adolescents.

2.3.1. Health system-related factors

Health service-related barriers such as poor health systems for sexual health, family planning, and maternal health are known, with unmarried adolescents ignored in some cases, married adolescents in others, and an overall deficiency of youth-friendly services (19,20). Contraceptive services may be affected by the lack of or erratic availability of supplies and equipment, especially in many poor communities of LMIC. Contraceptive methods are also not available to adults or adolescents (21,22). At the political level, adolescent sexual and reproductive health (ASRH) is a low priority and there are often restrictive laws and policies in place that undermine contraceptive uptake (19). Laws and policies prevent the provision of contraceptives to unmarried adolescents or those under a certain age, even in instances where contraceptive methods are available (8,21).

In places where there are no legal restrictions, the attitude of health workers deters adolescents' access to contraceptive services (19). Health workers, in many places, refuse to provide unmarried adolescents with contraceptive information and services, because they do not approve of premarital sexual activity (21,23–25). This was established in studies conducted in Ethiopia, Kenya and Zambia (24,26,27). Published findings from a study of public, private not-for-profit and private for-profit providers in rural Uganda confirmed these barriers, in addition to sporadic contraceptive stocks, costs and unfriendly service provision (28).

2.3.2. Individual factors

Education

Education has been found to have an effect on contraceptive use among adolescents (29,30). A significant increase in contraceptive use has been observed with an increase in the level of education (29,30). Nketiah-Amponsah et al. (31) found the level of education to be a significant predictor of contraceptive use among women of reproductive age in Ghana. This is more so in urban areas where urban adolescents who typically have higher education report more contraceptive use, particularly condoms (32). Therefore, educated female adolescents were more likely to use contraceptives than their uneducated counterparts. Hounton et al found that compared to adolescents who had completed only primary level education, the prevalence of contraceptive use among those with secondary-level or higher education was 2.4 times, 1.9 times and 5.9 times higher in Burkina Faso, Ethiopia, and Nigeria, respectively (7).

Furthermore, cognitive capacity, cognitive egocentrism, and experience factors have also been found to play a role in decision-making in contraceptive use among adolescents (33).

Knowledge of Contraception

Adolescents in sub-Saharan Africa are also characterised by poor or lack of knowledge about contraception (19,34) including emergency contraception (35). A study by Fatusi & Hindin (36) found a lack of knowledge of sexual and reproductive health issues as one of the factors associated with low contraceptive use. Similarly, Kennedy et. al. (37) also found that in addition to having low contraception use and less access to information and services, adolescents have poor knowledge of family planning. Adolescents' main source of information was usually their peers and the information received from their peers was mostly untrustworthy and distorted, thus perpetuating the myths and misconceptions about contraceptives (38–40).

Myths and Stigma

Fear, shame, myths, and stigma among adolescents also contribute to low contraceptive use in this age group. Studies have shown that these are some of the most common barriers to accessing sexual and reproductive health services among adolescents (21,25,39,41). Results from a study conducted among sexually active adolescents aged 12–19 years, in four countries (Burkina Faso, Malawi, Ghana and Uganda), found that feeling afraid, embarrassed, or shy were the most common barriers to contraception use (42,43). This factor was mentioned by 42–64 % of sexually active females and 38–59 % of sexually active males (43). Typically, the number of females that reported feeling afraid, embarrassed, or shy about obtaining contraceptive services was marginally higher (43).

Fear of Side Effects

Fear of side effects and adverse reactions were major barriers to contraception use (44–48), especially the fear that a particular method would cause infertility (49–51). Fears about contraceptive use causing infertility and affecting future fertility had a major influence on decision-making regarding contraceptive use among adolescents (25,39,49–53). Most fears were based on myths and misconceptions. Young women learn about both true side effects and myths from their social networks and sometimes distinguishing between what is factual and what is mythical, may not be that simple in that age group (39,50,53).

2.3.3. Family, peer, and community factors

Parents and peers also tend to positively or negatively influence adolescents' access to information and services (54–56). Adolescents who use contraceptives tended to discuss sexuality and contraception more often with friends than with their families (57). Social pressure contributes to the non-use of contraceptives among adolescents. Young women, in many places, are under pressure to conceive and bear children soon after marriage and contraception are considered only after a first child is born (21,30).

2.3.4. Cultural and religious factors

Social stigma is one of the greatest barriers faced by adolescents in obtaining sexual and reproductive health services (58,59). Social stigma resulting from cultural values and beliefs regarding sexuality and gender roles has a lot of influence on adolescents' decision-making process regarding contraceptive use (60,61). Cultural norms around adolescent sexuality may discourage young people from seeking the services they need. In most African settings, including Zambia, sex before marriage is frowned upon (50). This may hinder them from seeking advice on contraception from their elders. Furthermore, religious factors also influence contraceptive use (52). Some religions oppose contraceptive use which can contribute to non-use among these adolescents.

2.4. Decision-Making regarding Contraceptive Use

The decision to use contraception among adolescents is influenced by different factors, including those discussed in the previous section. Understanding how adolescents make decisions about sexual activity and the use of contraception poses a challenge with different views suggesting that adolescents make decisions differently than adults (53). According to Gage (61), adolescence is a period of transition during which adolescents undergo physiological changes, physical transition, identity formation and development of autonomy. As they go through these transitions, they are particularly susceptible to peer pressure, especially at the earlier stages of their adolescence. Perceptions about what their peers are doing and what is accepted in their peer groups may be more strongly related to their motivations to engage in sexual activity or risk-taking than perceptions about the opinions of parents and other family members (61). Studies have shown that there is an association between parental communication, parenting style, adolescent sexual activity and contraception use (40,62).

Maternal communication has been shown to delay sexual intercourse and increase contraceptive use (62).

Cultural values and beliefs regarding sexuality and gender roles, the power dimensions of adolescents' lives, and economic disadvantage exert powerful influences on the decision-making process regarding contraceptive use (60,61). Decisions to engage in unprotected sex may also be based on insufficient knowledge and distorted judgments of the risks of becoming pregnant and acquiring sexually transmitted infections (61). Myths and misconceptions also tend to influence the decision to use contraception (63,64). Factors such as increased age (33) and higher academic achievement (65) also influence decision-making in adolescents.

Conclusion

The review of the literature has highlighted various factors that influence contraceptive use among adolescents. These factors are at the individual, peer, family and community or societal levels. Different studies have focused on different aspects of these factors; however, it can be concluded that the interaction of all these factors shapes the decisions that adolescents make on whether or not to use contraceptives. Therefore, this study sought to examine and understand how these factors influence contraceptive use decision-making among adolescents. Both qualitative and quantitative methods were employed to achieve this goal.

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CHAPTER THREE

SYSTEMATIC SCOPING REVIEW

Building on the narrative literature review in chapter two, this chapter presents findings from the scoping review, which was aimed at mapping evidence on adolescents' decision-making on contraceptive use in sub-Saharan Africa, particularly the influence of parental, societal, and peer-related factors regarding adolescents' decision on contraceptives use. This was a systematic review of the literature to explore what has been published about what influences adolescent girls in their decision whether or not to use contraceptives. This was a review of published research with a view of identifying gaps and also to guide the focus of the qualitative component of the study. The protocol and the scoping review have both been published in international peer-reviewed journals.

3.1. Mapping evidence regarding decision-making on contraceptive use among adolescents in sub-Saharan Africa: a scoping review protocol

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Systematic Reviews

PROTOCOL

Open Access



Mapping evidence on decision-making on contraceptive use among adolescents: a scoping review protocol

Mumbi Chola^{1,2*}, Khumbulani Hlongwana¹ and Themba G. Ginindza¹

Abstract

Background: Contraceptive use among adolescents remains consistently low globally. Numerous studies have been done investigating factors that contribute to low contraceptive prevalence rates in this special population. It is particularly vital to understand decision-making processes that adolescents undergo when deciding whether or not to use contraceptives. Therefore, this scoping review seeks to map available evidence on decision-making processes in contraceptive use among adolescents.

Methods: We will conduct a scoping review to explore, describe and map literature on the adolescent decision-making regarding contraceptive use. The primary search will include peer-reviewed and review articles. Databases, including PubMed, MEDLINE with Full Text via EBSCOhost, PsycINFO via EBSCOhost, CINAHL with Full Text via EBSCOhost, Google Scholar, Science Direct and Scopus, will be searched for articles that meet the eligibility criteria. Keyword searches will be used, and for articles included after title screening, abstract and full articles will be screened by two independent reviewers with a third as a decider on any disputes. Content analysis will be used to present the narrative account of the reviews.

Discussion: Understanding how adolescents make decisions about whether or not to use contraception is essential for improving contraceptive prevalence rates in this special population. It is envisioned that the results from this review will highlight key evidence on how adolescents make decisions regarding contraceptive use as well as gaps and opportunities for future research. It will also be important in enhancing and re-focusing adolescent sexual and reproductive health policies and programmes.

Keywords: Adolescents, Decision making, Contraception, Contraceptive use

Background

Modern contraceptive methods are products or medical procedures that interfere with reproduction from acts of sexual intercourse [1]. Types of modern contraceptives include sterilisation (male and female), intrauterine devices and systems, subdermal implants, oral contraceptives, condoms (male and female), injectables, emergency contraceptive pills, patches, diaphragms and cervical caps, spermicidal agents (gels, foams, creams, suppositories, etc.), vaginal rings and sponge [1].

Globally, the prevalence of contraceptive use varies. In 2015, two out of three women or about 64% of women of reproductive age (15–49), married or in a union, were using some form of contraception, either modern or traditional [2]. Eastern and Southern Africa and West and Central Africa recorded lower numbers with 38.6% and 17.6% respectively [2]. Statistics are even lower among adolescents [3–5] with only about 15% of girls in developing countries aged 15–19, married or in a union, using modern contraceptive methods [6]. Adolescence is defined as all persons aged 10 to 19 years [7], and it is further subdivided into early adolescence (11 to 13 years), adolescence (14–17 years) and young adulthood (18–25 years), which encompasses those aged 18–19 years [8].

* Correspondence: mumbi24@gmail.com

¹Discipline of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu-Natal, Durban 4041, South Africa

²Department of Epidemiology & Biostatistics, School of Public Health, University of Zambia, Lusaka, Zambia



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Low contraception use in this age group exposes adolescents to higher risks of maternal mortality, obstructed labour and obstetric fistula, and results in lower chances of receiving an education and obtaining employment [9–11]. Children born to adolescent mothers also face higher risks of mortality, undernourishment and school dropout compared to their peers [12].

While factors that contribute to low contraceptive use among adolescents have been well documented, it is particularly vital to understand decision-making process they undergo when deciding on whether or not to use contraceptives. This information will be vital for policy-makers and program managers in addressing poor contraception usage among adolescents as well as preventing maternal complications. It will also be important in enhancing and re-focusing adolescent sexual and reproductive health policies and programmes.

Therefore, this scoping review seeks to:

- Map existing literature on adolescent decision-making on contraceptive use in sub-Saharan Africa
- Map existing literature on the influence of parental, societal and peer-related factors on adolescents' decision to use contraception

Findings from this review will highlight gaps in literature and form the basis for refining research questions for further research.

Methods

Scoping review

This is a scoping review of literature on adolescents' decision-making on contraceptive use. This review is part of a larger study whose aim is to examine the levels, patterns and trends of contraception use among adolescents and understand their decision-making, as well as their needs, preferences and perspectives regarding existing and future contraceptive methods. The review has been written using the PRISMA-P [13] as a guide and will be based on the methodological framework for scoping studies as proposed by Arksey and O'Malley's [14]. The framework stipulates the following steps:

- Identifying the research question
- Identifying relevant studies
- Study selection
- Charting the data
- Collating, summarising and reporting the results

This scoping review will, however, include a quality appraisal of the studies included in the review as proposed by Levac et al. [15].

Identifying the research question

What is the available evidence on decision-making in contraceptive use among adolescents?

Sub-questions include:

1. What societal and peer factors influence adolescents' decision-making on contraceptive use?
2. What parental factors influence adolescents' decision-making on contraceptive use?
3. What individual factors influence adolescents' decision-making on contraceptive use?

Eligibility criteria

Eligibility criteria will be based on the following inclusion and exclusion criteria.

Inclusion criteria

Studies present evidence on:

- Adolescent boys and girls aged 10–19 years
- Decision-making in contraceptive use among adolescents aged 10–19 years
- Parental influences on adolescents' decision to use contraceptives
- Societal and peer influences on adolescents' decision to use contraceptives
- Individual or "self" influence on adolescents' decision to use contraceptives
- Published studies including guidelines, reports, technical or policy briefs and opinion papers and other grey literature

Exclusion criteria

Studies meeting the following criteria will be excluded:

- Studies with no evidence on decision-making in contraceptive use among adolescents
- Studies with no evidence on influence of parental, societal, peer or individual factors on decision-making in contraceptive use among adolescents
- Studies not focused on adolescents aged 10–19 years
- Studies not freely available in full text

Eligibility of research question

The study has used the Population–Concept–Context (PCC) framework (see Table 1) recommended by the Joanna Briggs Institute for scoping reviews [16] to determine the eligibility of research question. This is a more flexible alternative to the PICO (Population, Intervention, Comparator and Outcome) framework recommended for systematic reviews.

Table 1 PCC framework

Population	Adolescents aged 10–19 years. This is based on the World Health Organization (WHO)'s definition of adolescents [21].
Concept	Decision-making in contraceptive use. This includes factors that adolescents consider and processes that they go through in deciding whether or not to use contraceptives
Context	Global—including studies from high-income and LMICs
Identifying relevant studies (search strategy)	
The following databases will be searched for articles that meet the eligibility criteria. These are PubMed, MEDLINE with Full Text via EBSCOhost, PsychINFO via EBSCOhost, CINAHL with Full Text via EBSCOhost, Google Scholar, Science Direct and Scopus. Search will follow the PRISMA guidelines	

Identifying relevant studies (search strategy)

The following databases will be searched for articles that meet the eligibility criteria. These are PubMed, MEDLINE with Full Text via EBSCOhost, PsychINFO via EBSCOhost, CINAHL with Full Text via EBSCOhost, Google Scholar, Science Direct and Scopus. Search will follow the PRISMA guidelines.

Articles will also be searched through the 'Cited by' search and reference lists of included articles. Search strategy was piloted to check the appropriateness of selected electronic databases and key words (Table 2). Boolean terms AND and OR will be used to separate the keywords during the search. Mesh terms (Medical Subject Headings) will also be included in the search.

A library will be created for this review using EndNote x8.0.2 referencing software. The primary investigator will conduct a comprehensive search and screening of the study titles from the abovementioned databases. All studies with eligible titles will be exported to the End-Note library, and all duplicates will be removed before abstract screening. Two reviewers will independently conduct abstract screening followed by full-article screening of selected studies, using standardised tools, with guidance from the eligibility criteria. Where disputes arise, a third reviewer will decide. To optimise the article search strategy, we will utilise our local library services, the UKZN library services, to help with retrieving and finding articles to be included in the full-article screening. Where articles are unavailable, authors will also be contacted. Reporting on these will be done using the Preferred Reporting Items for Systematic Reviews

and Meta-Analyses (PRISMA) chart [17], shown in Fig. 1.

Data extraction/charting

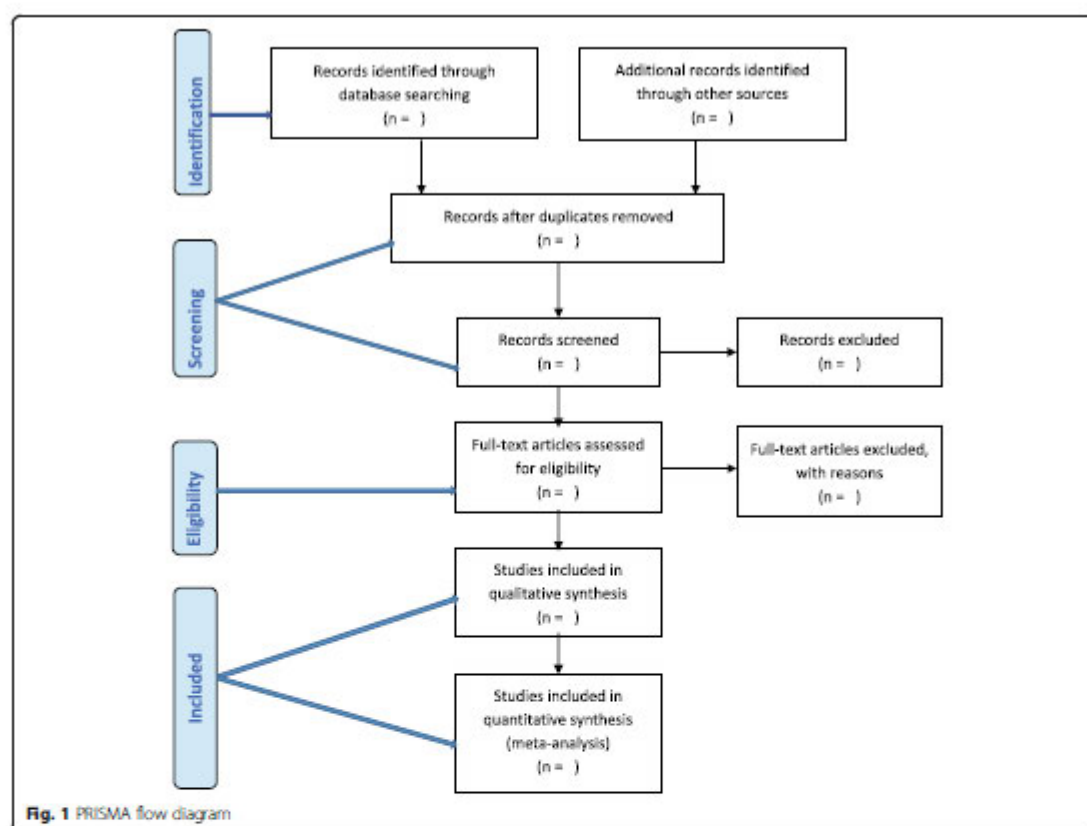
A data charting table (Table 3) will be used to extract background information and process the information from each utilised study. The data extraction form will be developed, piloted and used to extract and process relevant information from each study included. All variables that will focus on answering the research question will be included. The research team will independently conduct a trial data extraction and later discuss as a group to determine consistency of the data extraction approach with the research question and objective. The data extraction form will be continually reviewed and updated in an iterative process. This will improve the quality applicability and consistency of the chart. Once this is completed, the primary author will conduct the data extraction which will be reviewed by the other authors. Any and all discrepancies will be discussed and agreed upon in the final interpretation. All articles reviewed will be assigned a unique code to help track all articles reviewed and those that will be excluded during the data charting process.

Collating, summarising and reporting the results

Once the data extraction is completed, a narrative account of the data extracted from the included studies will be analysed using the thematic content analysis. Data relating to adolescents' decisions making in contraception and contraceptive use that will be extracted will

Table 2 Keyword searches

Date searched	Keyword search terms	Search engine used	Number of studies
21-06-2018	((("adolescent" [MeSH Terms] OR "adolescent" [All Fields]) AND ("decision making" [MeSH Terms] OR ("decision" [All Fields] AND "making" [All Fields]) OR "decision making" [All Fields]) AND ("contraception" [MeSH Terms] OR "contraception" [All Fields]))	PubMed	871
21-06-2018	Adolescent AND decision making AND Contraception	Via EBSCOhost	1752
		• MEDLINE with Full Text	653
		• PsychINFO	211
		• CINAHL with Full Text	108
21-06-2018	Adolescent AND decision making AND Contraception	Google Scholar	66,000
21-06-2018	adolescent AND decision AND making AND contraception AND (LIMIT-TO (ACCESSTYPE (OA)) OR LIMIT-TO (ACCESSTYPE (OTHER)))	Scopus	4836



be coded. NVIVO software version 10 [18] will be used collectively to code the data from the included studies. Emerging themes will be identified and data will be coded according to these themes. In line with the general aim of a scoping review, to map out the research landscape, some form of visual representation of the data will be presented in the results section to map the extent, range and nature of research in this area. This will help to identify patterns and themes and postulate explanations for summarising and synthesis of findings. The process will be done as follows [19]:

- Coding data from the included articles
- Categorising the codes into major themes
- Displaying the data
- Identifying key patterns in the data and identify sub-themes
- Summarising and synthesising

Resulting themes will then be analysed and synthesised, and their relationship to the research question and objective will be critically examined. The meanings of

the findings in relation to the aim of the study and the implications of these findings for future research, policy and practice will be examined.

Quality appraisal

The Mixed Method Appraisal Tool (MMAT)-version 2011 [20] will be used to determine quality of the studies. Depending on the study design, the appropriate section will be used. Section 1 will be used to appraise qualitative studies; sections 2 to 4 for quantitative studies and section 5 for mixed methods studies. The MMAT will be used to examine the appropriateness of the aim of study, adequacy of methodology, study design, data collection, study selection, data analysis, presentation of findings, author's discussions and conclusions. The scoring matrix in the tool will be used to grade the overall quality. The results from scoring of the abovementioned aspects will determine the quality of resultant article.

Discussion

Understanding how adolescents make decisions about whether or not to use contraception is essential for

Table 3 Data extraction form

Author and date
Study title
Study population
Gender
Marital status
Education level
Methodology
Geographical setting (country)
Study site
Study type
Residence
Study design
Data collection methods
Data collection tools
Data collection method
Sampling
Sampling method
Intervention (contraception)
Contraceptive method
Decision-making
Data analysis
Data analysis type
Data analysis method
Results
Most important finding
Other findings
Conclusion
Study limitations and recommendations

improving contraceptive prevalence rates in this special population. Increasing contraception among adolescents is important because it will help prevent adverse health such as maternal mortality, obstructed labour and obstetric fistula, and socio-economic outcomes such as diminished opportunities for education and employment [9–11]. Conducting this systematic scoping review will map and document existing evidence on factors that adolescents consider and decision-making processes they go through in deciding whether or not to use contraceptives. This information is vital for understanding why contraceptive prevalence rates among adolescents remain consistently low.

This systematic scoping review will focus on studies published between 1990 and 2017. This is because during this period, there have been various programmes and projects aimed at improving contraception among adolescents in Zambia. The focus is on adolescents

because they have been identified as a special population whose health needs have to be prioritised. It is envisioned that the results from this review will highlight key evidence on how adolescents make decisions regarding contraceptive use as well as gaps and opportunities for future research.

Abbreviations

LMIC: Low-to-middle-income country; MMAT: Mixed Method Appraisal Tool; PCC: Population–Concept–Context; PICOT: Population, Intervention, Comparator and Outcome; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; UKZN: University of KwaZulu-Natal; WHO: World Health Organization

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Availability of data and materials

All data generated from this study will be included in the published scoping review article and will also be available on request.

Authors' contributions

MC conceptualised the study and prepared the manuscript under the guidance and supervision of TG and KH. All authors contributed to the development and design of the study. TG and KH contributed to the methodology and reviewing of the manuscript. All authors contributed to the final version. All authors read and approved the final manuscript.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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3.2. Mapping evidence regarding decision-making on contraceptive use among adolescents in sub-Saharan Africa: a scoping review



Review

Mapping Evidence Regarding Decision-Making on Contraceptive Use among Adolescents in Sub-Saharan Africa: A Scoping Review

Mumbi Chola ^{1,2,*}, Khumbulani W. Hlongwana ^{1,3} and Themba G. Ginindza ^{1,3}

¹ Discipline of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu-Natal, Durban 4041, South Africa

² Department of Epidemiology and Biostatistics, School of Public Health, University of Zambia, Lusaka 10101, Zambia

³ Cancer & Infectious Diseases Epidemiology Research Unit (CIDERU), College of Health Sciences, University of KwaZulu-Natal, Durban 4041, South Africa

* Correspondence: mumbi24@gmail.com

Abstract: This scoping review mapped and synthesised existing evidence on the influence of individual, parental, peer, and societal-related factors on adolescents' decisions to use contraception in sub-Saharan Africa (SSA). Peer-reviewed and review articles published before May 2022, targeting adolescents aged 10–19 years were searched in PubMed, MEDLINE with Full Text via EBSCOhost, PsychINFO via EBSCOhost, CINAHL with Full Text via EBSCOhost, Google Scholar, Science Direct, and Scopus databases. Seven studies were included and analysed using thematic analysis based on the social-ecological model (SEM) and reported using the preferred reporting items for systematic reviews and meta-analyses (PRISMA). Individual (fear of side effects, fear of infertility), parental (parental disappointment and disapproval), peer (social stigma), partner (association with promiscuity and multiple sexual partners), societal and community (contraceptive use disapproval and stigma), and institutional and environmental factors (lack of privacy and confidentiality) influence contraceptive decisions among adolescents. These also include a lack of accurate information, social exclusion, negative health provider attitudes, and a lack of infrastructure that provides privacy and safe spaces. Identifying and addressing core issues within the context of local cultural practices that restrict contraceptive use is important. Holistic, inclusive approaches that promote the well-being of adolescents must be utilised to provide a conducive environment that ensures privacy, confidentiality, safety, and easy access to contraceptive services.

Keywords: adolescents; decision-making; contraception; contraceptive use; Sub-Saharan Africa



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1. Introduction

The World Health Organisation (WHO) defines family planning as a voluntary and informed choice that allows individuals and couples to decide how many and when to have their children. This is attained through contraception, which is the act of preventing pregnancy through the use of a device, medication, procedure, or change in behaviour [1]. This involves the use of contraceptive methods [2], including modern contraceptive methods, which are products designed to prevent pregnancy resulting from sexual intercourse [3], such as implants, female sterilisation, male sterilisation, intrauterine devices, condoms, oral contraceptives, emergency contraceptives, and other contraceptives, such as diaphragms, spermicides, and vaginal rings [3].

The prevalence of contraceptive use among women globally varies. According to statistics, in 2015, two out of every three married women or those in a union aged 15 to 49 years used a modern or traditional contraceptive [4]. The lowest numbers were reported in Eastern and Southern Africa (38.6%) and West and Central Africa (17.6%) [4]. A study

conducted in 29 countries in sub-Saharan Africa (SSA) found that only 24.7% of adolescent girls and young women aged 15–24 years use modern contraception, with the highest and lowest prevalence reported in Lesotho (59.2%) and Chad (5.1%), respectively [5]. Compared to all women, contraceptive prevalence rates were much lower among adolescents [6–8], with only 15% of girls aged 15–19 years who were either married or in a union using modern contraceptives [9]. Adolescents include those aged between 10 and 19 years [10]. They can be further divided into early adolescents (11–13 years), adolescents (14–17 years), and young adults (18–25 years), who include those aged 18–19 years [11].

Low rates of contraception use expose adolescents to the risk of adolescent pregnancy, which remains a serious public health problem, especially in Africa. Statistics from low- and middle-income countries show that for adolescents aged 15–19 years, 50% of the approximately 21 million pregnancies recorded annually are unplanned and result in approximately 12 million births [12]. Adolescent pregnancy is associated with adverse health outcomes in this age group, compared to older women, including higher risks for early neonatal death, anaemia, puerperal endometritis, operative vaginal delivery, and episiotomy [13]. They also face a significantly increased risk of maternal mortality, obstructed labour, and obstetric fistula, which reduces their chances of getting an education or being employed [14–16]. Additionally, the children born to these teenage mothers have an increased chance of death, low birth weight, small-for-gestational-age infants, and dropping out of school compared to their peers [13,17].

Factors that are associated with low contraceptive use among adolescents were reported in various studies [18–25]. However, it is particularly important to understand what influences adolescents' decisions on whether or not to use contraceptives. It is vital to understand the factors that influence adolescents, positively or negatively, as they decide whether to use contraceptives. The decision to use or not to use contraceptives is largely driven by various influences [18–25]. These include individual or intrapersonal influences [18,19,23–25], partner influences [19,20,26], peer influences [18,22,24], parental [22,24,25], and societal influences [18,20,22,25]. These include factors such as fear of side effects, fear of infertility at the individual level, parental disappointment and disapproval at the parental level, social stigma at the peer level, association with promiscuity and multiple sexual partners at the partner level and the societal level, as well as societal and cultural norms that disapprove of and stigmatise contraceptive use [18–25].

This information will be useful for policymakers and program managers as they seek to address low contraceptive use in this age group and prevent pregnancy complications. It will also be important for improving and re-shaping health policies and programmes targeted at adolescent sexual and reproductive health.

This scoping review, therefore, was aimed at mapping current literature on what influences decision-making among adolescent girls regarding contraceptive use, especially parental factors, partner factors, societal factors, and peer-related factors, and how they influence adolescent girls' contraceptive decisions.

2. Methods and Materials

2.1. Design

This was a scoping review of published peer-reviewed literature on factors that influence adolescent girls' decision-making regarding contraceptive use in sub-Saharan Africa (SSA). This review is nested in a larger study, which aimed to examine the levels, patterns, and trends of contraception use among adolescent girls and understand the influencers and motivators of their contraceptive decisions. While the protocol for this review was previously published [27], this scoping review included studies published before May 2022, when the literature search was conducted. The review was guided by the preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) (Figure 1) [28] and was based on Arksey and O'Malley's methodological framework for scoping studies [29].

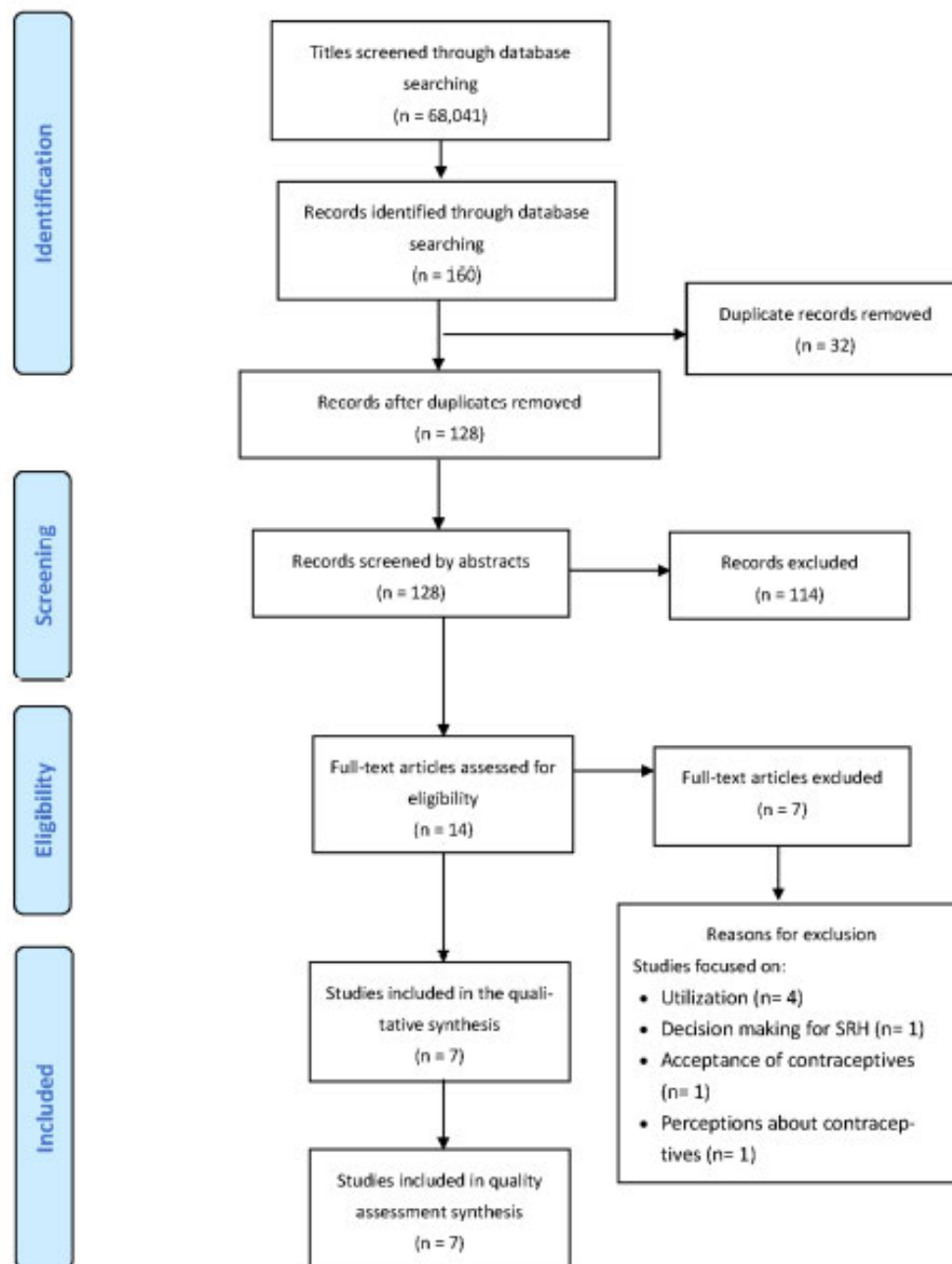


Figure 1. PRISMA 2009 flow diagram.

2.2. Identifying the Research Question

The research question that guided this scoping review was: what is the available evidence on the individual, parental, peer, societal, and cultural factors that influence decision-making in contraceptive use among adolescents? In answering this research question, the review was guided by the socio-ecological model (SEM).

2.3. Eligibility Criteria

Eligible studies that presented findings on adolescent girls aged 10–19 years; included decision-making in contraceptive use; influences of parents, peers, partners, and society on adolescent girls' contraceptive decisions, and individual or "self" influences on adolescents' decisions to use contraceptives, and focused on populations based in SSA that were included in the review. The eligibility of the research question was determined using the population—concept—context (PCC) framework (Table 1) as recommended by the Joanna Briggs Institute for scoping reviews [30].

Table 1. PCC Framework.

Population	Adolescents aged 10–19 years—as defined by the World Health Organisation (WHO) [31].
Concept	Decision-making in contraceptive use. This includes factors that adolescents consider and processes that they go through in deciding whether or not to use contraceptives.
Context	Sub-Saharan Africa—including studies from sub-Saharan Africa.

2.4. Identifying Relevant Studies (Search Strategy)

The databases that were searched for articles meeting the eligibility criteria included PubMed, MEDLINE with Full Text via EBSCOhost, PsychINFO via EBSCOhost, CINAHL with Full Text via EBSCOhost, Google Scholar, Science Direct, and Scopus. The search adhered to the PRISMA guidelines [32]. Studies published in SSA before May 2022 were included in the search. The search also included eligible studies listed in the citations of the selected studies. The keywords used to search the databases were: adolescent, girls, contraceptive use, and decision-making. The Boolean term "AND" was used to separate keywords. Medical subject headings (MeSH) terms were included in the keyword search. Only articles published in English were included in the study.

A library was created for this review using EndNote 20 referencing software. The primary investigator conducted a comprehensive search and screening of the study titles from the above-mentioned databases. All studies with eligible titles were exported to the EndNote library, and all duplicates were removed before the abstract screening. Two reviewers independently conducted abstract screening followed by full-article screening of selected studies, using standardised tools, with guidance from the eligibility criteria. Disputes were discussed and resolved based on the eligibility criteria. To optimise the article search strategy, library services at the University of KwaZulu-Natal were utilised to help with retrieving and finding articles to be included in the full-article screening. Reporting on these was conducted using the preferred reporting items for systematic reviews and meta-analyses (PRISMA) chart [32], shown in Figure 1.

2.5. Data Extraction/Charting

Table 2 shows the data extraction form that was developed, piloted, and used to extract and process the relevant information from each of the studies included in the review. All variables that were included in the form were aimed at answering the research question. Data extraction was conducted by the primary author and was reviewed by the other authors. The authors reviewed, discussed all discrepancies, and agreed on the final interpretation. A unique code was assigned to all reviewed articles to assist with keeping track of all reviewed articles and those excluded during the data charting process.

Table 2. Data extraction form.

Author and Date
Study Title
Study Population
Gender
Methodology
Geographical setting (country)
Study site
Study type
Study design
Data Collection Methods
Data collection tools
Data collection method
Sampling
Sample size
Intervention (Contraception)
Contraceptive use
Decision-making
Data Analysis
Data analysis type
Data analysis method
Results
Most important finding
Other findings
Conclusion

2.6. Collating, Summarising, and Reporting the Results

To improve quality, an iterative process was used to continuously review the data. The data were analysed using thematic content analysis. The manuscripts included in the analysis were coded around the following themes: individual, partner, peer, parental, and societal influences on the decision to use contraceptives. These themes are based on McLeroy and colleagues' social-ecological model (SEM) of health promotion [33]. According to their model, health behaviour and promotion are interrelated and take place across multiple levels at the individual, interpersonal, institutional, community, and policy levels. The model [33] argues that patterned behaviour is determined by the following:

- (1) Intrapersonal factors, which are individual characteristics.
- (2) Interpersonal factors, which are processes and principal groups that can include social networks (both formal and informal), and social support systems, such as families, and friendship networks.
- (3) Institutional factors, including social establishments that have structural characteristics and prescribed (and informal) formalities on how they operate.
- (4) Community factors, which include relationships between organisations, institutions, and informal networks within specified borders.
- (5) Public policy, which can include local, and national laws, regulations, and policies.

Various studies across different health topics used this model to determine, understand, and describe health issues and patterns that are complex in nature [34,35]. This multidimensional outlook is vital to understanding and explaining the different factors that influence decision-making regarding contraceptive use. Individual level or intrapersonal factors are factors such as lack of or limited knowledge, misaligned concerns, religious beliefs, and misinformation about the safety and effectiveness of contraceptives; interpersonal factors included partner, peer, parental, and societal influences or any interactions with social networks (both formal and informal) and social support systems; institutional level

factors included characteristics and health system activities that affect the use of contraceptives; and community-level factors, which included interactions between and within organisations in the health system, community, and other social networks that influence contraceptive use [36]. Policy-level factors are government policies that affect contraceptive use [36]. Based on the themes identified, a narrative was written describing the findings.

Overall, 160 articles were identified based on the title screening search criteria, after screening through 68,041 titles (see Table 3). At the title screening stage, 67,881 articles were removed because they met the exclusion criteria (i.e., those with no evidence on adolescent girls aged 10–19, contraceptive use, decision-making, and those conducted outside of SSA). A total of 32 duplicates were removed, and 128 titles were included for abstract screening. These articles were exported to the Endnote library for abstract screening. Following the screening of the abstracts, 14 were included for full article screening, while 114 were excluded. A total of seven articles were excluded because four focused on the utilisation of contraceptives; one on decision-making for sexual and reproductive health (SRH); one on acceptance of contraceptives; and one on perceptions about contraceptives. Only seven articles met the eligibility criteria and were included in the final analysis and qualitative synthesis.

Table 3. Title screening search results.

No.	Search Engine	Search Date	Search Terms	Search Results	Final Selected Articles
1	PubMed	19 April 2022	((Adolescent) AND (girls)) AND (contraceptive use) AND (decision-making)	1706 titles	44 articles
2	Google Scholar	21 April 2022	adolescent AND girls AND contraceptive use AND decision-making	64,400 titles	86 articles
3	Science Direct	27 April 2022	adolescent AND girls AND contraceptive use AND decision-making	1731 titles	11 titles
4	EBSCOhost-MEDLINE with Full Text	27 April 2022	Adolescent AND girls AND contraceptive use AND decision-making	112 titles	12 articles
5	EBSCOhost-APA PsychINFO	27 April 2022			
6	EBSCOhost-Academic Search Complete	27 April 2022			
7	Scopus	27 April 2022	(TITLE-ABS-KEY (adolescent) AND TITLE-ABS-KEY (girls) AND TITLE-ABS-KEY (contraceptive AND use) AND TITLE-ABS-KEY (decision AND making))	92 titles	7 articles
TOTAL				68,041 titles	160 titles

2.7. Characteristics of Studies Included

Table 4 describes the details of the studies that were included in this review. All studies were published before May 2022. All seven studies [18–20,22–25] were qualitative. Two studies were conducted in Malawi [18,20], two in Nigeria [23,24], and one in Ghana [19], Kenya [22], and South Africa [25], respectively. The total sample size of the included studies was 511 participants, the majority of whom were females.

Table 4. Characteristics of included studies.

Author and Year	Study Objective	Study Setting (Country)	Study Design	Study Population Sample Size	Data Collection
Bhushan, N.L., et al., (2021) [18]	This study qualitatively looked at the nature of contraceptive conversations among AGYW who were enrolled in a sexual and reproductive health study conducted in Lilongwe, Malawi called Girl Power. The study sought to understand the context, content, and impact of contraceptive-related conversations between AGYW and their sexual partners, peers, and older women in their families.	Malawi	This was a Qualitative study conducted as part of Girl Power-Malawi, a quasi-experimental study that implemented across four health facilities in Lilongwe, Malawi.	Included 60 AGYW aged 15–24 years	60 Individual in-depth interviews were conducted.
Boamah-Kaali, E.A., et al., (2021) [19]	This was a study conducted in the Kintampo area of Ghana which aimed at exploring, from the adolescents' perspective, factors that limit the uptake of hormonal contraceptives.	Ghana	An exploratory study using qualitative data collection methods.	Included 38 adolescent girls aged 15–19 years.	2 focus group discussions and 16 in-depth interviews.
Dombola, G. M., et al., (2021) [20]	This study aimed to understand contraceptive use and decision-making among young adolescents aged between 10 and 14 years.	Malawi	Qualitative based design	Included 26 young adolescents aged 10–14 years.	2 focus group discussions and 26 in-depth interviews.
Harrington, E. K., et al., (2021) [22]	The objective of this study was to explore how adolescent girls and young women aged 15–19 years in Kenya viewed their contraceptive needs and also how, within their social contexts, they make decisions to use contraceptives. They also studied social influences on decisions to use contraceptives among adolescents who were at risk for pregnancy. They sought to provide nuanced insights into the contraceptive behaviours of adolescents.	Kenya	Qualitative study	Included 86 adolescent girls aged 15–19 years	40 IDIs and 6 FGDs were conducted.
Otoide, V.O., et al., (2001) [23]	This study was conducted in Nigeria and sought to explore the beliefs and attitudes regarding abortion and also explore the attitudes and beliefs of adolescents concerning contraceptive use. The study also explored the fears that adolescent girls have about the availability, perceived advantages, side effects, and reasons for the use or non-use of contraceptives.	Nigeria	Qualitative study	Included 149 AGYW aged 15–24 years	20 focus-group sessions. The number of participants per group ranged from 6 to 10.
Sanchez, E.K., et al., (2020) [24]	This was a qualitative study that aimed to determine what and who influences contraceptive-seeking behaviours among adolescent girls in Nigeria.	Nigeria	This was a qualitative study that was conducted as part of a larger study investigating the sustainability and impact of the Nigerian Urban Reproductive Health Initiative (NURHI)	AGYW aged 15–24 Years with a total of 117 participants	12 focus group discussions (FGD) with three Nigerians with each group comprising 8–12 participants.
Wood, K and R. Jewkes (2006) [25]	This study was conducted in Limpopo province, South Africa, to collect information that could be used to enhance adolescent women's access to contraceptives as well as the quality of contraceptive services generally. The scope of inquiry included the circumstances of and influences on girls' contraceptive-seeking practices and decision-making. The investigation also focused on the circumstances as well as the factors that influenced adolescent girls' decisions about using contraceptives.	South Africa	Qualitative study	Adolescent girls aged 14–20 years with a total of 35 participants,	35 individual, semi-structured interviews and 5 group discussions. Each group comprised between 3 and 6 informants.

3. Results

Contraceptive decisions made by adolescent girls were influenced by various factors and at different levels. These included individual, parental, peer, partner, societal, community, and institutional and environmental influences, which either positively or negatively influenced adolescent girls' contraceptive decisions, particularly non-barrier, hormonal contraceptives. The findings below are described based on the SEM.

3.1. Intrapersonal or Individual-Level Factors

Individual-level or intrapersonal factors that influence the decision to use contraceptives among adolescent girls were explored in all seven studies [18–20,22–25]. These studies found that, at the individual level, various factors influence the decision to use contraceptives [19].

3.2. Health Concerns

Across all studies, fear of side effects was a major factor in influencing contraceptive decisions. Reported side effects included missing menses and heavy bleeding [20], changes in weight and menstrual cycles, stomach pain, and reduced libido [22]. They also reported “waist pains” following sex, loss of weight, menstrual irregularities, and prolonged absence of menstruation [25]. This was mainly linked to hormonal contraceptives and their reported side effects, which deterred adolescent girls, particularly those who were unmarried and nulliparous, from using them. Adolescent girls in Malawi highlighted a lack of information due to health providers not giving detailed information to adolescents as a factor, while poor knowledge about the various types of hormonal contraceptives and how they work was reported in Ghana [19]. Adolescents in Ghana could name at least one hormonal contraceptive but lacked information on how they work.

3.3. Fertility Concerns

Fear of infertility was also reported among adolescents in Nigeria [23,24]. This was mainly among unmarried women who expressed concerns about having difficulties conceiving once they became married [23]. Peer pressure, encouragement from male sexual partners [25], lack of efficacy to organise hormonal contraceptives [19], and preservation of fertility [24], based on alleged effects that contraceptives have on future fertility, were all factors in the decision to use contraceptives. Fear of the effects of contraception on infertility or future fertility among adolescent girls and community members was a common concern in almost all the studies [18,20,22–25].

3.4. Stigma Concerns

Adolescent girls in Ghana feared disclosing the use of hormonal contraceptives for fear of being labelled as ‘bad girls’ [19]. In Malawi, adolescent girls' fears and concerns revolved around misinformation about hormonal contraception, such as the fact that it causes cancer [20]. In Kenya, the fears centred around the shame of dishonouring parents, the stigma from their peers and community, and the social withdrawal that is associated with teenage pregnancy [22]. The stigma towards contraceptive use in their communities was mainly among adults and their peers who related the use of contraceptives with sexual promiscuity and lustful behaviour among girls [22]. Adolescents in South Africa reported fearing being condemned [25]. There were also negative attitudes towards the use of hormonal contraceptives among adolescents, and fear of disclosure of contraceptive use also influenced adolescent girls' decision to use contraceptives [19]. Beliefs that contraceptives were for married women also influenced adolescent girls' decisions to use them [20].

Another factor and motivator for contraceptive use among adolescents in Nigeria was the pursuit of education [24], while in Kenya, the consequences of adolescent pregnancy on future educational attainment, which they viewed as leading to poverty, was also a factor in their contraceptive decisions [22].

3.5. Interpersonal Factors

3.5.1. Parental Factors

There was an influence from parents, both positive and negative, on adolescents' decisions to use contraceptives, as reported in Kenya, Malawi, Nigeria, Ghana, and South Africa, both positively and negatively. On the negative side, adolescent girls in Malawi reported that parents and guardians had negative attitudes toward the use of contraceptives. Parents do not talk about contraceptives and their advantages and disadvantages. They view sex and contraceptives as immoral and do not discuss these issues because of their cultural and religious beliefs [20]. Similar views were expressed by adolescents in Ghana. Adolescents feared that their parents would view them as bad girls because they are not supposed to be having sex, which is viewed as immoral behaviour and a sign of disrespect to their parents [19]. This would result in their parents being disappointed in them and possibly chasing them away from home or disowning them [19,20].

Positive influences were also reported. Adolescents in South Africa reported that their mothers imposed contraceptives on them once their menses started [25], while in Kenya, they reported that their mothers advised or directed them to use condoms and not contraceptives amid concerns about their effects on the health and future fertility of the girls [22]. Some adolescents mentioned that conversations with their mothers helped them make decisions regarding contraceptive use. Adolescents in Ghana were more positive about using hormonal contraceptives, especially when discussing it with their mothers first before choosing a particular method. This gave them some assurance that their mothers would be fine with them using the contraceptives if they knew about it [19]. In Nigeria, conversations with mothers were also instrumental in positively influencing decisions on contraceptive use [24].

3.5.2. Peer Factors

Peers also have an influence, both positive and negative, on adolescent girls' decisions to use contraceptives. Adolescents in Malawi reported that conversations they had with their peers about infertility and social norms related to contraceptive use reinforced their decision not to use contraceptives, particularly among unmarried, nulliparous adolescents [18]. The implied association, by peers, between contraceptive use and promiscuous behaviour also discouraged contraceptive use [18]. Positive peer influences were reported among adolescents in Nigeria. In Nigeria, however, adolescent girls reported using contraceptives because this was what their peers were doing [24]. The girls would turn to their peers, and those they surrounded themselves with, to inform their decisions.

3.5.3. Partner Factors

Sexual partners have both a positive and negative influence on the contraceptive decisions made by adolescent girls. They either encouraged or discouraged contraceptive use. Some partners positively influence contraceptive decisions among adolescent girls, although the motive is for their benefit. In Kenya, adolescent girls mentioned that they decided to use contraceptives because their partners did not want to endure the embarrassment of impregnating a young girl [22], while others did it because their partners wanted to stop using condoms and have unprotected sex. Where sexual partners negatively influenced adolescent girls' decisions to use contraceptives and discouraged contraceptive use, it was based on their concerns regarding the effect that contraceptives may have on the future fertility of the girls [22]. Adolescents also made decisions not to use contraceptives due to their partners' concerns that using contraceptives signified having multiple sexual partners, which discouraged their use [18]. Adolescents in Nigeria, however, reported that sexual partners played a role in deciding which contraceptive method to use, particularly among married adolescents [24]. Other issues, such as the duration of the relationship, also influenced contraception decisions among adolescents [20]. Adolescents who were in long-term relationships, compared to those in short-term relationships, were more likely

to choose to use contraceptives [20]. However, the definition of short-term and long-term relationships was not detailed in the articles reviewed [25].

3.5.4. Societal, Cultural and Community Factors

Fear of the effects of contraception on infertility or future fertility among adolescent girls and community members was a common concern in almost all the studies [18,20,22–25]. Myths about the link between hormonal, non-barrier contraceptives and infertility were widespread, as were fears that using contraceptives causes infertility. It was believed that these methods were to be used by married women or for child spacing [18]. In Kenya, perceptions concerning not being able to give birth to a healthy baby in the future were a major influence on contraceptive decisions among adolescent girls [22]. Women are under social and cultural pressure to prove their fertility and reproduce, especially young women and newlyweds. The threat that infertility places on their future marriage prospects was also a major concern and influenced decisions about contraceptive use [24]. Societal and cultural norms that disapprove of and stigmatise premarital sex and contraceptive use were also key influencers on decisions to use contraceptives [19]. The perception that adolescents who use contraceptives are promiscuous also influenced decisions on contraceptive use [18,22]. Other issues, such as the duration of the relationship, also influenced contraception decisions among adolescents [20]. The fears also centred around the shame of dishonouring parents, the stigma from their peers and community, and the social withdrawal that is associated with teenage pregnancy [22]. Adolescents in South Africa also reported fearing being condemned [25].

3.5.5. Institutional and Environmental Factors

Institutional and environmental factors relating to accessing contraceptives and how they influence decisions to use them were reported among adolescents in Ghana [19], Malawi [20], and South Africa [25]. The absence of privacy in health facilities, and the lack of a conducive environment and policies that hinder access to contraceptives all influence contraception decisions among adolescents in Malawi [20]. In South Africa, the attitudes of healthcare workers, particularly nurses, influenced decisions to use contraception among adolescent girls [25]. Adolescents cited harsh treatment and scolding by nurses as negative influences. They also reported that nurses often attempted to coerce the girls into using injectables, as they were seen as the most reliable contraceptives [25].

4. Discussion

This is the first scoping review to map and synthesize existing evidence on the influence of individual, parental, peer, and societal factors on adolescents' contraceptive decisions in Sub-Saharan Africa. The results of this study indicate that various individual, parental, peer, and partner, societal and community, and institutional and environmental factors influence, both positively and negatively, adolescents' decisions on whether to use contraceptives. However, some of the main concerns under these influences were common and cross-cutting and are discussed below.

4.1. Intrapersonal Factors Influencing Adolescent Girls' Contraceptive Decisions

The fear of the side effects arising from contraceptive use was also reported across all the studies reviewed. Similar studies among adolescents and women, in general, reported comparable findings [37–41]. The fear of side effects is a major hindrance to contraceptive use, thus influencing contraceptive decisions among adolescent girls and women at large. This is due to the consequences that these side effects have on their lives, such as the strain and threats they place on relationships [42], including threats of physical violence [25].

Another major deterrent to contraceptive use was the alleged side effect of it causing sterility. Fears about contraceptive use causing infertility and affecting future fertility were a major influence on decision-making regarding using contraceptives among adolescents in all the studies reviewed [18–20,22–25]. This was explored across all levels in this study, i.e.,

individual, peer and partner, community, and societal levels. Other studies also reported on this belief that using modern contraceptives can cause infertility [39,40,43–47]. Women believed that infertility caused by contraception was caused by blood accumulation and blockage in the womb [25,41,48,49], damage to or spoiling the womb [44,49], displacement and internal movement of the contraceptive device (particularly the implants and IUD) causing damage to the body organs or going missing in the body [19,40,50], toxicity and contamination of the blood [23,48], and loss of libido, leading to inability to conceive [25,51]. Most women in African societies face enormous pressure to have children, and having children and being a mother are viewed positively and perceived as giving women elevated social status and respect in their communities [52]. As such, adolescent girls and women who cannot bear children may experience challenges socially and culturally, including disruption of their relationships or marriages, boyfriends or husbands resorting to polygamy, divorce, or promiscuity by the boyfriend or husband [41,45]. Therefore, where their ability to reproduce is threatened or is seemingly affected by contraceptive use, adolescent girls and women, in general, will opt to not use contraceptives or discontinue use where they started.

The lack of accurate information about contraceptives could be contributing to the fear of side effects. Studies showed that the information adolescents had about contraceptives, how they work, and how to use them was often inadequate, incomplete, and sometimes wrong [20,23,25], and studies reported similar findings [53]. Lack of information also influences contraceptive decisions, and it was cited as a deterrent to using contraceptives [20,23,41,54]. Adolescent girls also lacked credible sources of information, relying on friends, peers, and parents [18,19,22,24,25]. This lack of accurate information about contraceptives and how they work and the lack of reliable sources for accurate information can result in misconceptions and misinformation. When the fear of infertility, lack of information, and reliable sources are coupled with the high value placed on fertility in most sub-Saharan African cultures, it places great pressure on women to bear children, which contributes to adolescents deciding not to use contraceptives. Having a child accrues certain advantages and status in society, not just to the woman, but to the entire family [48]. Therefore, the fear of infertility and future fertility being affected results in women not using or discontinuing the use of contraceptives, irrespective of marital status, to safeguard their future fertility. The inability to bear children can have drastic consequences for the woman, both socially and culturally, which may include marital disruption, divorce, promiscuity by the husband, or even polygamy [41,45].

4.2. Interpersonal Factors Influencing Adolescent Girls' Contraceptive Decisions

4.2.1. Parental Factors

As found in other studies, parents, particularly mothers, have a significant influence on the contraceptive decisions of adolescent girls, whether positively or negatively. Their discomfort with discussing sex and sex-related issues with their children [55] can negatively influence contraceptive decisions among adolescent girls. The absence of parental communication on sexuality and sex-related issues with adolescents provides an opportunity for external influencers, such as peers, partners, and the media. Regarding positive parental influences on adolescent contraceptive decisions, studies revealed that conversations between children and their parents are effective at communicating sexual and reproductive information and instilling values in the children [56,57]. As a result of the enormous influence that parents have on adolescent girls' social, emotional, and cognitive development, they must be more involved in ensuring that the girls' contraceptive decisions and sexual and reproductive health needs are met [58].

4.2.2. Partner Factors

Sexual partners have a substantial influence on the contraceptive decisions adolescent girls make. Adolescent girls are the principal users of contraceptives and typically bear responsibility for contraceptive use, despite their partners having significant influence

in deciding the type of contraceptive used [41]. The demand for their partners' consent, the denial of their partner's approval, and the adolescent girls' inability to seek consent from their partners all negatively affect and influence the contraceptive decisions that the adolescent girls make [59].

However, studies also show the positive influences that partners have on contraceptive decisions. Communication with partners about contraceptive use positively influences the use of contraceptives among adolescent girls and young women, particularly with non-barrier methods [60]. For married adolescents, this is consistent with research findings on spousal communication and decision-making that are husband-centred [61–63], which align with family planning interventions that target male involvement, focusing mostly on married couples and husbands [64].

4.2.3. Peer Factors

Peer relationships are a major influence on contraceptive use among adolescent girls. As parental and community influence on adolescents diminishes, peer relationships start to take on a more significant role in adolescents' lives. The views of peers can negatively influence contraceptive decisions among adolescents and prevent them from using contraceptive services [55]. Peer relationships can also positively influence contraceptive decisions. Conversations about contraceptives with peers were positively associated with the use of non-barrier contraceptives, more so among those who are single, whether they have a child or not [60].

4.3. Society and Community Factors Influencing Adolescent Girls' Contraceptive Decisions

Studies in this review reported the belief that contraceptives are for married women and those who had children before—not single, nulliparous women. Comparable findings were reported in other studies [65]. This belief and the fear of stigma, social exclusion, and the linking of contraceptive use with promiscuous behaviour contribute to the contraceptive decisions that adolescents make, which lead to the non-use of contraceptives. They fear that if their use of contraceptives became common knowledge, they would be labelled as being promiscuous, 'bad girls' with no good morals, or accused of prostitution not only by peers, but also by their parents [18,19,22]. This was also reported in other studies [41,65–67]. This could result in social exclusion and their being the centre of gossip among their friends [18,19]. Among married adolescents, they feared that even discussing the use of contraceptives with their partners might imply having multiple sexual partners [18]. With such consequences that would affect their family and social lives, adolescents are inclined to decide against using contraceptives or discontinue their use to avoid the stress that comes with these consequences.

4.4. Institutional Factors Influencing Adolescent Girls' Contraceptive Decisions

Challenges with access and the availability of a conducive environment were also raised. Health facilities and communities also do not provide a conducive, judgement-free environment in which adolescents can exercise their freedom and make independent decisions [20]. Among the issues raised were lack of privacy, ease of access, youth-friendly services, and services targeting older adolescents. The negative attitude of healthcare staff also discouraged accessing contraceptives from health facilities [54,66–68]. Healthcare workers' negative and paternalistic attitudes towards adolescents' use of contraceptives were documented in various studies [41,66,69]. They discourage adolescent girls from using contraceptives, holding the view that they should be used by married adults, as they are largely meant for child spacing. Adolescents view communication with nurses as being below standard, incomplete, and often unilateral, with the nurses using technical language and not being in sync with the needs of adolescents [41]. Challenges raised by adolescents in the studies reviewed included being lectured about premarital sex, harassment, being scolded, and being denied services until they answered a barrage of questions. Another concern raised by adolescent girls was that their parents and community members, whom

they did not want to know about their contraceptive use, also used the same health facilities. Adolescents, therefore, preferred to access services in other locations, such as drug stores.

5. Conclusions

Our review revealed various individual, parental, peer, and partner, societal and community, and institutional and environmental factors that influence adolescent girls' contraceptive decisions. However, these factors were common and cross-cutting across these levels. The main factors were the fear of the side effects, particularly infertility and future fertility, lack of accurate information, beliefs, and cultural norms about who can use contraceptives, which contributed to the fear of stigma and social exclusion from friends and society. Other concerns included the impact on relationships and marriages, as well as the connection between the use of contraceptives and promiscuity. Challenges with access to contraceptives, particularly from health facilities, as a result of negative attitudes among health providers and a lack of infrastructure that provides privacy and safe spaces, were another major concern. These barriers remain a major challenge in most African countries and will need to be addressed if contraceptive use among adolescents is to improve.

Identifying and addressing the core issues within the context of local cultural norms is essential. To improve demand, access, and usage of contraceptives among adolescent girls, the implementation of policies and programmes that target this age group must be re-strategised. Ensuring constant engagement to enhance acceptance of contraceptives at the individual and community level, particularly among adolescents and young adults, is essential. To help dispel fears and misconceptions about contraception, communities and intended users should be given complete and accurate information. Accessing information from reliable sources, particularly health providers, should also be actively encouraged. Youth-friendly spaces should be the norm in health facilities. Training health providers and having a younger staff who can identify and communicate with adolescents in a respectful, nonjudgmental manner can help change health staff attitudes toward young people. Infrastructure-wise, locating youth-friendly spaces in more secluded places that afford privacy and confidentiality can help improve access to and uptake of contraceptive services in this age group. In these efforts to address these challenges, it is imperative to adopt holistic and inclusive approaches that embrace broader stakeholder involvement, utilise evidence-based data, and promote the well-being of adolescents.

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Abbreviations

LMIC	Low-to-Middle-Income-Country
MMAT	Mixed Method Appraisal Tool
PCC	Population: Concept, Context
PICO	Population: Intervention, Comparator and Outcome
PRISMA-P	Preferred Reporting Items for Systematic review and Meta-Analysis Protocols
SSA	sub-Saharan Africa
UKZN	University of KwaZulu-Natal
WHO	World Health Organisation

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CHAPTER FOUR

METHODOLOGY

This section provides a detailed description of the overall methods used in this study. It details the methods employed in answering the research questions. Methods and materials used in the study are provided in this chapter. Detailed information is provided on the study design used, the study area and setting, the study population that was targeted and how the sampling was done. It also covers the data collection methods, data management and analysis, and ethical considerations.

4.1.Study area and setting

This study was conducted in Zambia focusing on both urban and rural areas. Country data based on the Zambia Demographic and Health Survey (ZDHS) was used for quantitative analysis while the qualitative component employed primary data collection. The qualitative component was conducted in Lusaka and Northern provinces. Two districts were purposively selected from each province based on whether they are predominantly rural or urban, to maintain a good rural-urban balance. From Lusaka province, Lusaka and Chongwe districts were selected, while in Northern province, Kasama and Luwingu were selected. Lusaka province and Northern province were selected based on disparities in the current use of any modern contraceptive method (1).

Zambia is a land-locked country in sub-Saharan Africa that borders the Democratic Republic of Congo to the north, Tanzania to the northeast, Malawi and Mozambique to the east, Zimbabwe, and Botswana to the south, Namibia to the southwest, Angola to the west. Zambia covers a land area of 752,612 square kilometres. Administratively, the country is divided into 10 provinces and 110 districts. Of the 10 provinces, two are predominantly urban, namely Lusaka and Copperbelt. The remaining provinces—Central, Eastern, Muchinga, Northern, Luapula, North-western, Western, and Southern—are predominantly rural. The capital city is Lusaka, in the south-central part of the country.

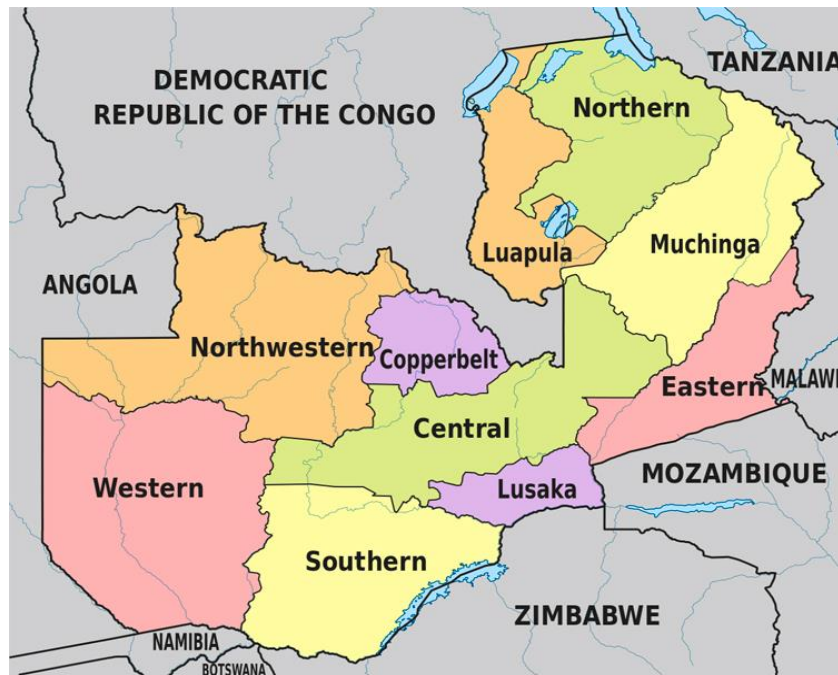


Figure 2: Map of Zambia (2)

According to the 2010 Census of Population and Housing, 52.5% of the population was aged below 18 years. Adolescents accounted for over a quarter (25.2%) of the total population (3). The study population included females aged 10-19 years. Quantitative data relating to this age group was extracted from 1996, 2001/2, 2007 and 2013/14 ZDHS datasets. Primary qualitative data was collected from females aged 15-19 years in selected provinces and districts. The qualitative study was conducted in the identified health facilities in the selected districts. The selection of the health facilities was based on the health facilities having functional youth-friendly spaces.

4.2. Study Design

This study was a concurrent mixed-method cross-sectional study involving quantitative and qualitative components. The quantitative component entailed analysis of secondary data from 1996, 2001/2 2007 and 2013/14 Zambia Demographic and Health Surveys (ZDHS) to examine patterns and trends of contraception use among adolescents in Zambia.

The qualitative component employed an explorative qualitative study design. This involved collection of data through focus group discussions (FGDs) and Key Informant Interviews (KII) with adolescents to explore and understand their decision-making process regarding contraception use, including factors that influence their decision-making, as well as their needs,

preferences, and perspectives regarding existing and future contraception methods. The two components are described in detail below.

4.2.1. Trend analysis based on ZDHS Data

The data used in this study was extracted from 1996, 2001/2 2007 and 2013/14 Zambia Demographic and Health Surveys. The Zambia Demographic and Health Survey (ZDHS) is a nationally representative sample survey of Zambian households. The ZDHS employs multistage sampling and is designed to provide estimates of population and health indicators at the national and provincial levels. All women aged 15-49 years and all men aged 15-59 years who were either permanent residents of the households in the sample or visitors present in the household on the night before the survey were eligible to be interviewed. Family planning data is collected on several aspects of contraception including knowledge of specific contraceptive methods, attitudes and behaviour regarding contraceptive use, sources of methods, and cost of methods. The focus is on women who are sexually active because these women have the greatest risk of exposure to pregnancy and the need for regulating their fertility (1).

4.2.2. Qualitative Exploratory Study

The explorative qualitative study design was chosen based on its ability to deepen our understanding of “how” adolescents make decisions on using contraceptives and also to explore some contextual conditions that may be relevant to the phenomenon under study (4). The study was based on ontological assumptions which answer questions on the nature of reality. The characteristics of this philosophical approach are that reality is subjective and multiple as seen by the different participants in the study (5). This study explored the nature of the adolescents’ reality and its characteristics pertaining to decision-making on contraceptive use. This embraced the idea of multiple realities and perspectives because the participants were a group of diverse individuals with different perspectives and experiences on how they make decisions on whether or not to use contraceptives. The presentation of evidence of multiple realities included the use of multiple quotes based on the actual words of different individuals and presenting different perspectives from individuals (5).

4.3. Recruitment

Quantitative component – multistage cluster sampling is the sampling method used in the Zambia Demographic and Health Surveys. All females in the 1996, 2001/2 2007 and 2013/14 ZDHS who responded to the question “Are you currently using any contraceptive?” were included in the study. This was a census of all the females aged 15-19 years in the DHS surveys mentioned above.

Qualitative component – participants were recruited from Youth Friendly Spaces at selected health facilities. Health facilities were purposively selected with a focus on those that have functional Youth Friendly Spaces. Data on health facilities with functional Youth Friendly Spaces was obtained from the District Health Offices under the Ministry of Health. A screening tool based on the eligibility criteria was used to recruit participants for the study.

4.3.1. Eligibility Criteria

The following eligibility criteria were applied in the selection of study participants. The eligibility criteria are described for both the qualitative and quantitative components. The quantitative component of the study included all adolescent females who are aged between 15 and 19 years, participated in 1996, 2001/2 2007 and 2013/14 ZDHS and responded to the question “Are you currently using any contraceptive?”. The qualitative component included sexually active adolescent females aged between 15 and 19 years, who were residents of Lusaka and Chongwe districts in Lusaka province and Kasama and Luwingu districts in Northern province. However, participants who did not give assent or their parents or guardians did not consent were not included in the study.

4.4. Sampling

The quantitative component of the study was based on ZDHS data therefore, sampling that which is implemented in the survey. Variables of interest that were included in the analysis were extracted from the four ZDHS surveys and merged prior to analysis.

For the qualitative component of the study, Purposive sampling, specifically maximum variation sampling, was employed to recruit adolescent girls aged between 15 and 19 years to participate in the focus group discussions (FGDs) and key informant interviews (KIIs). Peer educators from the selected health facilities assisted with the identification of potentially

eligible adolescents and allowed the principal investigator to recruit participants based on the eligibility criteria. The criteria included only female participants who were residents of the study sites, aged between 15-19 years and accessed services from the youth-friendly spaces. Maximum variation sampling ensured that participants were diverse in terms of age, knowledge of contraceptives, and educational levels

4.5.Sample Size

In the quantitative component of the study, data analysis was done across four ZDHS surveys and included a total of 9,072 adolescent girls. The majority (42%) were from the 2013/14 ZDHS while 18% were from the 2007 survey, with 20% from the 2001/2 survey and 20% from the 1996 survey. This included all females aged 15-19 years in the 1996, 2001/2, 2007 and 2013/14 surveys who responded to the question “Are you currently using any modern contraceptive?”. For the qualitative component, participants in focus group discussions were purposively recruited using maximum-variation sampling criteria from the selected health facilities in the four (4) districts. This strategy for purposive sampling aims at capturing and describing the central themes or principal outcomes that cut across many participant or program variations (6). This involves selecting key demographic variables that are likely to have an impact on participants’ views of the topic (7). Therefore, to create space for multiple perspectives, purposive maximum variation sampling technique was employed. The sampling was based on demographic characteristics, such as age, and area of residence resulting in a variety of participants. A total of seven focus group discussions and three key informant interviews were conducted in the four districts selected from the two provinces.

4.6.Study Instruments and Data Collection

In understanding the levels, patterns, determinants, and trends of contraception use among adolescents, several factors were examined to determine how they have influenced these patterns and trends. Data extraction from the ZDHS was based on the response to the question “Are you currently using any contraceptives?” This was the dependent variable. Explanatory variables that were included in this study are detailed under the descriptions for each manuscript.

With regard to the qualitative component, focus group discussions (FGDs) and key informant interviews were employed in collecting data. The 3 KIIs were conducted as opposed to an FGD

because the participants were not comfortable with participating in an FGD but were willing to participate through IDIs. Participants for FGDs were selected based on their characteristics to ensure that the groups were heterogeneous. FGDs were conducted with eligible research participants using focus group discussion guides. The focus group technique in this study was applied as a way of eliciting needs, preferences and perspectives regarding existing and future contraceptive methods (8). The groups involved adolescents aged between 15 and 19 years. On average, the group discussions lasted for approximately 90 minutes. The location for the focus group discussions was at the health facilities which were convenient, accessible and familiar to the participants (8). The exact number of participants in each focus group ranged between 8-12 which is the ideal size for a focus group discussion. The FGDs were conducted in English and where necessary, in Bemba and Nyanja which are languages that are widely spoken in the study areas, with which the participants were comfortable. Trained and experienced research assistants and the principal investigator conducted the FGDs and interviews. Permission was sought from participants to audio-record the focus group discussions using a digital audio recorder.

4.7.Data Management

Data entry was not necessary for the quantitative component as the data was already entered and presented in Stata format. Once data extraction was complete, data analysis was conducted using Stata. Details of the analysis are presented in the different publications that constitute this thesis. Qualitative data from the FGDs and KIIs were audio-recorded and transcribed verbatim by two professional researchers. Verbatim transcription was used to capture both content and context within which the comments were made (8). Where Bemba and Nyanja were used, transcripts were translated into English by the data collection team. The principal investigator worked with the research team to review the transcribed and translated information to ensure that the transcripts retained the original meaning. All personal identifiers were removed from the transcripts. The transcripts were imported into NVivo 12 pro (QSR International) for data management and analysis.

4.8.Data analyses

Quantitative data presented in papers 3 and 4 were analysed using Stata. Paper 3 employed multilevel analysis while multivariate decomposition analysis was employed in paper 4. In both papers and estimates with a p-value less than 0.05 were considered statistically significant.

Papers 5 and 6 were based on qualitative data which was managed using NVivo 12 pro and analysed using thematic analysis. Detailed analysis procedures used in all the manuscripts are presented in the format of the manuscripts in subsequent chapters.

4.9.Ethical Considerations

Ethical approval for this PhD study was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC), reference number REF. No. 157-2019 and the University of KwaZulu-Natal Biomedical Research Ethics Committee (UKZNBREC) reference number No BE288/18. Annual recertification approval was obtained since initial approval to date. Authorization to conduct the research was also obtained from the National Health Research Authority (NHRA) and permission to use the data was obtained from the Demographic and Health Surveys (DHS) Program. Permission to conduct the qualitative component of the research was obtained from the Ministry of Health of Zambia at the national, provincial and district levels. The Provincial Health Directors for Kasama and Lusaka granted permission to conduct the study in their provinces as did the District Health Directors for Lusaka, Chongwe, Kasama, and Luwingu. Health Facility-In-charges were also visited before the commencement of fieldwork. Consent was obtained from the participants and assent was obtained for underage participants. Consent and assent forms were administered and signed by the participants and permission for participants who were below the age of 18 was obtained from the parents or guardians. Confidentiality was upheld. Participants' sexual activity and contraceptive use was not disclosed to the parents or guardians.

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CHAPTER FIVE

PATTERNS, TRENDS, AND FACTORS ASSOCIATED WITH CONTRACEPTIVE USE AMONG ADOLESCENT GIRLS IN ZAMBIA (1996 TO 2014): A MULTILEVEL ANALYSIS

Mumbi Chola, Khumbulani Hlongwana, and Themba G. Ginindza

This paper examined the patterns, trends, and factors associated with contraceptive use among adolescents in Zambia over the period 1996–2014 (Objective 1). The aim was to use ZDHS data to establish the patterns and trends in contraceptive use among adolescent girls in Zambia over the period 1996 – 2014, as well as to determine the associated factors.

Data on adolescent girls aged 15–19 years from 1996, 2001/2, 2007 and 2013/14 Zambia Demographic and Health Surveys were analysed. A total of 9,072 adolescent girls were included in the analysis across the four ZDHS surveys. Descriptive statistics and multilevel logistic regression models were used to analyse variations in contraceptive use among adolescent girls over the reference period.

To our knowledge, this was the first study in Zambia, to examine the patterns, and trends in contraceptive use among adolescent girls and factors associated with contraceptive use in this age group, using multilevel regression models. This study contributes to understanding the factors associated with contraceptive use among adolescents in Zambia and how these factors and their influence on contraceptive use have been changing over the years. The use of multilevel modelling goes beyond the simple logistic regression as it allows for the examination of the relationship between the dependent variable and multiple independent variables while accounting for different levels (cluster level and individual level) used in the sampling. It accounts for the effects of the independent variables on the dependent variable in view of the cluster effects, both within clusters and across clusters.

The findings of this paper showed that contraceptive use among adolescent girls in Zambia has remained low over time, increasing by only 3% over the 18-year period, which is much lower than the change in the general population. Contraceptive use remained consistently low among

younger, uneducated, and unmarried sexually active adolescent girls, who comprise some of the disadvantaged sub-groups. In more recent years however, urban-rural differences in contraceptive use among adolescent girls began to emerge again.

The chapter is presented in the format of a published article.

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RESEARCH ARTICLE

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Patterns, trends, and factors associated with contraceptive use among adolescent girls in Zambia (1996 to 2014): a multilevel analysis



Mumbi Chola^{1,2*} , Khumbulani Hlongwana¹ and Themba G. Ginindza¹

Abstract

Background: Despite high levels of pregnancy and childbearing among adolescents in Africa, contraceptive use remains low. Examining variations in contraceptive use among adolescent girls is vital for informing programs to improve contraceptive utilisation among this segment of the population. This study aimed to examine the patterns, trends, and factors associated with contraceptive use among adolescents in Zambia over the period 1996–2014.

Methods: The study involved an analysis of data from 1996, 2001/2, 2007 and 2013/14 Zambia Demographic and Health Surveys focusing on adolescent girls aged 15–19 years. Analysis entailed descriptive statistics and estimation of multilevel logistic regression models examining variations in contraceptive use among adolescent girls over time. Estimates with *p*-values less than 0.05 were considered statistically significant.

Results: Results showed that contraceptive use remains low and ranged from 7.6% in 1996 to 10.9% in 2013/14, reflecting a change of 3.3 percentage points over 18 years. Over the 18 years, contraceptive use was significantly associated with age, level of education, and marital status. Older adolescent girls and those with higher levels of education were significantly more likely to use contraception compared to younger ones and those with lower levels of education. Although initially significant (AOR 0.556, 95% CI 0.317, 0.974 in 1996), rural-urban differences disappeared between 2001/2 and 2007 but re-emerged in 2013/14 (AOR 0.654, 95% CI 0.499, 0.859). Across all survey years, adolescents who were married or living with a partner were significantly more likely to use contraceptives compared to those who were not married.

Conclusions: The findings suggest the need for targeted interventions to improve contraceptive use among sexually active adolescent girls in the country in general, and those who are disadvantaged in particular.

Keywords: Adolescent girls, Contraceptive use, Patterns and trends, Multilevel analysis, Zambia

* Correspondence: mumbi24@gmail.com

¹Department of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu Natal, Durban, South Africa

²Department of Epidemiology & Biostatistics, School of Public Health, University of Zambia, Lusaka, Zambia



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Background

The World Health Organisation (WHO) estimated that every year, approximately 21 million girls between the ages of 15 and 19 years, and 2 million girls aged below 15 years become pregnant in developing regions, with an estimated 16 million girls between ages 15 and 19 years and 2.5 million girls below the age 16 years giving birth [1]. Approximately half of these pregnancies (49%), reported among adolescents between ages 15–19 who live in low-income regions, are unintended, and over 50% result in abortions, usually under unsafe conditions [2]. WHO further states that although the global birth rate among adolescents reduced to 47 births per 1000 women in 2015 from 65 births per 1000 women in 1990, the adolescent population continues to grow globally and adolescent pregnancies are also projected to increase by 2030, with West and Central Africa and Eastern and Southern Africa experiencing the most substantial increases [1]. Projections also show that the number of adolescent mothers will reach a high of 86 million by 2030 [3].

Pregnancies among adolescent girls have serious consequences which can significantly affect the lives of the adolescent mothers and those of the children. Early and unintended pregnancies among adolescents have been associated with adverse health, educational, social, and economic outcomes [4]. The impact on adolescent mothers includes risks of maternal death, illness, and disability such as obstetric fistula, complications of unsafe abortion, sexually transmitted infections, including HIV, and health risks to infants [5]. About 70,000 adolescent girls in low-income countries (LICs) die annually of causes related to pregnancy and childbirth [5]. Among adolescent girls aged 15–19 years in LICs, pregnancy and childbirth complications are the second leading cause of death, and babies born to these mothers have increased health risks compared to those born to older women [2]. Early and unintended pregnancy disrupts adolescent girls' schooling, thus affecting their future economic opportunities, including reducing job market opportunities [5, 6]. The effects of adolescent childbearing also extend to the health of babies with higher perinatal deaths and low birth weight among children born to mothers aged below 20 years [5–7].

Despite the high rates of pregnancies and births among adolescents, contraceptive use among this segment of the population remains low globally, particularly in LICs, such as those in Africa [8–10]. Evidence shows that contraceptive prevalence rate (CPR) among adolescent females aged 15–19 years in LICs is 21% for all methods (modern and traditional) [8, 11, 12]. The low use of contraception among adolescents occurs against the backdrop of evidence that using family planning methods has benefits that could reduce some of the

negative consequences of adolescent pregnancy and childbearing. These benefits include the freedom to decide how many children to have and child spacing, improvements in health-related outcomes, such as a reduction in maternal mortality and infant mortality [13–15] and improvements in schooling and economic outcomes [16, 17].

Studies show that various factors influence adolescents' decision making regarding whether or not to use contraceptives. These include individual; family, societal or peer; health system; and cultural and religious factors. This paper focuses on individual-level factors, which include education [10, 18, 19], knowledge of contraceptives [20, 21], fear, shame, myths and stigma [22, 23] and fear of side effects and adverse reactions [24, 25].

In Zambia, contraceptive use among adolescents remains low despite the evidence showing almost universal knowledge of at least one modern contraceptive method [26]. Statistics show that contraceptive prevalence among women 15–49 years has been increasing over time in the country. Estimates, for instance, show that use of any method among currently married women increased from 15.2% in 1992 to 49.0% in 2013–14 while use of modern methods increased from 8.9 to 44.8% over the same period [26]. Among adolescents, contraceptive use remains low with only 10.2% using any modern contraceptive method in 2013/14 [26]. There is limited understanding of the patterns and trends of contraceptive use among adolescents and associated individual-level factors and how these have changed over the past two decades. The aim of this study was to examine the patterns, trends, and factors associated with contraceptive use among adolescents in Zambia over the period 1996 to 2014.

Methods

This study involved an analysis of cross-sectional data from four Zambia Demographic and Health Surveys (1996, 2001/2, 2007 and 2013/14). The Zambia Demographic and Health Survey (ZDHS) is a nationally representative sample survey of Zambian households. The main objective of the ZDHS is to provide information on fertility levels and trends, mortality, family planning, as well as indicators on maternal and child health including HIV/AIDS [26]. The sample for the ZDHS is designed to provide estimates of population and health indicators at the national and provincial levels [26]. The sample design allows for specific indicators, such as contraceptive use, to be calculated for all provinces in Zambia. The sampling frame used for the ZDHS is usually adopted from the Census of Population and Housing of the Republic of Zambia (CPH) provided by the Central Statistical Office.

A representative sample of households was drawn for all the ZDHS surveys using a two-stage stratified cluster sample design, with Enumeration Areas (EAs) (or clusters) selected during the first stage and households selected during the second stage. The sample was stratified in two stages from the CPH frames (1990, 2000 and 2010). Stratification was achieved by dividing every province into urban and rural areas. Provinces were stratified into 18 strata in earlier surveys and 20 strata in the 2013/14 survey. Samples were selected independently in every stratum through a two-stage selection process. Stratification and proportional allocation were achieved, at all lower geographical/administrative levels, by sorting the sampling frame according to the geographical/administrative order and using a probability proportional to size selection process in the first stage. All women and men aged, 15–49 and 15–59 respectively, who were either permanent residents of the households in the sample or were visitors present in the household on the night before the survey, were eligible for interview [26].

The target population in this study included adolescent girls aged 15–19 years captured in the ZDHS surveys. All those who responded to the question on current contraceptive method were included in the analysis. Current use of a contraceptive method, which was the dependent variable, was recoded into a binary outcome, those currently using and those not using any method. Explanatory variables included in the analysis were age, type of place of residence, province, highest level of education, marital status at the time of interview, literacy, and knowledge of any contraceptive method (Table 1). Since the ZDHS involved more than one level of stratification, analysis took into account cluster and household variables. Adolescents who had never had sex were excluded from the analysis.

Data from the four ZDHS surveys were combined by appending the data sets from 1996, 2001/2 and 2007 to the 2013/14 ZDHS. We started by conducting descriptive analysis and presented the results as proportions. Where appropriate, Chi-square and Fischer's exact tests were used to test for the significance of association between the outcome and explanatory variables. We then conducted multilevel multivariate logistic regression analysis – factoring in random effects – to determine the predictors of contraceptive use. Analysis was conducted using Stata 15/MP (StataCorp LLC) and estimates with *p*-value less than 0.05 were considered statistically significant.

Results

Sample characteristics

A total of 9072 adolescent girls were included in the analysis across the four ZDHS surveys. The majority (41%) were from the 2013/14 ZDHS while 18% were from the 2007 survey, 20% from the 2001/2 survey and 22% from the 1996 survey. Table 2 shows the distribution of adolescent girls included in the analysis by background characteristics across the survey years.

Overall, contraceptive use over the 18 years has been low, with only 9.8% of adolescent girls aged between 15- and 19-years using contraceptives (Table 2). This ranged from 7.6% in 1996 to 10.9% in 2013/14, reflecting a 3.3 percentage point change over 18 years ($p < 0.01$). The distribution of respondents across ages ranged from 18.1 to 23.2% over the survey years. Regarding marital status, the proportion of adolescents who reported being married declined from 24.8% in 1996 to 15.1% in 2013/14 (Table 2). However, 19.3% of adolescent girls interviewed over the 18-year period from 1996 to 2014 were married at the time of the survey. Rural and urban distribution showed that in 1996 and 2001/2, the

Table 1 Definition of variables

Variable	Definition and measurement
Current Contraceptive Use	Contraception use: 0 = Not using a method; 1 = Using a method
Knowledge of Any Method	Knowledge of any modern contraceptive method: 0 = Knows no method; 1 = Knows modern methods*
Age	Respondent's current age in completed years: ranges from 15 to 19
Current Marital Status	Marital status of the respondent: 0 = Never in Union; 1 = Married/Living with Partner; 2 = Widowed/Separated/Divorced*
Residence	Type of place of residence: 0 = Urban; 1 = Rural
Province	Province or region of residence: 1 = Central; 2 = Copperbelt; 3 = Eastern; 4 = Luapula; 5 = Lusaka; 6 = Muchinga; 7 = Northern; 8 = North Western; 9 = Southern; 10 = Western
Highest Educational Level	Highest level of education attained: 0 = No Education; 1 = Primary; 2 = Secondary & Higher
Literacy	Whether a respondent who attended primary schooling can read a whole or part of a sentence: 0 = Cannot read at all; 1 = Able to read only parts of sentence; 2 = Able to read whole sentence
Currently working	Whether the respondent was currently working (at the time of the survey): 0 = No; 1 = Yes

Table 2 Distribution of adolescent girls by background characteristics and survey year, ZDHS 1996–2013/14

Variable	ZDHS 96 N = 1982	ZDHS 2001/2 N = 1806	ZDHS 2007 N = 1598	ZDHS 2013/14 N = 2686	Total N = 9072
Current Contraceptive Use					
No	1831 (92.4%)	1630 (90.3%)	1424 (89.1%)	3296 (89.4%)	8181 (90.2%)
Yes	151 (7.6%)	176 (9.8%)	174 (10.6%)	390 (10.9%)	891 (9.8%)
Knowledge of Any Modern Method					
Knows no method	247 (12.5%)	127 (7.0%)	150 (9.4%)	162 (4.4%)	686 (7.6%)
Knows modern method	1728 (87.5%)	1677 (93.0%)	1447 (90.6%)	3519 (95.6%)	8371 (92.4%)
Age					
15 Years	395 (19.9%)	372 (20.6%)	370 (23.2%)	735 (19.9%)	1872 (20.6%)
16 Years	419 (21.1%)	326 (18.1%)	330 (20.7%)	759 (20.6%)	1834 (20.2%)
17 Years	369 (18.6%)	325 (18.0%)	303 (19.0%)	674 (18.3%)	1671 (18.8%)
18 Years	404 (20.4%)	406 (22.5%)	299 (18.7%)	774 (21.0%)	1883 (20.8%)
19 Years	395 (19.9%)	377 (20.9%)	296 (18.5%)	744 (20.2%)	1812 (20.0%)
Current Marital Status					
Never Married	1435 (74.2%)	1307 (72.4%)	1302 (81.5%)	3058 (83.0%)	7102 (78.3%)
Married/Living with Partner	501 (25.3%)	449 (24.9%)	270 (16.9%)	572 (15.5%)	1792 (19.8%)
Widowed/Separated/Divorced	46 (2.3%)	50 (2.8%)	26 (1.6%)	56 (1.5%)	178 (2.0%)
Residence					
Urban	799 (40.3%)	639 (35.4%)	809 (50.6%)	1850 (50.2%)	4097 (45.2%)
Rural	1183 (59.7%)	1167 (64.6%)	789 (49.4%)	1836 (49.8%)	4975 (54.8%)
Province					
Central	170 (8.6%)	223 (12.4%)	152 (9.5%)	327 (8.9%)	872 (9.6%)
Copperbelt	309 (15.6%)	235 (13.0%)	190 (11.9%)	417 (11.3%)	1151 (12.7%)
Eastern	244 (12.3%)	192 (10.6%)	196 (12.3%)	472 (12.8%)	1104 (12.2%)
Luapula	242 (12.2%)	159 (8.8%)	152 (9.5%)	279 (7.6%)	832 (9.2%)
Lusaka	274 (13.8%)	204 (11.3%)	224 (14.0%)	434 (11.8%)	1136 (12.5%)
Muchinga ^a	–	–	–	340 (9.2%)	1001 (11.0%)
Northern	204 (10.3%)	288 (16.0%)	169 (10.6%)	352 (9.6%)	821 (9.1%)
North western	114 (5.8%)	198 (11.0%)	157 (9.8%)	381 (10.3%)	943 (10.4%)
Southern	205 (10.3%)	166 (9.2%)	191 (12.0%)	377 (10.2%)	905 (10.0%)
Western	220 (11.1%)	141 (7.8%)	167 (10.5%)	307 (8.3%)	307 (3.4%)
Highest Educational Level					
No education	174 (8.8%)	158 (8.8%)	69 (4.3%)	69 (1.9%)	470 (5.2%)
Primary	1254 (63.3%)	1073 (59.5%)	756 (47.5%)	1418 (38.6%)	4501 (49.8%)
Secondary	553 (27.9%)	574 (31.8%)	767 (48.2%)	2183 (59.5%)	4077 (45.0%)
Literacy^b					
Cannot Read at All	–	765 (42.8%)	386 (24.6%)	750 (20.5%)	1901 (27.1%)
Able to Read Only Parts of Sentence	–	188 (10.5%)	151 (9.6%)	283 (7.7%)	622 (8.9%)
Able to Read Whole Sentence	–	834 (46.7%)	1032 (64.8%)	2621 (71.7%)	4487 (64.0%)

^a - Data on Muchinga province not available for 1996, 2001/2 and 2007 surveys. Muchinga only became a province in 2011

^b - Data on literacy was not collected in the 1996 ZDHS

majority of the respondents were from rural areas (59.7 and 64.6% respectively). However, in 2007 and 2013/14, the distribution was almost even (50.6% vs 49.4% in 2007 and 50.2% vs 49.8% in 2013/14). The provincial

distribution shows that overall, Copperbelt (12.7%), Lusaka (12.5%) and Eastern (12.2%) provinces had the highest proportion of adolescent girls; with Western province recording the lowest proportion of 3.4%.

There were also changes in the distribution of adolescent girls by highest level of education. In 1996 and 2001/2, the majority of respondents had attained primary school level education (63.3 and 59.4% respectively) while in 2007 and 2013/14, the majority had attained secondary level education (48.2 and 59.3% respectively; Table 2). Knowledge of modern contraceptive methods also increased over the reference period. In 1996, 87.7% of adolescents reported knowing modern contraceptive methods, which increased to 95.5% in 2013/14. Concerning literacy, the proportion of adolescents who could not read at all declined from 42.4% in 2001/2 to 20.4% in 2013/14. In contrast, the proportion of adolescents who could read whole sentences increased from 46.2% in 2001/2 to 71.1% in 2013/14. No data on literacy was collected in 1996.

Patterns and trends in contraceptive use

Table 3 below describes the proportions of adolescent girls aged 15–19 years who used contraceptives across the survey years.

Age

Over the period 1996 to 2013/14, contraceptive use increased significantly with age ($p = 0.000$). The proportion using contraception was highest among 19-year old and lowest among 15-year old adolescent girls across survey years (Fig. 1). However, the proportion of 19-year old adolescent girls using contraception declined from 25% in 2007 to 20% in 2013/14.

Marital status

Differences in contraceptive use according to marital status across the four surveys were also statistically significant ($p = 0.000$). Adolescent girls who were married or living with a partner comprised the highest proportion of contraceptive users in 1996 (17.0%) and 2001/2 (24.3%). From 2001/2 to 2007, the proportion of contraceptive users increased across all groups with the most increases being among those married or living with a partner (24.3% in 2001/2 to 28.5% in 2007) and those who were widowed/ separated or divorced (10.0% in 2001/2 to 34.6% in 2007). By 2013/14, those who were married/living with a partner comprised the highest proportion of contraceptive users (36.4%).

Province

Variations in contraceptive use among adolescent girls by province show that in 1996, North-Western province had the highest proportion of users (20%) while Luapula province had the lowest (2%; Table 3). In the 2001/2 survey, Lusaka had the highest while Central province had the lowest proportion of adolescent girls using contraception (16 and 5%, respectively; Table 3). In 2007 and

2013/14, the proportion of adolescent girls using contraception was highest in Western province (29 and 16%, respectively) and lowest in Luapula province (3 and 6%, respectively). The observed differences in contraceptive use by province were statistically significant ($p = 0.000$).

Residence

Contraceptive use by urban-rural residence showed some variation over the period 1996–2013/14. Contraceptive use among urban adolescent girls increased between 1996 to 2001/2 from 8.1 to 11.4% before slightly declining to 10.1% in 2007 and remaining unchanged thereafter (Table 3). Among adolescent girls in rural areas, the proportion using contraception increased between 1996 and 2007 from 7.3 to 11.8% and remained largely unchanged thereafter.

Highest education level

The proportion of adolescent girls using contraception was generally low across all levels of education. In 2007 and 2013/14, use was highest among those with primary level education (13 and 12%, respectively), having increased from 7% in 1996 (Table 3). Among those with no education, only 7% reported using a contraceptive method in 2013/14, which was lower than the proportion using in 2001/2 and 2007 (10% in each case; Table 3). Among those with secondary level education, the proportion ranged between 9 and 11% in the period between 1996 and 2013/14 with 10% reporting currently using contraceptives in 2013/14.

Determinants of contraceptive use

The odds of using contraceptives increased with age across all years. The odds of contraceptive use were higher among older adolescents than the younger ones across all survey years. However, significant differences were observed in 1996, 2007 and 2013/14. In 1996, adolescent girls aged 19 years were 4 times significantly more likely to use contraception compared to those aged 15 years (AOR 4.175, 95% CI 1.377, 12.656) while in 2007, they were twice as likely to use a method as their 15-year-old counterparts (AOR 2.667, 95% CI 1.255, 5.668) (Table 4). Results in Table 4 showed that in 2013/14, 18-year olds had the highest odds of contraceptive use compared to 15-year olds (AOR 2.717, 95% CI 1.496, 4.935).

Results from correlation analysis showed that although there were some positive and negative correlations between the factors considered in the analysis, these were not very strong (Table 5).

There were also disparities by province. In 1996, adolescent girls in North Western (AOR 6.043, 95% CI 2.301, 15.875), Eastern (AOR 3.147, 95% CI 1.230, 8.052), and Northern (AOR 2.871, 95% CI 1.109, 7.437)

Table 3 Distribution of adolescent girls aged 15–19 years using contraception by background characteristics, 1996–2013/14

Current Contraceptive Use	1996		2001/2		2007		2013/14	
	%	N	%	N	%	N	%	N
Marital Status								
Never in union	4.3	1435	4.7	1307	6.8	1302	5.6	3058
Married/Living with Partner	17.0	416	24.3	449	28.5	270	36.4	572
Widowed/Separated/Divorced	8.7	46	10.0	50	34.6	26	19.6	56
P-Value	0.000		0.000		0.000		0.000	
Province								
Central	5.3	170	5.4	223	6.6	152	9.8	327
Copperbelt	6.5	309	11.1	235	6.3	190	6.7	417
Eastern	9.0	244	7.3	192	13.8	196	11.0	472
Luapula	2.1	242	13.2	159	3.3	152	5.7	279
Lusaka	8.0	274	15.7	204	8.5	224	12.7	434
Muchinga†	-	-	-	-	-	-	7.9	340
Northern	9.3	204	7.6	288	7.1	169	9.1	352
North western	20.2	114	11.1	198	15.3	157	12.9	381
Southern	4.9	205	8.4	166	8.9	191	13.5	377
Western	9.6	220	9.2	141	28.7	167	15.6	307
P-Value	0.000		0.014		0.000		0.000	
Residence								
Urban	8.1	799	11.4	639	10.0	809	10.1	1850
Rural	7.3	1183	8.8	1167	11.8	789	11.1	1836
P-Value	0.476		0.075		0.255		0.297	
Highest Education Level								
Education	5.8	174	10.1	158	10.1	69	7.3	69
Primary	7.4	1254	9.2	1073	13.0	756	11.6	1428
Secondary & Higher	8.7	554	10.6	575	8.9	773	10.0	2197
P-Value	0.407		0.656		0.040		0.199	
Literacy*								
Cannot read at all	-		9.9	765	15.0	386	12.5	750
Able to read only par	-		11.2	188	9.9	151	9.2	283
Able to read whole se	-		9.1	834	9.7	1032	10.1	2621
P-Value			0.657		0.015		0.121	

† - Data on Muchinga province not available for 1996, 2001/2 and 2007 surveys. Muchinga only became a province in 2011.

* - Data on literacy was not collected in the 1996 ZDHS

provinces reported the highest odds of using contraceptives compared to those in Central. In 2001/2, there were significant variations between Central province and Copperbelt (AOR 2.671, 95% CI 1.193, 5.978), Luapula (AOR 3.234, 95% CI 1.445, 7.238), Lusaka (AOR 3.731, 95% CI 1.671, 8.332) and North Western (AOR 2.274, 95% CI 1.041, 4.967) provinces (Table 4). In 2007, there were significant differences between Central and North Western and Western provinces. Adolescent girls in North Western and Western provinces were, respectively, 2.4 times and almost 6 times more likely to use contraceptives compared to those in Central province.

There were no significant variations in contraceptive use by province in 2013/14.

Adolescent girls in rural areas were also less likely to use contraceptives compared with their urban counterparts. There were statistically significant variations in contraceptive use by place of residence in 1996 (AOR 0.556, 95% CI 0.317, 0.974) and 2013/14 (AOR 0.654, 95% CI 0.499, 0.859) (Table 4). Adolescent girls with secondary or higher levels of education were significantly more likely to use contraception compared to those with no education across all survey years. From 2007 onwards, adolescent girls with primary level education, like

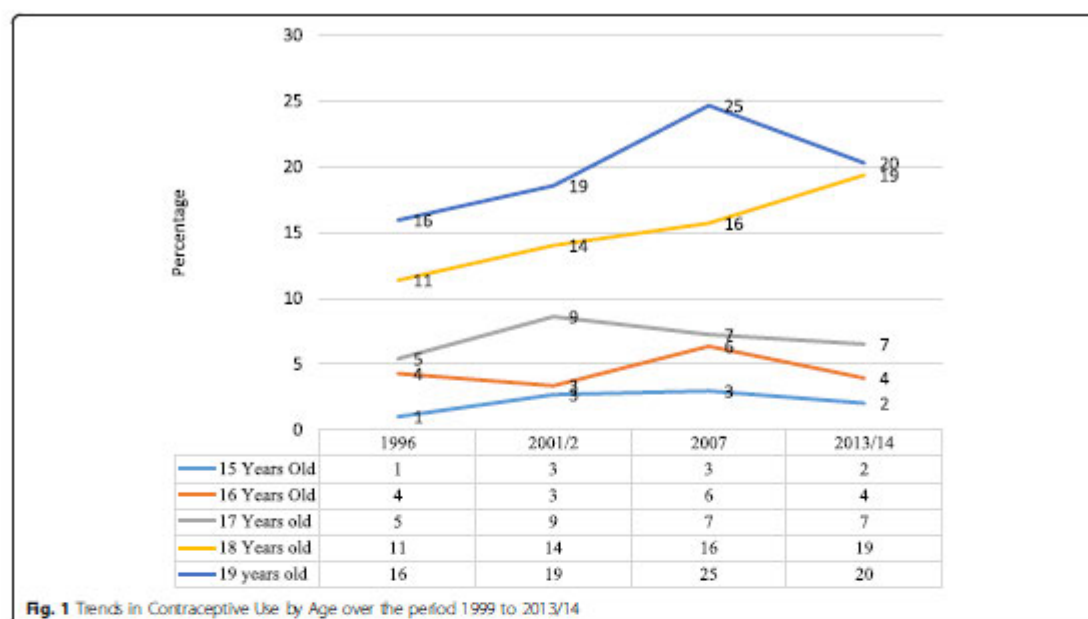


Fig. 1 Trends in Contraceptive Use by Age over the period 1999 to 2013/14

those with secondary level education, were also significantly more likely to use contraceptives compared to those with no education. Similarly, adolescent girls who were married or living with a partner were significantly more likely to use contraception than their never married counterparts across all survey years. In 2007, adolescent girls who were married or living with a partner, or were widowed, separated, or divorced were significantly more likely to use contraception than their never married counterparts.

In summary, the results show that adolescent girls who were most likely to use contraceptives were aged 18–19 years old, had secondary education or higher, and were either married or living with their partner. However, whereas initial significant urban-rural differences in contraceptive use among adolescent girls seemed to have been bridged between 2001/2 and 2007, such differences emerged in 2013/14.

Random-effects results from the multilevel model show that in 1996, 9% of variability in contraceptive use among adolescent girls was explained by inter-cluster variations while in 2013/14, inter-cluster variability explained only 2% of the variations. This shows that over time, variations in contraceptive use among adolescent girls across different geographic clusters were becoming less important compared to individual-level variations.

Discussion

Contraceptive use among adolescent girls in Zambia remained low over the period 1996–2014 although

knowledge of at least one modern method is almost universal. Results from this study showed that in recent years, age, education, residence, marital status, and working status were significantly associated with contraceptive use among adolescent girls. Significant rural-urban differences, which occurred in early years but disappeared in subsequent years, re-emerged in recent years while provincial disparities were bridged. In addition, the odds of using contraceptives increased as adolescent girls grew older and achieved higher levels of education. Furthermore, adolescent girls who were married or living with their partners were significantly more likely to use contraceptives compared with those who were never married.

The low contraceptive use among adolescents could be due to challenges with access to contraception and the actual use of methods. Health system issues, such as lack of adolescent-friendly health services, as well as health care worker attitudes [22], can deter adolescents from accessing contraceptives, particularly from health centres. Lack of access to contraceptive and family planning services at health facilities affects the kind of information that adolescents have. Studies have shown that in addition to low contraceptive use and limited access to information and services, adolescents have poor knowledge of family planning [27]. Adolescents' primary source of information was usually their peers, and the information received from such sources was mostly untrustworthy and distorted [28], thus perpetuating myths and misconceptions about contraception. The low use of

Table 4 Odds ratios from multilevel logistic regression analysis examining variations in current use of contraception among adolescent girls aged 15–19 years in Zambia, ZDHS 1996–2013/14

Current Contraceptive Use	1996 (n = 1181)			2001/2 (n = 1042)			2007 (n = 795)			2013/14 (n = 1879)		
	AOR	p-values	[95% CI]	AOR	p-values	[95% CI]	AOR	p-values	[95% CI]	AOR	p-values	[95% CI]
Age												
15	1.000			1.000			1.000			1.000		
16	2.252	0.171	(0.705 7.194)	0.494	0.139	(0.195 1.256)	1.063	0.885	(0.464 2.435)	1.049	0.889	(0.534 2.063)
17	1.733	0.352	(0.544 5.521)	0.768	0.524	(0.342 1.728)	0.762	0.516	(0.335 1.732)	1.031	0.927	(0.539 1.970)
18	2.872	0.062	(0.947 8.706)	1.058	0.884	(0.494 2.265)	1.425	0.372	(0.655 3.101)	2.717	0.001	(1.496 4.935)
19	4.175	0.012	(1.377 12.656)	1.291	0.511	(0.603 2.764)	2.667	0.011	(1.255 5.668)	1.825	0.050	(1.001 3.328)
Province												
Central	1.000			1.000			1.000			1.000		
Copperbelt	1.345	0.544	(0.516 3.504)	2.671	0.017	(1.193 5.978)	1.262	0.640	(0.477 3.341)	0.904	0.750	(0.484 1.687)
Eastern	3.147	0.017	(1.230 8.052)	1.425	0.425	(0.596 3.406)	2.257	0.062	(0.959 5.311)	0.937	0.817	(0.542 1.620)
Luapula	0.539	0.319	(0.159 1.819)	3.234	0.004	(1.445 7.238)	0.390	0.117	(0.120 1.265)	0.602	0.161	(0.296 1.224)
Lusaka	1.705	0.273	(0.657 4.427)	3.731	0.001	(1.671 8.332)	1.280	0.591	(0.521 3.143)	1.302	0.354	(0.745 2.273)
Muchinga										0.793	0.472	(0.421 1.493)
Northern	2.871	0.030	(1.109 7.437)	1.559	0.257	(0.724 3.359)	0.976	0.961	(0.375 2.541)	0.703	0.253	(0.384 1.287)
North western	6.043	0.000	(2.301 15.875)	2.274	0.039	(1.041 4.967)	2.408	0.050	(1.000 5.800)	1.033	0.908	(0.592 1.803)
Southern	1.302	0.619	(0.460 3.688)	1.763	0.189	(0.756 4.110)	1.108	0.822	(0.453 2.713)	1.110	0.719	(0.630 1.954)
Western	2.301	0.080	(0.905 5.853)	1.735	0.208	(0.736 4.093)	5.967	0.000	(2.598 13.706)	1.406	0.238	(0.799 2.475)
Residence												
Urban	1.000			1.000			1.000			1.000		
Rural	0.556	0.040	(0.317 0.974)	0.827	0.422	(0.520 1.315)	0.658	0.051	(0.432 1.002)	0.654	0.002	(0.499 0.859)
Highest Level of Education												
No Education	1.000			1.000			1.000			1.000		
Primary	2.057	0.061	(0.968 4.371)	1.195	0.562	(0.655 2.179)	3.525	0.008	(1.386 8.964)	2.928	0.032	(1.099 7.801)
Secondary	3.080	0.009	(1.322 7.175)	2.330	0.015	(1.179 4.606)	3.389	0.015	(1.263 9.092)	3.584	0.011	(1.333 9.636)
Current Marital Status												
Never in union	1.000			1.000			1.000			1.000		
Married/Living with Partner	1.934	0.003	(1.258 2.975)	2.867	0.000	(1.928 4.263)	2.408	0.000	(1.562 3.712)	4.131	0.000	(3.071 5.559)
Widowed/ Separated/Divorced	0.708	0.551	(0.227 2.207)	0.837	0.727	(0.309 2.271)	3.199	0.016	(1.247 8.208)	1.423	0.351	(0.678 2.984)
Currently Working												
No	1.000			1.000			1.000			1.000		
Yes	1.614	0.023	(1.070 2.436)	1.276	0.243	(0.847 1.921)	1.392	0.127	(0.911 2.127)	1.345	0.037	(1.018 1.777)
sigma_u	0.565		(0.261 1.223)	0.004		(0.000 120.604.000)	0.005		(3.04E-16 8.78E-10)	0.281		(0.051 1.538)
rho	0.088		(0.020 0.313)	0.000		(0.000 1.000)	8.12E-06		(2.81E-32 1.000)	0.023		(0.001 0.418)

contraception among adolescents could therefore be partly due to limited access to the right information and services.

Over the period 1996–2014, contraceptive use marginally increased with age. Adolescent girls aged 19

years were more likely to be using contraceptives at the time of the survey compared to 15-year-olds. This finding is consistent with those from other studies [8, 29]. This could be attributed to older female adolescents being more mature and knowledgeable about

Table 5 Results from Collinearity Test

	Current Contraceptive Use	Age	Province	Residence	Highest Level of Education	Current Marital Status	Currently Working
Current Contraceptive Use	1						
Age	0.222	1					
Province	0.065	0.020	1				
Residence	-0.003	-0.011	0.124	1			
Highest Level of Education	0.001	0.091	-0.016	-0.361	1		
Current Marital Status	0.257	0.353	-0.026	0.144	-0.25	1	
Currently Working	0.099	0.134	0.103	0.216	-0.202	0.177	1

contraception and the importance of contraceptive use, unlike younger female adolescents. Furthermore, older female adolescents are more likely to be married, have higher education levels, and more likely to be active sexually compared to younger adolescents [30]. Adolescents who reported being married or living together with a man, or were separated, widowed, or divorced were more likely to use contraceptives compared to those who had never married. In recent surveys, adolescent girls who were separated, widowed, or divorced were also more likely to be using contraceptives compared to those who had never married. The findings are in line with those from other studies [10, 29, 30]. One study found that adolescent girls who were married or living with a man were significantly more likely to use contraception compared to those who were not married or living together with a partner [10]. Another study found that married adolescent girls had the highest odds of using contraceptives compared to those that never married or were formerly married [30, 31]. This could be due to partner support in using contraceptives among married women [32]. Married female adolescents may likely use contraceptives because they can afford more effective contraceptives than their unmarried counterparts due to financial support from the partner [10]. They are also more likely to practice family planning and take measures to prevent pregnancy compared to those who are not married due to regular exposure to sexual intercourse and the risk of unintended pregnancy.

The findings of this paper show that current contraceptive use increased with the level of education. Other studies have reported similar findings. Evidence shows that education affects contraceptive use among adolescents [18]. A study in Ghana found that the level of education was a significant factor in contraceptive use among women of reproductive age [33]. As the level of education increased, there was an increase in contraceptive use [10, 19]. This increase was more so in urban areas where urban adolescents,

who typically have higher education, report a higher likelihood of contraceptive use, particularly condoms [21]. Adolescents who are more educated are more likely to appreciate the advantage of having fewer children and how this can positively impact their own economic productivity and the well-being of their children [33, 34].

The results reported in this study have implications for both policy and public health in general. The increased likelihood of contraceptive use among adolescent girls with higher levels of education suggests that keeping girls longer in school is likely to improve their reproductive health outcomes. In addition, the introduction of comprehensive sexuality education in primary school curriculum in Zambia is vital for providing comprehensive and age-appropriate information to adolescents who are at a pivotal stage of their lives. However, it is vital to also target adolescents who are outside the school system. Community-based activities, in addition to youth-friendly spaces in health centres, are essential to ensure correct information is provided to adolescents.

Furthermore, access to contraceptives is another issue that needs to be addressed. Information centres, such as schools, can also serve as distribution points for contraceptives. The merits of distributing contraceptives in schools need to be explored further, in addition to distribution through youth-friendly spaces in health facilities. Generating demand for contraceptives and sexual and reproductive health services, as described in the 2017–2021 Zambia Adolescent Health Strategic Plan, is essential for increasing contraceptive use in this age group. Increasing the use of modern contraceptives is essential and has been shown to have a significant impact on fertility, and maternal, new-born, and child survival. Contraceptive use can significantly reduce unintended pregnancies, abortions, and births, as well as avert thousands of child and new-born deaths, including hundreds of maternal deaths, annually [35].

Conclusion

The findings of this paper show that contraceptive use among adolescent girls in Zambia has remained low over time, with only a modest increase from 8 to 11% between 1996 and 2013/14, which is much lower than the change in the general population. Over time, contraceptive use remained consistently low among younger, uneducated and unmarried sexually active adolescent girls, who comprise some of the disadvantaged sub-groups. In addition, whereas initial significant urban-rural differences in contraceptive use among adolescent girls did not occur in subsequent surveys, such differences began to emerge again in 2013/14. The findings suggest the need for targeted interventions to improve contraceptive use among sexually active adolescent girls in the country in general, and those who are disadvantaged in particular.

Limitations

The study had some inherent limitations and strengths. The study was based on DHS data from four surveys. Some variables included in the analysis have either changed or been added over time. Furthermore, DHS data is based on self-reporting, and there may be social desirability biases in some responses. In addition, given the cross-sectional nature of DHS, it is not possible to make causal inferences about the relationships observed in the data. Despite the limitations, the study highlights patterns in contraceptive use among adolescent girls in Zambia, which have important implications for programs aimed at improving reproductive health outcomes among this sub-group of the population. The study is also based on a nationally representative sample of adolescent girls, which allows for generalizing the findings to all adolescent girls in the country.

Abbreviations

AOR: Adjusted odds ratio; CI: Confidence interval; CPH: Census of population and housing; DHS: Demographic and health survey; LICs: Low income countries; UKZNREC: University of KwaZulu Natal biomedical research ethics committee; WHO: World health organization; ZDHS: Zambia demographic and health survey

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Authors' contributions

MC conceptualised the study, designed the methodology, led the formal data analysis and wrote the initial draft. KH and TGG reviewed the methodology, results of the study and reviewed the manuscript. KH and TGG supervised and approved the work. All authors have read and approved the manuscript.

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Availability of data and materials

The data used in this paper are publicly available from the Demographic and Health Surveys (DHS) Program. Data can be accessed through their website <https://dhsprogram.com/data/>

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Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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CHAPTER SIX

FACTORS CONTRIBUTING TO CHANGES IN CONTRACEPTIVE USE AMONG ADOLESCENT GIRLS IN ZAMBIA: A DECOMPOSITION ANALYSIS

This paper was written to understand the contribution of the different factors observed in paper one to the observed change in the contraceptive prevalence rate over the period 1996 to 2014. This study was aimed at determining which factors contributed the most to the observed change in contraceptive use over the period 1996 – 2014 using decomposition analysis. This paper builds on the findings from paper one.

Data on adolescent girls aged 15–19 years from 1996, 2001/2, 2007 and 2013/14 Zambia Demographic and Health Surveys were analysed. A total of 9,072 adolescent girls were included in the analysis across the four ZDHS surveys. Descriptive statistics and multivariate decomposition analysis were used to analyse the data.

To the best of our knowledge, this was the first study to use multivariate decomposition analysis to understand which factors contribute the most towards observed changes in contraceptive use among adolescent girls in Zambia. Multivariate decomposition analysis is used to quantify the contribution of observed variables to group differences with multivariate regression models. This paper was used to determine the source of the difference in change in contraceptive use among adolescent girls between 1996 and 2014 in terms of the composition (Characteristics) of the adolescent girls' population and the difference in the effect of characteristics (Coefficients) over this period. This difference can be attributed to compositional changes between surveys (i.e., differences in characteristics) and to changes in the effects of the selected explanatory variables (i.e., differences in the coefficients due to changes in population behaviour). Therefore, the observed difference in modern contraceptive use among adolescent girls between different surveys is additively decomposed into a characteristics (or endowments) component and a coefficient (or effects of characteristics) component. The contribution to knowledge is that beyond understanding which factors contribute to changes in contraceptive use among adolescent girls in Zambia, we have quantified the magnitude of how much these factors contribute to change. This information is

important for programme implementers as they will be able to target specific factors for maximum effect on contraceptive use considering the limited resources available.

The findings of this paper showed that the difference in contraceptive use among adolescent girls over the period 1996 to 2014 was mainly due to differences in coefficients (changes in population behaviour). Increases in age contributed to the change in contraceptive use; marriage or living with a partner contributed the most to the change (44%) while living in a rural area accounted for approximately 20%.

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Factors contributing to changes in contraceptive use among adolescent girls in Zambia: a decomposition analysis

Mumbi Chola,^{1,2} Khumbulani Hlongwana,^{1,3} Themba G. Ginindza^{1,3}

¹Department of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu Natal, South Africa; ²Department of Epidemiology & Biostatistics, School of Public Health, University of Zambia, Lusaka, Zambia; ³Cancer & Infectious Diseases Epidemiology Research Unit (CIDERU), College of Health Sciences, University of KwaZulu-Natal, South Africa

Correspondence: Mumbi Chola, Department of Epidemiology & Biostatistics, School of Public Health, University of Zambia, Lusaka, Zambia.

Tel.: +260.968832646.

E-mail: mumbi24@gmail.com

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Key words: factors; contraceptive use; adolescent girls; decomposition; Zambia.

Contributions: MC, conceptualised the study, designed the methodology, led the formal data analysis, and wrote the initial draft manuscript; TGG, KH, reviewed the methodology, results of the study and the manuscript; TGG, KH, supervised and approved the work. All authors approved the final version to be published.

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Availability of data and material: the data used in this paper are publicly available from the Demographic and Health Surveys (DHS) Program. Data can be accessed through their website <https://dhsprogram.com/data/>

Abstract

Despite its documented benefits, contraceptive use among adolescents remains low, particularly in low-and middle-income countries. This study aimed to decompose the main factors contributing to the changes in contraceptive use among adolescent girls in Zambia over the period 1996 to 2014. Data on adolescent girls aged 15-19 years from Zambia Demographic and Health Survey data were analysed using multivariate decomposition analysis of change. Stata 15/MP (Stata-Corp LLC) was used for analysis, at a 95% confidence level. A p-value of 0.05 was used to determine statistical significance. The sample included 9,072 adolescent girls. Contraceptive use increased by 3% from 7.6% in 1996 to 10.6% in 2013/14. Change in modern contraceptive use among adolescents was mainly due to differences in coefficients (changes in population behaviour). Increases in age contributed to the change in contraceptive use, resulting in 2.94% and 9.33% increases for 17- and 18-year-olds respectively. Marriage or living with a partner contributed the largest change (44%) while living in a rural area accounted for approximately 20%. Interventions targeting improving contraceptive use in adolescents should be responsive to the needs of various age groups, places of residence, and educational levels for maximum benefits.

Introduction

Teenage pregnancies continue to pose health and socio-economic problems for adolescents, globally.⁽¹⁾ It is estimated that in developing countries, approximately 21 million girls aged 15 to 19 years get pregnant while about 12 million of them give birth, yearly.⁽¹⁾ Each year, a further 777,000 girls under the age of 15 years give birth, globally.^(1,2) It is estimated that by 2035, 19.2 million adolescent girls across the world would have given birth.⁽³⁾ The extent of the problem of adolescent pregnancy is put into context by examining data from Demographic Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) on the proportion of girls aged 20 to 24 years who had a live birth by age 15 or 18 years. The most recent global estimates available show that 19 per cent or approximately one in five women between the ages of 20 to 24 had a live birth by their 18th birthday.⁽⁴⁾ A systematic review on adolescent pregnancy found a pooled adolescent pregnancy prevalence of 18.8% in Africa, overall, and 19.3% for sub-Saharan Africa (SSA).⁽⁵⁾

Adolescent pregnancies have major health and socio-economic consequences for young mothers and their babies. The leading cause of mortality among adolescent girls aged 15-19 years is due to complications from pregnancy and childbirth complications, and 99% of the global deaths occur in low- and middle-income countries.⁽⁶⁾ The risk of eclampsia, puerperal endometritis and systemic infections is higher in adolescent mothers aged 10–19 years compared to women aged 20–24

years.^(7,8) Furthermore, unsafe abortions among adolescent girls ages 15-19 years, estimated at 3.9 million annually, contribute to maternal mortality and morbidity rates, as well as lasting health problems.⁽²⁾ Adolescent pregnancies also have repercussions for the new-born babies. Children born to adolescent mothers have increased risks of low birth weight, preterm delivery, and severe neonatal conditions.⁽⁷⁾

In addition to adverse health outcomes, adolescent pregnancies have economic and social consequences such as social stigma and discrimination from communities and/or families, resulting in them having to leave their family home, consequently increasing their vulnerability to violence and abuse, and potentially facing increased poverty and economic hardships.⁽⁹⁾ Early and unintended pregnancy also affects adolescent girls' schooling, disrupting their future economic opportunities, causing them to miss out on the overall benefits of education that contribute to their physical and emotional growth, including increases in knowledge and life skills, higher self-confidence and better outcomes in life.^(9,10) Furthermore, adolescent childbearing is associated with lower educational attainment, and it can perpetuate a cycle of poverty from one generation to the next.⁽¹¹⁾

Contraceptive use remains one of the major interventions towards prevention of pregnancy among adolescents. Guidelines have been published by the World Health Organisation (WHO) on Preventing Early Pregnancy and Poor Reproductive Outcomes, which emphasise the increased use of contraception by adolescents who are at risk of unplanned pregnancy.⁽¹²⁾ However, contraceptive use among adolescents remains low, particularly in low-income countries (LICs).⁽¹³⁻¹⁷⁾ Studies have shown that in LICs, contraceptive prevalence rate (CPR) among adolescent females aged 15-19 years is low at 21% for all methods (modern and traditional).^(15,18,19) This is despite the documented benefits of using contraceptives, which include the freedom to decide the number of children to have and child spacing, improved health outcomes, such lower maternal and infant mortality^(20,21) and improvements educational and economic outcomes.^(22,23)

Despite contraceptive use being relatively low in most sub-Saharan countries, it has been increasing over the years.⁽²⁴⁾ Various factors have been associated with contraceptive use among women, including adolescents. Among these are age,^(17,25,26) education,^(14,26) wealth,^(14,25) residence,^(17,25) marital status,^(13,17) work status, knowledge of ovulatory cycle, visit of health facility.^(13,27) The contribution of these factors to the changes in contraceptive use among adolescent girls varies from country to country. Decomposition analysis conducted in Tanzania found that difference in coefficients contributed more (87.5%) to increase in modern contraceptive prevalence rate (mCPR) than differences in women's characteristics (12.5%). Women's characteristics included partner's education levels, recent sexual activity and being visited by a family planning worker, while most

increase in modern contraceptive use was attributed to rural population (44.1%) and women who experienced a termination of pregnancy (7.1%).⁽²⁴⁾ It has also been found that increases in the use of modern contraceptives are what drive increases in the rate of contraceptive use and not changes in women's parity composition.⁽²⁸⁾ A study in Ethiopia found that 34% of the overall change in modern contraceptive use resulted from difference in women's characteristics (age, educational status, religion, couple concordance on family size, and fertility preference), while two-thirds of the increase was due to difference in coefficients (mainly changes in contraceptive use behaviour among the rural population (33%) and among Orthodox Christians (16%) and Protestants (4%).⁽¹⁷⁾

In Zambia, contraceptive prevalence rate among adolescents remains low, although it has increased slightly from 1996 to 2013/14.⁽²⁶⁾ With factors that are associated with contraceptive use in adolescent girls aged 15-19 years having been established, it is important to understand the contribution to the observed change in the contraceptive prevalence rate. Therefore, this study is aimed at investigating the main factors contributing to the changes in contraceptive use among adolescent girls in Zambia over the period 1996 to 2014.

Materials and Methods

Cross-sectional data from four (4) Zambia Demographic and Health Surveys, spanning from 1996 to 2014, was analysed. The Zambia Demographic and Health Survey (ZDHS) is a nationally representative sample survey of Zambian households that provides country level information on various indicators, including fertility levels and trends, mortality, contraceptive use and family planning methods, as well maternal and child health, including HIV and AIDS. The ZDHS employs two stage stratified sampling and targets women and men aged, 15-49 and 15-59 respectively. The sampling frame used for the ZDHS is typically adopted from the Census of Population and Housing of the Republic of Zambia (CPH) from the Central Statistical Office.⁽²⁹⁾

Using a two-stage stratified cluster sample design, a representative sample of households was drawn for all the surveys, with the first stage being the selection of Enumeration Areas (EAs) (or clusters) and the second stage the selection of households. The sample was stratified in two stages from the CPH frames (1990, 2000 and 2010). Dividing each province into rural and urban ensured stratification was achieved. In the previous studies, provinces were stratified into 18 strata and 20 strata in the 2013/14 survey. In each stratum, the samples were selected independently in every stratum through a two-stage selection process. At all lower levels, stratification and proportional allocation were attained through sorting the sampling frame by geographical/administrative order and using a probability proportional to size selection process in the first stage. All females and males aged, 15-

49 and 15-59 respectively, who lived permanently in the sampled households or were visitors present in the household on the night preceeding the survey, were eligible to participate in the survey. ⁽²⁹⁾

Data analysis focused on adolescent girls aged 15-19 years. All adolescents who answered questions on the current contraceptive method were included in the analysis. Current contraception method, which was the dependent variable, was recoded into a binary outcome, those currently using and those not using any contraceptive method. Explanatory variables included in the analysis were age, residence, province, the highest level of education, and marital status. Since the ZDHS involved more than one level, variables on cluster and household were also included. Data from the four ZDHS surveys were combined by appending the data sets from 1996, 2001/2 and 2007 to the 2013/14 ZDHS. Descriptive analysis was done, and results were presented using proportions. Where appropriate, Chi-square and Fischer's exact tests were used to test for association between the outcome and explanatory variables.

Multivariate decomposition analysis of change was used to determine the major factors contributing to the difference in the contraceptive use among adolescents over the 1996 to 2014 period. Multivariate decomposition has been used extensively in quantifying the contributions of observed variables to group differences with multivariate regression models.⁽³⁰⁻³²⁾ In this study, the multivariable decomposition method proposed by Powers, Yoshioka and Yun⁽³⁰⁾ was used to analyse the data. It was further used to determine what the source of difference was in terms of the composition (Characteristics) of the adolescent girls' population and the difference in the effect of characteristics (Coefficients) between the surveys over time. The analysis was done using logistic regression models, adjusting for the sampling weight, based on data from 1996 and 2014 ZDHS. The analysis was focused on how the contraceptive prevalence rate changes due to differences in adolescent girls' characteristics and how these factors lead to the differences across the DHS surveys conducted between the reference period. This difference can be attributed to compositional changes between surveys (i.e., differences in characteristics) and to changes in effects of the selected explanatory variables (i.e., differences in the coefficients due to changes in population behaviour). Therefore, the observed difference in modern contraceptive use among adolescent girls between different surveys is additively decomposed into a characteristics (or endowments) component and a coefficient (or effects of characteristics) component.⁽³³⁾ Stata 15/MP (Stata-Corp LLC) was used to perform the analysis, at a 95% confidence level with a p-value of 0.05 are what determined significance. The SVY STATA command was employed to control the clustering effect of complex sampling (stratification and multistage sampling procedures).

Ethical considerations

Ethical approval (REF No BE288/18) for this study was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (UKZNBREC) and University of Zambia Biomedical Research Ethics Committee (UNZABREC), reference number REF. No. 157-2019 as part of PhD research. Permission to use the data was obtained from Demographic and Health Surveys (DHS) Program.

Results

Descriptive results

Analysis was done across four ZDHS surveys and included a total of 9072 adolescent girls. The majority (42%) were from the 2013/14 ZDHS while 18% were from the 2007 survey, with 20% from the 2001/2 survey and 20% from the 1996 survey. Results in Table 1 reflect, across all the survey years, the distribution of adolescent girls who were included in the analysis.

Contraceptive use among adolescent girls aged 15-19 years, over the period 1996 to 2014, was 9.8%, ranging from 7.6% in 1996 to 10.6% in 2013/14 (Table 1). Across all survey years, in each of the survey years, the age distribution ranged from 18.1 to 23.2%. Regarding education level, in the earlier survey years, the majority of adolescent girls had primary education while in the latter years (2007 and 2013/14), majority of adolescent girls had secondary education or higher. In terms of marital status, most of the adolescent girls had never been married. However, over the survey years, the proportion of adolescent girls who reported being married reduced from 25.3% to 15.5% (Table 1). Knowledge of modern contraceptives increased from 87.5% in 1996 to 95.6% in 2013/14.

Decomposition analysis results

Table 2 below shows results from the decomposition analysis of contraceptive use among adolescent girls over the period 1996 to 2014. There was a total of 24,432 adolescents who were included in the analysis. This decomposition, however, focuses on the year 1996 and 2014 as the key years at the beginning and end of the reference period.

Results from the decomposition analysis showed that change in modern contraceptive use among adolescents was mainly due to difference in coefficients (changes in population behaviour). Increase in age contributed to the change in contraceptive use over the reference period, 2.94% and 9.33% for 17- and 18-year-olds respectively. Being married or living with a partner contributed the largest change with regard to marital status. This contributed about 44% to the observed change in

contraceptive use among adolescents, while living in a rural area accounted for approximately 20% of the change.

Compositional changes also accounted for some changes in contraceptive use among adolescents over the years. Changes in composition relating to Education, particularly regarding secondary education and higher, accounted for 290%. With regard to residence, rural areas contributed about 13% of the change while changes in age composition among older adolescents, 18 and 19-year-olds, accounted for approximately 7 and 2 percent, respectively.

Discussion

Over the period 1996 to 2014, contraceptive use among adolescents in Zambia increased by 3%. Decomposition analysis showed that the change was as a result of population behaviour and compositional changes in the age group 15 – 19 years over this period. The behaviour of adolescent girls, as they get older, as well as compositional changes in this age group contributed to the increase in population change over the reference period. The effect of women's characteristics, such as age and educational status, are compares well to other findings of similar studies.⁽¹⁷⁾

Bearing in mind the association of education with contraceptive use,^(14,26) the increase in the proportion of adolescent girls who are in school contributed to the change in contraceptive use. The increase in the composition of adolescent girls' attainment of secondary education or higher showed a significant effect on modern contraceptive use, similar to the findings of the study by Worku et al.⁽³³⁾ This can be attributed to deliberate government policies to keep adolescent girls in schools. Various Non-governmental organisations also have projects aimed at ensuring adolescent girls remain in school. Free education in government schools may have also contributed to increase in adolescent girls who are in school.

Decomposition analysis also showed that residence had an effect on modern contraceptive use among adolescent girls. About 14 percent of the change was due to compositional changes in rural areas and about 20% due to changes in the behaviour among rural adolescent girls. This is similar to findings by Worku et al.⁽³³⁾ With increase in the proportion of adolescent girls in rural areas who attain higher levels of education, this could have also contributed to increase in contraceptive use in rural areas. Furthermore, deliberate government policies such as Comprehensive Sexuality Education for both in and out of school adolescents and improving access to contraceptives⁽³⁴⁾ may have contributed to this. About 45% of the increase in modern contraceptive use among Zambian adolescent women was observed over the period 1996 to 2014, and this was attributable to changes in modern contraceptive use behaviour among married adolescents. Modern contraceptive use has increased over the reference

period from 13.07% in 1996 to 43.76 in 2013/14. This can be attributed to adolescents who reported being married or living together with a man, being more likely to use contraceptives compared to those who had never married.^(13,35,36) This could be attributed to married adolescents receiving partner support in using contraceptives,⁽³⁷⁾ them being more likely to afford contraceptives due to financial support from the partner,⁽¹³⁾ or them being likely to practice family planning and take measures to prevent pregnancy compared to the unmarried as a result of regular exposure to sexual intercourse and the risk of unplanned pregnancy.⁽²⁶⁾

Strengths and limitations

The study did have some strengths and limitations, especially given that it was based on DHS data from four surveys. Firstly, some variables included in the analysis may have either changed or been added over time. Secondly, DHS data is based on self-reporting, and therefore prone to social desirability bias. Thirdly, given the cross-sectional nature of DHS, causal inferences about the relationships observed in the data cannot be made. However, despite these limitations, the study highlights the results from decomposition analysis, which showed that the change in modern contraceptive use was as a result of population behaviour and compositional changes in the age group 15 – 19 years between 1996 and 2014. This has vital implications for programs aimed at improving increasing contraceptive use among adolescents. Furthermore, the study used nationally representative data of adolescent girls in Zambia. This ensures that the findings generated from this study can be generalized to the study population.

Conclusions

Modern contraceptive use among adolescent girls in Zambia has remained low over time, with only a modest increase of 3% in the period from 1996 to 2014. The results from the decomposition analysis showed that the change was as a result of population behaviour and compositional changes in the age group 15 – 19 years over this period. Changes in characteristics (compositional changes) were mostly in education with moderate changes in age and residence while changes in coefficients (population behaviour) were mainly in age, marriage, and residence. These findings suggest that interventions aimed at influencing population behaviour should be responsive to the needs of various age groups, places of residence, and educational levels in order to yield maximum benefits in improving contraceptive use among adolescent girls. The government has introduced free education, but it is important to keep the girls in school. Therefore, programmes aimed ensuring girls stay in school longer should be promoted. Comprehensive sexuality education also needs to be strengthened

especially for out-of-school girls. It is best suited to provide accurate information about contraceptives to adolescents. Furthermore, health promotion and education activities such as provision of contraceptives also need to be enhanced and strengthened. Improving access to contraceptives may contribute positively to their use.

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Table 1: Distribution of adolescent girls by background characteristics and survey year, ZDHS 1996–2013/14

				Year							
		1996 (N=1982)	%	2001/2 (N=1806)	%	2007 (N=1598)	%	2013/14 (N=3686)	%	Total (N=9072)	%
Contraceptive Use	No	1,831	92.4	1,630	90.3	1,424	89.1	3,296	89.4	8,181	90.2
	Yes	151	7.6	176	9.8	174	10.9	390	10.6	891	9.8
Age (Years)	15	395	19.9	372	20.6	370	23.2	735	19.9	1,872	20.6
	16	419	21.1	326	18.1	330	20.7	759	20.6	1,834	20.2
	17	369	18.6	325	18.0	303	19.0	674	18.3	1,671	18.4
	18	404	20.4	406	22.5	299	18.7	774	21.0	1,883	20.8
	19	395	19.9	377	20.9	296	18.5	744	20.2	1,812	20.0
Highest Education Level	No Education	174	8.8	158	8.8	69	4.3	69	1.9	470	5.2
	Primary	1,254	63.3	1,073	59.4	756	47.3	1,418	38.5	4,501	49.6
	Secondary & Higher	554	28.0	575	31.8	773	48.4	2,197	59.6	4,099	45.2

Marital Status	Never in Union	1,435	72.4	1,307	72.4	1,302	81.5	3,058	83.0	7,102	78.3
	Married/Living with Partner	501	25.3	449	24.9	270	16.9	572	15.5	1,792	19.8
	Widowed/Separated/Divorced	46	2.3	50	2.8	26	1.6	56	1.5	178	2.0
Knowledge of any method	Knows no method	247	12.5	127	7.0	150	9.4	162	4.4	686	7.6
	Knows modern methods	1,728	87.5	1,677	93.0	1,447	90.6	3,519	95.6	8,371	92.4
Residence	Urban	799	40.3	639	35.4	809	50.6	1,850	50.2	4,097	45.2
	Rural	1,183	59.7	1,167	64.6	789	49.4	1,836	49.8	4,975	54.8

Table 2: Decomposition of change in modern contraceptive use among adolescents in Zambia, 1996 to 2014.

Reference group (A): Year=1 (2014) --- Comparison group (B): Year_2=0 (1996)					
Modern Contraceptive Use		P>z	[95% Conf.	Interval]	
E	- 0.01232	0.001	-0.01972	0.00491	
C	0.06823	0	0.05443	0.08204	
R	0.05592	0	0.04486	0.06697	
Due to Difference in Characteristics (E)					
Modern Contraceptive Use	Coef.	P>z	[95% Conf.	Interval]	Pct.
Age (Years)					
15	Ref				
16	- 0.00112	0.446	-0.00401	0.00177	-2.01
17	- 0.00113	0.422	-0.00389	0.00163	-2.02
18	0.00424	0.405	-0.00573	0.0142	7.58
19	0.00153	0.406	-0.00208	0.00513	2.73
Marital Status					
Never in Union	Ref				
Married/Living with Partner	- 0.07002	0.407	-0.2356	0.09556	-125.22
Widowed/Separated/Divorced	- 0.00321	0.423	-0.01106	0.00464	-5.74
Residence					
Urban	0	.	0	0	0
Rural	0.00778	0.456	-0.01266	0.02822	13.91
Education					

No Education	Ref				
Primary	- 0.11258	0.512	-0.44921	0.22405	-201.34
Secondary & Higher	0.1622	0.514	-0.32508	0.64948	290.07
Due to Difference in Coefficients (C)					
Modern Contraceptive Use	Coef.	P>z	[95% Conf.	Interval]	Pct.
Age (Years)					
15	Ref				
16	- 0.01192	0.19	-0.02975	0.00591	-21.32
17	0.0022	0.805	-0.01527	0.01968	3.94
18	0.00522	0.575	-0.01302	0.02345	9.33
19	- 0.00474	0.569	-0.02107	0.01159	-8.48
Marital Status					
Never in Union	Ref				
Married/Living with Partner#	0.02513	0	0.01112	0.03914	44.94
Widowed/Separated/Divorced	0.00217	0.115	-0.00053	0.00488	3.88
Residence					
Urban	Ref				
Rural	0.01114	0.315	-0.0106	0.03288	19.92
Education					
No Education	Ref				
Primary	- 0.01887	0.648	-0.09987	0.06213	-33.75
Secondary & Higher	- 0.01508	0.41	-0.05092	0.02077	-26.96
Secondary & Higher	- 0.01508	0.41	-0.05092	0.02077	-26.96

CHAPTER SEVEN

UNDERSTANDING ADOLESCENT GIRLS' EXPERIENCES WITH ACCESSING AND USING CONTRACEPTIVES IN ZAMBIA

This exploratory qualitative paper sought to understand adolescent girls' experience with accessing and using contraceptives.

The findings in this paper are based on analysis from seven focus group discussions and three key informant interviews aged between 15-19 years. There was a total of 70 participants across four districts namely Chongwe and Lusaka in Lusaka Province, and Kasama and Luwingu districts located in Northern province. The data was managed and organised using NVivo version 12 pro (QSR International) and was analysed using thematic analysis.

Using thematic analysis to analyse the qualitative data and applying the integrated view on human experience in healthcare, in which patient experience is at the core. Patient experience is the sum of all interactions as shaped by the healthcare system's culture and influenced by patients' perceptions across the continuum of care. We found that it is influenced by intrapersonal, interpersonal, community and environmental factors. Adolescents' experience regarding contraceptives across the continuum of care. Adolescent girls' experience regarding contraceptive use is determined by various factors, which fall under the following main themes: knowledge of contraceptives, which includes sources of information and contraceptives; experience with contraceptives; challenges with access to contraceptives; misconceptions about contraceptives; perspectives about existing contraceptives; and preferred types of contraceptives.

Applying these qualitative methods helped further understand what factors influence adolescent girls' experience with accessing and using contraceptives. This is essential because understanding their experience, whether positive or negative, can influence their decision whether to use contraceptives or not. This information is vital for policymakers and programme implementers because it provides insights into some potential drivers for contraceptive use in the context of experiences with contraceptive use.

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Understanding adolescent girls' experiences with accessing and using contraceptives in Zambia

Affiliations

Mumbi Chola^{1,2*}, Khumbulani Hlongwana^{1,3}, Themba G. Ginindza^{1,3}

¹ Discipline of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu-Natal, Durban 4041, South Africa;

² Department of Epidemiology and Biostatistics, School of Public Health, University of Zambia, Lusaka 10101, Zambia

³ Cancer & Infectious Diseases Epidemiology Research Unit (CIDERU), College of Health Sciences, University of KwaZulu-Natal, Durban 4041, South Africa

* Correspondence: mumbi24@gmail.com

Email addresses:

Mumbi Chola mumbi24@gmail.com

Khumbulani Hlongwana Hlongwanak@ukzn.ac.za

Themba G. Ginindza Ginindza@ukzn.ac.za

ABSTRACT

Background

Globally, the unmet need for contraception among adolescent girls is high and is driven by barriers to access and utilisation of contraceptives. Understanding adolescent girls' experiences with accessing and using contraceptives is crucial because it influences their decision to use and willingness to continue using health products and services. While determinants of contraceptive use have been extensively researched globally, few studies explore how adolescent girls experience contraceptive use in Zambia using qualitative methods. Therefore, this study aimed to understand Zambian adolescent girls' experiences using contraceptives.

Methods

Thematic analysis was used to analyse data generated from 7 focus group discussions and three key informant interviews with adolescent girls aged 15 to 19 years in 4 districts in Zambia. NVivo version 12 pro (QSR International) software was used to manage and organise the data.

Results

Results revealed that adolescents' experiences concerning contraceptives across the continuum of care are shaped by various factors, including knowledge of contraceptives which comprises sources of information and contraceptives; experience with using contraceptives, challenges with access to contraceptives, and misconceptions about contraceptives; perspectives about existing contraceptives; and preferred types of contraceptives.

Conclusion

The multifactorial interaction relating to adolescents' personal experience, their community and the environment in which they access contraceptive services all contribute to their overall experience and influence their contraceptive decisions. Therefore, qualitative studies exploring adolescents' experiences with accessing and using contraceptives are vital for tailoring interventions responsive to the contraceptive needs of this age group.

Keywords

Adolescent girls; Contraceptive use; Experiences; Zambia

BACKGROUND

Globally, women of reproductive age, particularly adolescents, have a high unmet need for contraception. Estimates in 2017 showed that in developing regions, 214 million women aged 15-49 years had an unmet need for contraception (91). Over the period 1970 and 2019, the lowest rates of demand satisfaction for contraceptives were among adolescents (15-19 years) and young adults (20-24 years), with 64.8% and 71.9%, respectively, with 43.2 million of them having an unmet need for contraception in 2019 (92). Key reasons for this unmet need for contraception are attributed to various barriers to accessing and using contraceptives, such as limited access to and choice of contraceptive methods, fear of or experience of side effects, cultural or religious opposition, poor quality of available services, and gender-based barriers (91). These are barriers based on the experiences that adolescents have as they access and use contraceptives. Their experience is determined by client-related and healthcare-related factors, which comprise 1) the client's lived experience, 2) the client's subjective influences, 3) the quality of healthcare services, 4) the responsiveness of the health system to non-health needs of clients, 5) and the politics of healthcare and the perspectives of healthcare providers (93). The manifestation of the adolescent girls' experience is the result of this experience and typically shows through client satisfaction and client engagement, with positive client experiences leading to increases in client satisfaction and client engagement (93).

Client satisfaction is based on the client or client's experience after using a health service and shows how much they like/dislike the service after using it (94). It is an element of the client's overall experience and has been used to understand client experience with the healthcare system and ensure the quality of service (95). Globally, it has been used as an essential indicator of service acceptability, clients' decision to use, and willingness to continue using health products and services (96–98). Studies have shown that provider-client communication, waiting times and staff compassion and empathy are influential determinants of client experience (99). With regard to family planning, factors such as client-provider communication, the level of trust the client has and the type, confidentiality, health provider skills, and level of information and counselling that is provided to them positively influenced the client's knowledge regarding contraceptives, the client's satisfaction with the healthcare provider and the contraceptive method they choose, and the use of more effective contraceptive methods (94,100).

The experience that adolescent girls have with accessing and using contraceptives influences their contraceptive decisions and may incline them towards not using contraceptives or discontinuing their use. Negative lived experiences with contraceptives among women are a core reason for discontinuation or change of contraceptive methods (101). These negative experiences stem primarily from the side effects emanating from their contraceptive use (15,20,64,65,68). Healthcare provider attitudes and behaviours also influence contraceptive decisions (102). Health provider attitudes negatively impact the adolescent girls' experience through their lack of competence, poor service delivery and unfriendly attitude, limited stock of contraceptives, and prohibitive costs (103,104). They hold misconceptions regarding contraceptives and usually have negative attitudes towards providing contraceptives to adolescents and young people, use unauthorised discretion to impose age restrictions which are not evidence-based, even request consent when it is not required (46,105), and take a

paternalistic attitude towards adolescents (20,74,106). Positive staff attitudes have an impact on client satisfaction and improved client outcomes. Empathetic health providers who are keen on clients' needs and preferences encourage family involvement and customise educational efforts to the individual, increase client satisfaction, adherence to recommended treatments, and client outcomes (107).

Stockouts, limited options for contraceptive methods, lack of privacy and confidentiality, and long waiting times (105) all shape adolescents' perceptions of health facilities, which may affect their decision-making regarding contraceptive use (105). These perceptions are formed based on the information that adolescents have about contraceptives. Adolescents often have inadequate, incomplete and incorrect information about contraceptives (46,69,70). The types and sources of information they receive are often unreliable (15,46,59,68,71) but shape how they view the health services, products and the overall healthcare system.

While determinants of contraceptive use have been extensively researched globally and in the sub-region, few studies explore how adolescent girls experience contraceptive use, particularly in Zambia, employing qualitative methods. Therefore, this study sought to explore the experiences of Zambian adolescent girls with accessing and using contraceptives.

METHODS

Study design

This study was conducted through a qualitative exploratory design that sought to understand adolescent girls' experiences with accessing and using contraceptives in four districts in Zambia.

Study setting

The study was done in Chongwe, Lusaka, Kasama and Luwingu districts located in Lusaka and Northern provinces, respectively. The two districts in each province were purposively selected based on whether they were predominantly rural or urban. Kasama and Lusaka districts in the Northern and Lusaka provinces are predominantly urban, while Chongwe (Lusaka province) and Luwingu (Northern province) are predominantly rural. In this study, one health facility with functional and active Youth Friendly Services was selected in each district with the help of the District Adolescent Health Coordinator. The Ministry of Health operates these corners through their health facilities, providing sexual and reproductive health IEC materials and products such as condoms and contraceptives to adolescents. Focus group discussions were held at these sites.

Study participants and recruitment

Purposive sampling, specifically maximum variation sampling, was employed to recruit adolescent girls between 15 and 19 years to participate in the focus group discussions (FGDs) and Indepth interviews (IDIs). Peer educators from the selected health facilities assisted with the identification of potentially eligible adolescents and allowed the principal investigator to recruit participants based on the eligibility criteria. The criteria included only female participants who were residents of the study sites, aged between 15-19 years and accessed

services from the youth-friendly spaces. Maximum variation sampling ensured that participants were diverse in age, knowledge of contraceptives, and educational levels.

Data collection

A total of 7 FGDs, comprising 6 – 12 participants, and 3 IDIs were undertaken, each lasting between 60 to 90 minutes, following the signing of informed consent and assent forms by parents/ guardians or girls ≥ 18 years and girls below 18 years, respectively. The 3 IDIs at Mtendere clinic were conducted as opposed to an FGD because the participants were not comfortable with participating in an FGD but were willing to participate through IDIs. The FGDs and IDIs were all conducted by two trained and experienced research assistants under the supervision of the principal investigator. In addition to being experienced in qualitative research and fluent in local languages, the research assistants were taken through the study protocol, consent documents and data collection tools. The FGDs and IDIs were conducted using the participant's language of choice, which included English, Bemba and Nyanja and audio recorded (with participants' permission). Throughout the study processes, confidentiality was maintained.

Table 1: Description of types of interviews conducted and participants involved

Type	Health Facility	District	Province	Number of participants	Age Range	Education level
FGD	Mtendere Clinic	Lusaka	Lusaka Province	12	15 – 19	Primary and Secondary School
IDIs	Mtendere Clinic	Lusaka		3	15 – 19	Primary and Secondary School
FGD	Chongwe Clinic	Chongwe		9	15 – 19	Primary and Secondary School
FGD	Chongwe Clinic	Chongwe		8	15 – 19	Primary and Secondary School
FGD	Chikoyi Clinic	Luwingu	Northern Province	10	15 – 19	Primary and Secondary School
FGD	Chikoyi Clinic	Luwingu		10		Primary and Secondary School
FGD	Location Urban Clinic	Kasama		10	15 – 19	Primary and Secondary School
FGD	Namalundu Clinic	Kasama		10	15 – 19	Primary and Secondary School
			Total	72		

Data analysis

Thematic analysis was used as a method to identify, analyse, and report patterns or themes observed within data (108), was used in this study. Audio materials from the interviews and FGDs were transcribed, and the ones in local languages were translated verbatim into English by the research assistants. NVivo version 12 pro (QSR International) software was used to manage and organise the data. Through an iterative process, one master code list was

developed by the researchers. The process involved constantly reviewing the codes and the transcripts throughout the analysis to establish connections within the themes. Through this process, emerging themes were reviewed and, where needed, merged with other similar themes until the main themes and sub-themes were developed, which formed the master code list. Participant verbatim quotes were also used to ensure the credibility of the findings.

RESULTS

Results from this study revealed that adolescents' experience concerning contraceptives across the continuum of care is influenced by various factors, including experience with knowledge of contraceptives, including sources of information about contraceptives; experience with contraceptives accessing contraceptives, including the various challenges that come with this; experience with using contraceptives including misconceptions about contraceptives; and given these experiences, their preferred types of contraceptives.

Experience with information on contraceptives

Knowledge of Contraceptives: Participants were aware of and understood what contraceptives were. When asked what they understood by contraceptives, they described contraceptives as methods of preventing pregnancy and a means of planning for children.

"When I just hear the word family planning, the first thing that comes to mind is a person wanting time to decide when to have a child." *[FGD 6, participant 3, Location Urban Clinic, Kasama]*

"It's a way of preventing unwanted pregnancies. You are not ready to get pregnant, but you want to have sex." *[FGD 1, participant 5, Location Urban Clinic, Kasama]*

"Methods of preventing pregnancies as one waits for the right time to get pregnant." *[FGD 5, participant 4, Chikoyi Clinic, Luwingu]*

Beyond just knowing what contraceptives were, participants were also knowledgeable and aware of the different methods, such as pills, IUDs, injectables and condoms, that they could use.

"We can use pills, female condoms, injectables." *[FGD 5, participant 4, Chikoyi Clinic, Luwingu]*

"There is another one whose name I can't remember..... Yes! Microgynon pill." *[FGD 1, participant 6, Location Urban Clinic, Kasama]*

Regarding emergency contraceptive pills, one participant had this to say.

"If I have unprotected sex with my boyfriend, I need to take it immediately or within 72 hours." *[FGD 6, participant 7, Location Urban Clinic, Kasama]*

Sources of Information on Contraceptives: The research participants had different sources from which they got their information on contraceptives. Some of the primary sources of

information were health facilities, specifically clinics and youth-friendly spaces, friends, and through the media such as television, radio and the internet.

"Health facilities, we get information on Depo from mother to child health care. They explain to us how it works." *[FGD 1, participant 2, Chongwe Clinic, Chongwe]*

"From the youth-friendly corner, I see a lot of people come to get contraceptives. They are usually sensitised and given information about the contraceptives before they choose which one they want." *[FGD 6, participant 1, Location Urban Clinic, Kasama]*

"There are adolescent programs, for example, on Lutanda radio station or Mano, they do bring people to sensitise on contraceptives. For example, every Friday, there is a program where they speak about such." *[FGD 6, participant 7, Location Urban Clinic, Kasama]*

"It was on the morning after pill. My friend told me that after having sex, you need to use it within three days after having sex." *[FGD 6, participant 2, Location Urban Clinic, Kasama]*

Other sources of contraceptive information included parents, relatives, partners, non-governmental organisations (NGOs), and schools. However, with parents, information was provided mainly to adolescents who already had children to deter them from having more children.

"With parents, unless they see that you have exceeded having children [had a lot of children], that is when they will tell you to go for family planning." *[IDI 1, participant, Mtendere Clinic, Lusaka]*

There were mixed sentiments about the contraceptive information provided in schools. Information provided through established curricula, such as comprehensive sexual education and subjects like science and some clubs, was largely viewed as positive, while teachers' opinions on contraceptives were seen as judgemental.

"From school through JETS club. They teach about different topics [on contraceptives]." *[FGD 2, participant 5, Chongwe Clinic, Chongwe]*

"At school, from the teachers in subjects like science [they address contraceptives]." *[FGD 5, participant 4, Chikoyi Clinic, Luwingu]*

However, participants raised concerns about teachers' judgemental and anti-sex attitudes towards the girls who use contraceptives. As one participant mentioned,

"In schools, teachers are so judgemental. Each time you ask about contraceptives, they start saying things like, "At your age, you have started having sex". This makes pupils uncomfortable to approach teachers to get information on contraceptives. That is why most of them chose to go to the clinic." *[FGD 7, participant 2, Namalundu Clinic, Kasama]*

Participants also raised concerns about the lack of a conducive environment in schools,

hindering them from freely approaching teachers for information. Teachers' inability to maintain confidentiality when adolescents sought information on contraceptives and often using this against them by discussing their sexual activity in class was another deterrent.

"At Kasama Secondary [School], what I observed is that they do not create that environment where pupils can freely approach teachers to talk about contraceptives. For a pupil to talk to a teacher, that conducive environment. You will find that if you ask about contraceptives from a teacher, that teacher will use that against you in class by saying, 'Some of you in here have started having sex'." *[FGD 7, participant 2, Namalundu Clinic, Kasama]*

Among all these different sources of information, the most trusted were the health facility and NGOs, such as DREAMS.

"For me, it's DREAMS and clinic because they will not only give me [the contraceptives] but will explain to me more about the contraceptive and how it works and how to use it." *[FGD 7, participant 3, Namalundu Clinic, Kasama]*

Some participants preferred health facilities because they had youth-friendly spaces where they can get information and contraceptives.

"Because we have youth-friendly corners where you can get them [contraceptives], and the people there are open with them [contraceptives]." *[FGD 7, participant 2, Namalundu Clinic, Kasama]*

Experience with accessing contraceptives

Sources of Contraceptives: With regard to sources of contraceptives, participants preferred health facilities, drug stores and pharmacies, community outreach staff, and NGOs, mainly due to ease of access.

"It's very easy at the clinic as people there know what you will need and will also give you the information you need." *[FGD 5, participant 3, Chikoyi Clinic, Luwingu]*

"Certain contraceptives such as condoms are found in shops. One can easily go and buy, especially if the hospital or clinic is far." *[FGD 5, participant 6, Chikoyi Clinic, Luwingu]*

"The reason why I said drug store is because if you know the contraceptive you want and have used before, it is easy to walk in a drug store, buy it and use it." *[FGD 7, participant 2, Namalundu Clinic, Kasama]*

Most used contraceptives: While participants used various contraceptives, the most commonly used were injectables, implants, condoms, pills and emergency contraceptives. The most widely used injectables were *Depo-Provera [injectable with 13-week cycle]* and *Sayana Press [injectable with 13-week cycle]*, preferring the 3-month duration, while those who used implants used Jadelle.

“I used Sayana press for 3 months.” [FGD 1, participant 9, Chongwe Clinic, Chongwe]

“I used Depo for 3 months.” [FGD 1, participant 7, Chongwe Clinic, Chongwe]

Some participants opted to discontinue the use of injectables in favour of other types of contraceptives, such as emergency contraceptive pills, which are taken after engaging in unprotected sex.

“When I started using Depo, I did it for 3 times, 3 months each. But I stopped, and I started using morning-after pills after sex.” [FGD 1, participant 2, Chongwe Clinic, Chongwe]

Some participants reported carrying both male and female condoms with them in case their partners did not have one.

“As a lady, you need to be ready just in case he does not come with a condom, you can give him. This is so that we prevent diseases and unwanted pregnancies.” [FGD 5, participant 4, Chikoyi Clinic, Luwingu]

Some participants used *Microgynon* [Levonorgestrel/Ethinylestradiol] and *Mycrolut* [Levonorgestrel 30 µg tablets] oral pills and mentioned the failure of other contraceptives, such as condom burst, as the reasons for their choice.

“They [adolescent girls] do not trust condoms so much. They [condoms] feel like they may burst. For pills, they [adolescent girls] know it will work.” [FGD 4, participant 2, Chikoyi Clinic, Luwingu]

Challenges with access to Contraceptives: Participants reported various challenges with accessing contraceptives, including staff attitudes at health facilities, lack of privacy and confidentiality, availability of contraceptives, expired drugs, and lack of information on contraceptives, specifically how they work, how to use them and their side effects.

Health facility staff attitude: The bad staff attitudes towards adolescent girls were more pervasive among the older staff, as they tended to ask many unsettling questions.

“The facial expression and the mentality of them seeing the young people as though they do not listen, even when you are the first to line up, they tell you to wait and go behind as though we are babies.” [FGD 3, participant, Mtendere Clinic, Lusaka]

“Some staff at the youth-friendly spaces, especially the old ones, tend to ask us questions like, “Where are you taking these contraceptives? You are still young to be taking them.” [FGD 1, participant 6, Location Urban Clinic, Kasama]

Lack of Confidentiality and Privacy: Some participants reported that health facility staff’s knowledge of their parents compromised confidentiality. Adolescent girls feared that staff would tell their parents about their trying to get contraceptives from the health facility.

“Others you will find that some nurses start telling their parents that they wanted to access contraceptives from the clinic.” *[FGD 1, participant 4, Chongwe Clinic, Chongwe]*

“They are not very comfortable because most of the workers here know our parents, so they might end up disclosing to our parents that we access the contraceptives. So, it is very uncomfortable.” *[FGD 1, participant 4, Chongwe Clinic, Chongwe]*

The lack of privacy was also another challenge raised by the participants. The locations where they access contraceptives within the health facilities are open and visible to everyone.

“At the clinic, a challenge we find is that the place where we can access them is too open. Many people can see us. If it was private, it would be better.” *[FGD 5, participant 10, Chikoyi Clinic, Luwingu]*

Expired drugs: Participants also reported challenges with expired drugs, particularly emergency contraceptives procured from drug stores or pharmacies.

“I will talk about drug stores; for example, you had sex with your boyfriend, and you buy a morning after pill and drink, and it shows no sign that it is working... maybe it’s expired. So, it’s hard to trust buying morning after pill in a drug store” *[FGD 6, participant 4, Location Urban Clinic, Kasama]*

“I once bought a pill, and I did not check the expiry date. Afterwards, I discovered that it was expired.” *[FGD 4, participant 3, Chikoyi Clinic, Luwingu]*

Unavailability of Contraceptives and lack of information: The non-availability of contraceptives at times was a challenge for participants, which they feared would lead to them falling pregnant. Participants were concerned that they sometimes do not find contraceptives when they need them.

“Sometimes you find that the contraceptives are not there, and this might make us pregnant.” *[FGD 1, participant 2, Chongwe Clinic, Chongwe]*

“In most of these drug stores, you only find salespersons who do not know anything about these contraceptives. So, they do not give you full information on contraceptives.” *[FGD 7, participant 7, Namalundu Clinic, Kasama]*

Experiences with using Contraceptive use

Participants had varying experiences regarding contraceptive use, depending on the contraceptive type. These experiences also included the side effects of using contraceptives.

Experience with Condoms: Not enjoying sex with a condom, preferring “skin to skin”, and fears of the condom breaking were commonly reported experiences.

“A condom is not nice unless skin on skin.” *[FGD 1, participant 7, Chongwe Clinic, Chongwe]*

“We do not enjoy it because sometimes we are scared that it might break due to friction.” [FGD 1, participant 1, Chongwe Clinic, Chongwe]

Others reported reactions such as itching in the vagina or their partners reacting and having a rash on the penis, and one girl stated that it caused stomach pains.

“Some condoms are nice, but others say that the condoms react on them [condom users react to the condoms], and they end up having a rash on their penises.” [FGD 1, participant 3, Chongwe Clinic, Chongwe]

P7: For me, condoms make the vagina itch.” [FGD 7, participant 7, Location Urban Clinic, Kasama]

“Sometimes even stomach aches. I do not know if it is the flavour they put on the condom.” [FGD 7, participant 3, Location Urban Clinic, Kasama]

Another participant blamed condoms for delaying climax for some men, and the girls get tired of having sex.

“It does not feel nice because some men do not release quickly, and I get tired easily.” [FGD 1, participant 2, Chongwe Clinic, Chongwe]

Experience with injectable contraceptives: Concerning injectables, one participant tried different injectable contraceptives and had similar experiences with all of them, including prolonged and frequent menstrual cycles with one contraceptive, delayed start of menstrual cycles with another contraceptive, and irregular periods with yet another contraceptive. She also experienced similar effects with using contraceptive pills.

“Jadelle contraceptive for three years made me have prolonged and frequent menstrual cycles not until they removed it. I then changed to Depo, which gave me similar problems. I later switched to Noristerat injection, which gave me a small challenge where my menstrual cycle would begin two days after the end of a cycle. I took Sayana [Injectable contraceptive], and it still gave me similar problems of having a period for two weeks, one week without, and then it starts again. Pills also gave me the same problem.” [FGD 7, participant 6, Namalundu Clinic, Kasama]

Side effects: Participants associated contraceptives with various side effects, including diarrhoea, dizziness, headaches, numbness in the hand, prolonged periods, stomach pains and weight gain.

“I have headaches, and sometimes my menstruating days increase, and the bleeding is too much. I also feel dizzy when I am walking.” [FGD 2, participant 2, Chongwe Clinic, Chongwe]

“It is just okay. It is just that the moment you get the shot, your hand will seem like it is paralysed for some time.” [FGD 2, participant 6, Chongwe Clinic, Chongwe]

“It [injectable contraceptive] makes me gain weight.” [IDI participant 3, Mtendere Clinic, Lusaka]

"I have headaches and stomach pains." [FGD 2, participant 5, Chongwe Clinic, Chongwe]

Misconceptions about contraceptives

Misconceptions about contraceptives also form part of the experience of using contraceptives. Participants raised concerns about misconceptions regarding contraceptives, including contraceptives cause clots, infertility, and cancer, contraceptives should not be used by women who have never been pregnant before, and that they can dislodge and move to other parts of the body.

Causing clots: this was regarding contraceptive pills that will form a clot in the body.

"Others hear a lot of misconceptions on contraceptives. For example, if you take pills, they will form a clot in your stomach" [FGD 7, participant 6, Namalundu Clinic, Kasama]

Causing infertility: Participants reported having heard that contraceptives, particularly injectables and pills, cause infertility, especially in women who had not had a baby before.

"I hear that [the] injections affect your ability to conceive when you have never had a baby before." [FGD 1, participant 4, Chongwe Clinic, Chongwe]

Causing Cancer: This misinformation related to cervical cancer, as participants heard that contraceptives accumulate in the body and thus cause cancer, possibly due to toxicity.

"It brings cervical cancer because the medicine does not dissolve in the body, and it just accumulates." [FGD 2, participant 2, Chongwe Clinic, Chongwe]

Contraceptive dislodges and moves around the body: This refers particularly to implants. According to what the participants heard, the implants come out of position, move around in the body, and may go to the heart.

"The one they put on the arm for five years is known that it sometimes goes to the heart when you overwork your arm." [FGD 1, participant 9, Chongwe Clinic, Chongwe]

"Others are scared of the Loop because they heard that if inserted, it will move to your heart or in your blood." [FGD 7, participant 5, Namalundu Clinic, Kasama]

Contraceptives are not for women who have never been pregnant before

: There is also the misconception that women who have never been pregnant before should not use contraceptives. If they do, they should use non-hormonal contraceptives such as condoms.

"They say we [those who have children] should involve in family planning, and then for those that haven't been pregnant before, they say it's bad to do to family planning if you have never been pregnant before." [IDI 1 participant, Mtendere Clinic, Lusaka]

"If they didn't have a child, I would advise them to go for a condom. For those with children, injections will help them in child spacing." [IDI 3 participant, Mtendere Clinic, Lusaka]

"A loop is designed for those who have had children before. They are not for us young ladies." [FGD 7, participant 10, Namalundu Clinic, Kasama]

Perspectives about existing contraceptives

The participants had a narrow view of available contraceptive choices.

"They are what is available, so there is nothing we can do but use them." [FGD 4, participant 9, Chikoyi Clinic, Luwingu]

Some participants felt that the existing contraceptives were what they needed and were reliable, while others felt that more options were needed beyond what was available.

"They are what we need, especially for me, because they are reliable. If I have unprotected sex, I can easily go and get a contraceptive with that assurance that it will work." [FGD 7, participant 2, Location Urban Clinic, Kasama]

"I would like to say these injections and condoms used are not the only ones that should be available. I feel there should be more options." [FGD 2, participant 4, Chongwe Clinic, Chongwe]

Preferred types of Contraceptives

Participants had varying preferences when asked about their envisaged new contraceptives, with some wanting it to be a pill, others an injection, with some preferring a liquid contraceptive. Only one participant preferred to have a patch.

"It should be like a pill, just being able to drink it with water." [IDI participant 3, Mtendere Clinic, Lusaka]

"I would want it to be an injectable instead of the insertable. Some mission schools will not admit a child with an insertable contraceptive like Jadelle. Once they check and find you with a contraceptive of such nature, they deny you admission to the school." [FGD 7, participant 6, Namalundu Clinic, Kasama]

"I would want to see a liquid one. Something that we can just drink and not the pill." [FGD 5, participant 2, Chikoyi Clinic, Luwingu]

"I am not really a fan of injections and the pills I can be forgetting. I think I would go for a patch, the one for sticking on the shoulder." [FGD 1, participant 5, Chongwe Clinic, Chongwe]

They also preferred contraceptives that can be taken less frequently with minimal side effects and a longer duration of effectiveness.

“The one that should not give us any sort of problems [such as] dizziness, stomach problems, headaches or having a popping Stomach. *[IDI participant 1, Mtendere Clinic, Lusaka]*

“It should be a pill for taking once only, and it should be lasting for three years in the body, and it should not have any side effects.” *FGD 1, participant 2, Chongwe Clinic, Chongwe]*

“I would love to see a new pill that we could take on a monthly basis and not the current ones where you have to take one pill per day.” *[FGD 5, participant 3, Chikoyi Clinic, Luwingu]*

“It should be a liquid contraceptive. One that you can drink only once after, say, two weeks.” *[FGD 4, participant 3, Chikoyi Clinic, Luwingu]*

The participant who preferred a patch, when asked about the duration of effectiveness, she responded

“Maybe changing it once a week can do.” *[FGD 2, participant 4, Chongwe Clinic, Chongwe]*

The participants also wanted contraceptives that could prevent both pregnancy and diseases

“It can either be a pill or an injection, but once you take it prevent pregnancy and diseases.” *[FGD 5, participant 10, Chikoyi Clinic, Luwingu]*

“I would love to see a pill that prevents both pregnancy and sexually transmitted diseases.” *[FGD 5, participant 1, Chikoyi Clinic, Luwingu]*

The participants also wanted contraceptives to be readily available and easily accessible.

“The contraceptives should be easily accessible, and not today they are available, and tomorrow you don’t find them.” *[FGD 1, participant 3, Chongwe Clinic, Chongwe]*

DISCUSSION

Client experience in healthcare, which is shaped by the healthcare system’s culture and influenced by clients’ perceptions across the continuum of care, the workforce experience and the community experience, can arguably be understood within the context of broader intrapersonal, community and environmental factors.

Personal Experience

Regarding contraceptive use among adolescent girls, since their experience is the sum of all interactions across the continuum of care. Their experience arguably starts with the girls seeking information about contraceptives once they get curious or intend to use them.

In our study, adolescent girls had some knowledge about contraceptives, consistent with findings from other studies (109,110). Adolescents were able to explain what contraceptives were, with examples of the different types of contraceptives. However, a deeper understanding of the different types of contraceptives and how they work, particularly

hormonal contraceptives, was lacking, and other studies had similar results (15,74,106). Health facilities, friends, media (such as television, radio, and the internet), schools, parents, relatives, partners, and non-governmental organisations, were the primary sources of information, some of which have been found to provide unreliable information (58–60). Adolescent girls' interaction with their community and the healthcare environment exposes them to misinformation or incomplete information about contraceptives. Health facility staff may provide accurate information, but they are prejudiced against adolescent girls based on their ages (70) and tend to take a parental role when dealing with them.

Similarly, information from peers, relatives and partners may not be accurate (15,46,111), as it is usually based on hearsay. As such, these informational sources usually exacerbate misinformation about contraceptives. In terms of the adolescent girls' experience, the incomplete, inaccurate and inconsistent information they have about contraceptives is likely to influence their decisions about contraceptives. It may influence their perceptions about contraceptives and thus influence their willingness to use contraceptives. Adolescent girls may be less inclined to use contraceptives based on the misinformation they receive. Misinformation may also impact the correct use of contraceptives, which can further expose adolescent girls to pregnancy and associated poor health outcomes. Receiving inadequate information from a health provider has been associated with poor compliance with contraceptive use (112).

Misinformation also contributed to negative attitudes towards contraceptives. Negative attitudes about condoms have been reported in other studies, including condoms having "little holes" that make them ineffective in preventing STIs/HIV or pregnancy, free condoms obtained from clinics being defective, and condoms causing illnesses such as cancer, rashes, sores and stomach pains (113–117). This also affects adolescents' contraceptive experience and ultimately influences their contraceptive decisions, contributing to the non-use or discontinuation of use.

Part of the experience of contraceptive use is the sourcing of contraceptives. In this study, adolescent girls mentioned health facilities (hospitals and clinics), drug stores and pharmacies, community outreach staff and non-governmental organisations as sources of contraceptives. Similar sources have been mentioned in other studies (15,69). Among these sources, the girls considered health facilities, drug stores, and NGOs their most trusted sources. This could be because health facilities remain the main point of access to health care and as such are the main source of contraceptives and information on contraceptives particularly in rural areas where alternative information and contraceptive sources may be limited. Therefore, despite challenges with the attitude of health facility staff, health facilities remain a key and essential source of information on contraceptives and contraceptives themselves.

Adolescent girls also used the contraceptives that they obtained from their preferred sources. Among the most used contraceptives were injectables, implants, condoms, pills and emergency contraceptives, as found in other studies (118–120). However, issues of availability of contraceptives, long waiting times and compromised privacy and confidentiality at health facilities (105) may lead to a poor experience and thus negatively influence their likelihood of using contraceptives. These also potentially impacted the continuity of use of

contraceptives as adolescents were likely to discontinue use or be forced to switch to other methods, which could alter their experience.

As part of their experience with contraceptives, adolescents in this study reported various side effects, including prolonged and frequent menstrual cycles with one contraceptive, delayed start of menstrual cycles with another contraceptive, and irregular periods with yet another contraceptive, particularly among those using injectables. In contrast, those using condoms reported itching in the vagina, stomach pains or their partners having a rash on the penis. Other studies have reported similar side effects from contraceptive use experienced by adolescent girls. These have included irregular menstrual cycle (15,46,68), sickness, including abdominal pain (46,59,70), changes in weight (either extreme weight gain or loss) (15,23,59,69,71), menstrual cycle and colour of blood, spotting, constant bleeding (23,69), amongst others. The adolescent girls have reported mostly negative experiences from using contraceptives which in most cases demotivates them from using contraceptives. While positive experiences have been associated with adherence and improved client outcomes (121), these negative experiences can lead to poor adherence to contraceptive use, thus exposing adolescents to pregnancy and the associated negative health outcomes.

Community Experience

Part of the client experience is through interaction with the community. The communities in which adolescent girls live also shape how they perceive and experience contraceptive use. Through their interaction with friends, family and other community members, adolescent girls receive varying information and advice about contraceptives, either based on the experience of those who have used them or what those who have not used contraceptives have heard from those who have used them. This tends to result in misconceptions about contraceptives, how they work and their effects. In this study, some of the misconceptions the adolescent girls reported having heard included causing clots, causing infertility, causing cancer, contraceptives dislodging and moving around the body, or contraceptives perceived as not for women who have never been pregnant before. The fear of the effects of contraception on infertility or future fertility among adolescent girls and community members was a common concern (46,59,68–71). Myths about hormonal contraceptives causing infertility have been widely reported and significantly influence adolescent girls' contraceptive use (59). Societal and cultural norms that disapprove of contraceptive use are also a key influence on adolescent girls' experience, particularly their decisions to use contraceptives (15). Most adult women believe contraception is unacceptable for adolescent girls and believe it harms health and future childbearing in nulliparous girls (122).

Environmental Factors

The environment in which the health services are provided also has an impact on the client experience, particularly with accessing contraceptives. With regard to contraceptive use, health facilities and other locations where contraceptive services and products are provided affect client experience, both in terms of access and actual usage. Adolescent girls in this

study reported various challenges with accessing contraceptives, mostly centred around health facilities. The challenges raised included health facility staff attitude, lack of confidentiality and privacy, expired drugs, lack of availability of contraceptives, and lack of information on contraceptives. Institutional and environmental factors relating to accessing contraceptives have been reported among adolescents in other countries (15,46,70). Attitudes of health facility staff, particularly harsh treatment and scolding by nurses, have been reported as a challenge and negatively influenced decisions to use contraceptives among adolescent girls (46). The lack of privacy and health facilities, lack of a conducive environment and policies that hinder access to contraceptives also have a bearing on the client experience and tend to negatively influence contraceptive use among adolescents (70).

Perspectives about existing and Future contraceptives

Based on their experience with contraceptives, adolescent girls from this study had different perspectives about the contraceptives currently available to them and also what sort of contraceptives they would prefer. Even with their side effects, some adolescents felt they had no choice but to use them as they were what was available. Some felt that they needed more options beyond what was available. Suggestions were made on what options they would like, which can be considered regarding delivery methods, effectiveness and side effects. Several delivery methods in addition to the ones already available (pills and injections) were suggested, such as liquid contraceptives and patches which can be attached to the skin. Concerning effectiveness, adolescents would like contraceptives that they can take less frequently and with a longer duration of effectiveness. They would also like contraceptives that have minimal side effects and can prevent pregnancies and diseases. Relating to access to contraceptives, they would like contraceptives to be easily and readily accessible.

Study limitations

Study participants were recruited from youth-friendly services/corners, which may have biased recruitment to those inclined to seek health services from or live near the health centres. Therefore, applying these results to settings dissimilar to the study sites may not be possible. Future studies should consider different approaches when recruiting participants to enable the generalisability of study findings.

CONCLUSION

Client experience is at the core of the human experience in healthcare and typically starts when the client first interacts with the healthcare system, continues through the continuum of care and is not a once-off experience but can happen multiple times. This study has highlighted the experience that adolescent girls have concerning accessing and using contraceptives. The interaction of factors related to their personal experience, their community and the environment in which they access contraceptive services all contribute to the overall client experience and ultimately influence the adolescent girls' decision to use contraceptives. Therefore, any intervention targeting improving contraceptive use among adolescent girls should be cognisant of these complexities. Non-use and discontinuation of use is typically the case when the experience is negative, and most adolescent girls have a

negative client experience when accessing and using contraceptives due to challenges such as negative attitudes of healthcare staff, problems with accessing contraceptives, and lack of confidentiality, as well as the side effects from the contraceptives themselves. This ultimately inclines them not to use contraceptives. Therefore, ensuring that adolescent girls have a positive client experience when they access and use contraceptives is vital in programme and health facility efforts to improve contraceptive use in this age group.

Abbreviations

AOR	Adjusted Odds Ratio
CI	Confidence Interval
CPH	Census of Population and Housing
DHS	Demographic and Health Survey
LICs	Low-Income Countries
UKZNBREC	University of KwaZulu Natal Biomedical Research Ethics Committee
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

DECLARATIONS

Ethics approval and consent to participate

The study was conducted in accordance with relevant guidelines and regulations, signing of informed consent and assent forms by parents/ guardians or girls ≥ 18 years and girls below 18 years, respectively. Ethical approval (REF No BE288/18) was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (UKZNBREC) and the University of Zambia Biomedical Research Ethics Committee (Ref No 157-2019).

Consent for publication

Not applicable

Availability of data and material

Data can be accessed upon request through the corresponding author.

Competing interests

The authors declare no competing interests

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Authors' contributions

MC conceptualised the study, designed the methodology, led the formal data analysis and wrote the initial draft. KH and TGG reviewed the methodology, and results of the study and reviewed the manuscript. KH and TGG supervised and approved the work. All authors have read and approved the manuscript.

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CHAPTER EIGHT

MOTIVATORS AND INFLUENCERS OF ADOLESCENT GIRLS' DECISION-MAKING REGARDING CONTRACEPTIVE USE IN FOUR DISTRICTS OF ZAMBIA

This chapter details the findings from a study that aimed to understand what motivates and influences adolescent girls' decision-making regarding contraceptive use. The findings in this paper are based on analysis from 7 focus group discussions and three key informant interviews aged between 15-19 years. There were 70 participants across four districts, namely Chongwe and Lusaka in Lusaka Province and Kasama and Luwingu districts in Northern Province. The data was managed and organised using NVivo version 12 pro (QSR International) and was analysed using thematic analysis.

Results showed that adolescent girls' decision whether or not to use contraceptives is motivated by their personal fears, such as fear of pregnancy, fear of side effects, fear of having more children and child spacing among those who have children. Their contraceptive decisions are also influenced by people in their lives, such as parents, peers and friends, partners, family members such as grandmothers, sisters and aunts, and health care workers. This study provided essential information about the key motivators and influencers of adolescent girls' contraceptive decisions in Zambia, which is important for policymakers and programme implementers. The findings can contribute to developing targeted interventions to improve contraceptive use among adolescent girls in Zambia.

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Article

Motivators and Influencers of Adolescent Girls' Decision Making Regarding Contraceptive Use in Four Districts of Zambia

Mumbi Chola ^{1,2,*}, Khumbulani W. Hlongwana ^{1,3} and Themba G. Ginindza ^{1,3}

¹ Discipline of Public Health Medicine, School of Nursing and Public Health, University of KwaZulu Natal, Durban 4041, South Africa

² Department of Epidemiology & Biostatistics, School of Public Health, University of Zambia, Lusaka 10101, Zambia

³ Cancer & Infectious Diseases Epidemiology Research Unit (CIDERU), College of Health Sciences, University of KwaZulu-Natal, Durban 4041, South Africa

* Correspondence: mumbi24@gmail.com

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Abstract: Low contraceptive use in sub-Saharan Africa, and Zambia specifically, negates the potential benefits of contraception in preventing unwanted and early pregnancies. This study aimed to explore and understand the motivators and influencers of adolescent girls' contraceptive decision making. Using thematic analysis, we analysed qualitative data from seven focus group discussions and three key informant interviews with adolescent girls aged 15 to 19 years in four Zambian districts. The data were managed and organised using NVivo version 12 pro (QSR International). Fear of pregnancy, fear of diseases, fear of having more children, and spacing of children (especially among married adolescents) were key motivators for adolescents' contraceptive use. Friends and peers motivated them to use contraceptives while fear of side effects and fear of infertility drove non-use. Peer pressure and fear of mocking by their friends were important deterrents to contraceptive use. Parents, peers and friends, family members, partners, churches, and religious groups influenced adolescent girls' contraceptive decisions. Mixed messages from these influencers, with some in favour and others against contraceptives, make adolescents' decisions to use contraceptives complex. Therefore, interventions targeting increased contraceptive use should be all-inclusive, incorporating multiple influencers, including at institutional and policy levels, to empower adolescents and give them autonomy to make contraceptive decisions.

Keywords: adolescent girls; contraceptive use; motivators; influencers; decision making; Zambia

1. Introduction

Globally, adolescent sexual and reproductive health has been prioritized in recent years [1] due to the significant death, illness, and injury that adolescents face, most of which can be prevented or treated [2]. Universal access to sexual and reproductive health (SRH) services and rights by 2030 is included in the Sustainable Development Goals (SDGs), numbers 3 and 5, under which adolescents are included [1]. Adolescents comprise a significant proportion of the population, with a global estimate of 1.2 billion, which is about one-sixth of the world population, the greatest number of adolescents ever recorded [2]. This is expected to increase further by 2050, especially in low- and middle-income countries where nearly 90% of adolescents reside [2]. Adolescents face various health challenges, which may be age specific, such as water, hygiene, and sanitation-related risks for younger adolescents (10–14 years), as well as behavioural (alcohol use and unsafe sex) risks for older adolescents (15–19 year olds) [2]. Globally, among adolescent girls aged 15–19 years, pregnancy complications and unsafe abortions are the leading causes of death

[2]. Annually, in low-income countries, approximately 21 million adolescent girls between the ages of 15 and 19 years become pregnant, while approximately 12 million give birth and about 777,000 births are reported among adolescent girls aged below 15 years [3].

In Zambia, contraceptive use among adolescents remains low while adolescent girls become sexually active at an early age. Statistics show that the median age at first sexual intercourse among women aged 25–49 in Zambia is 16.6% while 17% of women had sexual intercourse by age 15 and 69% by age 18 [4]. Statistics also showed that at the time of the 2018 Zambia Demographic and Health Survey (ZDHS), 29% of adolescents had begun childbearing [4]. With the low age at first sex among adolescents, contraceptive use is also low in this age group. In the period from 1996 to 2013/14, contraceptive use among adolescents increased by only 3.3% from 7.6% in 1996 to 10.9% in 2013/14 [5]. Data from the 2018 ZDHS also showed that only 12% of all women aged 15–19 years used modern contraceptives [4].

Contraceptives have been proven to help prevent unwanted pregnancies, early pregnancies, and unsafe abortions [6]. However, contraceptive use remains low, particularly in the least-developed countries, such as those in Africa [7–9]. Contraceptive use was as low as 40% and 33% in the least-developed countries and Africa, respectively [8]. Statistics revealed even lower figures among female adolescents [10,11], with the overall contraceptive prevalence rate (CPR) among female adolescents aged 15–19 in the developing world being about 21% for all methods (modern and traditional) [12].

This is despite the benefits of contraceptive use, such as the freedom to decide the number of children to have and how to space them, improvements in health-related outcomes, such as reduction in maternal mortality and infant mortality [13–15], and improvements in schooling and economic outcomes, especially for girls and women [16,17].

While there is a large body of evidence quantifying the magnitude of the problem surrounding contraceptive use among adolescent girls, the reasons for the low contraceptive use among adolescent girls are not well understood, especially in the Zambian context. These include motivators and influencers of adolescent girls' contraceptive decisions. Various studies across Africa have shown that there are factors influencing adolescent girls' decision to use contraceptives [6,18–20]. Among these are individual [6,21,22], parental [18,19,21], peer [20,21], partner [19,22], societal and community [6,18,20], and institutional and environmental [6,23] influences that contribute positively and negatively to adolescents' decision to either use or not use contraceptives. In Zambia, however, there is limited information on what influences contraceptive decisions among adolescent girls aged 15–19 years. Therefore, this study sought to explore and understand what motivates and influences adolescent girls' decision making regarding contraceptive use through qualitative methods.

2. Material and Methods

2.1. Study Design

This study was conducted through a qualitative exploratory design that sought to understand the motivators and influencers of adolescent girls' decisions on whether or not to use contraceptives. Influencers in this study included people and institutions that encourage or discourage contraceptive use while motivators were reasons why adolescent girls decide to use or not use contraceptives.

2.2. Study Setting

The study was conducted in Chongwe and Lusaka districts in Lusaka province and Kasama and Luwingu districts in northern provinces. The two districts in each province were purposively selected based on whether they are predominantly rural or urban. Kasama and Lusaka districts in Northern and Lusaka provinces represented urban, while Chongwe (Lusaka province) and Luwingu (Northern province) represented rural.

2.3. Selection of Study Sites

In this study, one health facility with a functional and active Youth Friendly Services (YFS) corner was selected in each district with the help of the District Adolescent Health Coordinator as the site for the focus group discussion. These corners are operated by the Ministry of Health and are run through health facilities where space is provided to provide sexual and reproductive health IEC materials and products, such as condoms and contraceptives.

2.4. Study Participants and Recruitment

Adolescent girls who were recruited for the FGDs and KIIs were aged between 15 and 19 years. Purposive sampling, specifically maximum variation sampling, was employed in selecting participants for both FGDs and KIIs. Peer educators from the selected health facilities assisted with recruitment by administering the recruitment screening tool while the research assistants and principal investigators decided which participants were recruited based on the eligibility criteria. The criteria included only female participants who were residents of the study sites, aged between 15 and 19 years and accessed services from the youth-friendly spaces were included in the study. Maximum variation sampling ensured that there was diversity in the groups considering age, knowledge of contraceptives, and education levels.

2.5. Data Collection

In total, 7 focus group discussions (FGDs), with each having between 6 and 12 participants, and 3 key informant interviews (KIIs), were undertaken, each lasting between 60 and 90 min. KIIs were conducted with participants who were not comfortable with participating in the focus group discussions. All these involved adolescent girls aged between 15 and 19 years. The FGDs and KIIs were all conducted by two research assistants (RAs) trained and experienced in conducting qualitative research, who were supervised by the principal investigator. The RAs were experienced in qualitative research and were also trained and oriented in this study. All the research assistants had the required understanding of the local language and context of the study areas. The FGDs and KIIs were audio recorded, with participant permission, predominantly in English, with some participants opting for local languages—Bemba and Nyanja.

2.6. Data Analysis

Thematic analysis was used to analyse the data from both KIIs and FGDs. Thematic analysis is a method used to identify, analyse, and report patterns or themes observed within data [24]. It helps with organising and describing the data set in detail and interpreting different facets of the research topic. Components of the interviews that were recorded in the local language were transcribed and translated verbatim into English by the research assistants. NVivo version 12 pro (QSR International) was used to manage and organise the data, including data from both the KIIs and FGDs. Through an iterative process, one master code list was developed by the researchers. The process involved constantly reviewing the codes as well as the transcripts throughout the analysis to establish connections within the themes. Through this process, emerging themes were reviewed and, where needed, were merged with other similar themes until the main themes and subthemes were developed, which formed the master code list. Participant verbatim quotes were also used to ensure the credibility of the findings. The social-ecological model of health promotion [25] was used to categorise the themes. Health behaviour and promotion, according to their model, are interrelated and occur at multiple levels, including the individual, interpersonal, institutional, community, and policy levels [25]. Therefore, the results of this study are presented and discussed in line with the following themes, individual, partner, peer, parental, and societal influences, and how they influence adolescent girls' contraceptive decisions.

3. Results

The study included a total of 70 adolescents across seven focus group discussions and three key informant interviews. Participants included a mix of adolescent girls who were sexually active and not sexually active, some who were married, and some who had children but were not married. There were also some who were in school and some who were not in school. Table 1, below, summarises the distribution of participants and the study site for each group and the geographical location.

Table 1. Characteristics of the participants.

Type of Interview	Facility Name	Total Number of Participants	Age Group	District	Geographical Location
FGD	Chikoyi Clinic 1	10	15–19	Luwingu	Rural
FGD	Chikoyi Clinic 2	10	15–19	Luwingu	Rural
FGD	Chongwe Clinic 1	9	15–19	Chongwe	Rural
FGD	Chongwe Clinic 2	6	15–19	Chongwe	Rural
FGD	Location Urban Clinic	10	15–19	Kasama	Urban
FGD	Namalundu Clinic	10	15–19	Kasama	Urban
FGD	Mtendere Clinic	12	15–19	Lusaka	Urban
KII	Mtendere Clinic	1	15–19	Lusaka	Urban
KII	Mtendere Clinic	1	15–19	Lusaka	Urban
KII	Mtendere Clinic	1	15–19	Lusaka	Urban
Total		70			

FGD: 7, KII: 3.

Results from the seven focus group discussions and three key informant interviews revealed various motivators and influencers for both the decision to use and/or not use contraceptives among adolescent girls. Under the motivators for contraceptive use, there were six subthemes, namely, preventing pregnancy; fear of STIs, child spacing, and fear of having more children; fear of disturbing education; preventing worsening poverty and lack of family support; and peer pressure and influence from peers. Under the theme motivators for non-use of contraceptives were three subthemes and these were side effects of contraceptives; fear of infertility; being mocked by friends and peers. These themes and subthemes are detailed further below.

3.1. Motivators or Reasons for Contraceptive Use

3.1.1. Fear of Becoming Pregnant and Fear of Disturbing Their Education

One of the key motivators for contraceptive use among adolescent girls was to prevent pregnancy. Adolescent girls were afraid of getting pregnant and, thus, resorted to using contraceptives, especially if they had observed their friends falling pregnant.

“When you see your friend get pregnant or get sick at a young [age], you are motivated to use contraceptives so that you do not get pregnant.” [FGD 2, participant 5, Chikoyi Clinic, Luwingu]

“To protect myself from getting pregnant, because if I do not get that injection, I can get pregnant quickly.” [FGD 2, participant 1, Chongwe Clinic, Chongwe]

The desire to prevent pregnancy was also linked to their fear of disrupting their education. For adolescents who were still in school, the fear of disrupting education was an added motivation for using contraceptives. Becoming pregnant would lead to them having to drop out of school for the duration of the pregnancy and also post-delivery so they opted to use contraceptives to prevent pregnancy and, thus, remain in school.

"You just make a decision on what you want in life such that you decide whether you want to get pregnant there and then or first go to school and live better. So, I have decided to use contraceptives." [FGD participant 3, Chongwe Clinic, Chongwe]

"Some of us use contraceptives because say you are at school, I do not want to stop school because of pregnancy. I tend to use contraceptives while enjoying the sex till I finish school." [FGD 1, participant 2, Location Urban Clinic, Kasama]

3.1.2. Fear of Sexually Transmitted Diseases

The fear of contracting sexually transmitted diseases such as HIV/AIDS was also a strong motivator for using contraceptives among adolescent girls.

"We feel they [condoms] are safe to prevent us from getting diseases such as STIs." [FGD 1, participant 9, Location Urban Clinic, Kasama]

"I think we just get scared of getting HIV and AIDS" [KII 3 participant, Mtendere Clinic, Lusaka]

Most of the adolescents expressed both the fear of becoming pregnant and the fear of diseases as the main motivators for their use of contraceptives.

"To avoid diseases and pregnancies" [FGD 2, participant 3, Namuhundu Clinic, Kasama]

3.1.3. Child Spacing and Fear of Having More Children

Fear of having more children and child spacing were key motivators for contraceptive use, particularly among adolescents who had a child. Adolescents who already had a child started using contraceptives to prevent having more children. For some adolescents, fear of having a second child was what drove them to start using contraceptives.

"For me, I decided to get it [injectable contraceptive] so that I should not fall pregnant immediately because I have a child." [FGD 2, participant 1, Chongwe Clinic, Chongwe]

"I looked at my child, she's still young and so I'm scared to get pregnant again." [KII 1, participant, Mtendere Clinic, Lusaka]

Among those who were married, child spacing was also one of the reasons why they chose to use contraceptives.

"Not wanting to have children without spacing is what influenced me." [FGD 2, participant 5, Chongwe Clinic, Chongwe]

3.1.4. Prevent the Worsening of Poverty and Lack of Family Support

For some, the thought of the socio-economic situation at home or the possibility of struggling to take care of the child, or even the possibility of lack of support from family members if they fall pregnant, was motivation enough for them to use contraceptives. Having an extra mouth to feed in a household that is already struggling motivated adolescent girls to use contraceptives.

"If I am not ready to become a parent, I might make my child suffer for nothing. That is the main reason." [FGD1, participant 1, Chongwe Clinic, Chongwe]

"Some [girls] it's because of their social economic status at home. You will find that becoming pregnant is a cost they cannot afford." [FGD 1, participant 4, Location Urban Clinic, Kasama]

"To reduce poverty, because you find that at home, they are not managing to feed everyone, so if I bring a baby, it would be worse." [FGD 2, participant 2, Chongwe Clinic, Chongwe]

Having no support from the family when they fall pregnant was also added motivation to use contraceptives for some of the adolescent girls.

“People from home stop sponsoring [providing support] you once you fall pregnant.” [FGD 1, participant 9, Chongwe Clinic, Chongwe]

3.2. Motivations or Reasons for Non-Use of Contraceptives

Some adolescents expressed various reasons why they chose not to use contraceptives. These are presented below.

3.2.1. Side Effects of Contraceptives

The side effects of the contraceptives that adolescent girls experienced were key motivations for the non-use of contraceptives, specifically discontinuation of use. Various side effects that they experienced were mentioned with prominent side effects, including bleeding, delayed or extended periods, headaches, numbness in the arm, and weight gain.

“When I was using Depo, I used to gain [weight] and my stomach would bulge up, so that was why I decided to stop.” [FGD 1, participant 2, Chongwe Clinic, Chongwe]

“The challenges I went through were unending periods, overweight too.” [FGD1, participant 2, Chongwe Clinic, Chongwe]

“Periods never end when I get the injection for 2 months. Sometimes the hand which receives the injection freezes.” [FGD 1, participant 7, Chongwe Clinic, Chongwe]

“When I first got the injection I had an unending flu, delayed with periods.” [FGD 1, participant 2, Chongwe Clinic, Chongwe]

3.2.2. Fear of Infertility

What adolescents hear about contraceptives also gave them a reason not to use them. Some adolescents reported hearing that contraceptives would cause them not to conceive. They heard that using contraceptives such as the pill would cause them to become barren.

“The things people say about contraceptives. For example, people say when you take a pill, you will become barren, so that discourages us from getting them” [FGD 2 Participant 4 Chikoyi Clinic, Luwingu]

“People advise that getting contraceptives when you do not have a child means you will never conceive.” [FGD 1, Participant 9 Chongwe Clinic, Chongwe]

3.2.3. Mocking by Friends and Peers

Adolescents reported that friends and peers also motivated them not to use contraceptives. Mocking by friends and peers also deterred some adolescent girls from using contraceptives.

“Some of the youths look down on their friends who get contraceptives, and they usually mock them, so this makes most of them shun away.” [FGD 1, Participant 9 Chongwe Clinic, Chongwe]

3.3. Influencers for Use and Non-Use

Although discussions on actual contraceptive use are typically between girls and their boyfriends or partners, their use of contraceptives is influenced by other factors, both positively and negatively. These influencers shape what the girls know and how the girls view contraceptives. This influence can be direct or indirect and, thus, influences the girls' decisions on whether they will use contraceptives. In this study, we found that influencers of contraceptive use among adolescents are intrapersonal, interpersonal, and organisational. At the intrapersonal level, these are related to the personal influences that shape their decisions while interpersonal influences include parents, friends and peers, family members, and partners or boyfriends. Organisational influencers include churches and religious groups.

3.4. Intrapersonal Influencers

Personal: For some adolescents, the motivation or influence to use contraceptives was a personal decision. The decision to use contraceptives is something that came from within themselves based on personal beliefs or experiences. One adolescent started using contraceptives because she cannot afford to take care of a child while another started using contraceptives for fear of labour and maternal mortality.

"For me, it was myself that initiated the idea of using contraceptives. I told myself that at my age I cannot afford to take care of a child. So, I decided to start using contraceptives." [FGD 1, Participant 6 Location Urban Clinic, Kasama]

"For me, I fear labour as people die during labour. So, to avoid pregnancy I use a contraceptive." [FGD 2, Participant 10 Chikoyi Clinic, Luwingu]

With regard to initiating the decision to use contraceptives with their sexual partners, there are instances where adolescent girls broached the discussion and made the decision to use contraceptives. This is primarily because they are the ones who are afraid of becoming pregnant and, sometimes, they use contraceptives without their partner knowing about it.

"It is the girl [who starts the decision] as we are the ones who fear to get pregnant." [FGD 2, Participant 3 Chikoyi Clinic, Luwingu]

Further, if they have unprotected sex, they feel that it is up to them to protect themselves by using emergency contraceptives.

"It's the lady. After the sex, you find the guy goes and it's up to the lady to know how to protect herself from pregnancy." [FGD 2, Participant 7 Namahundu Clinic, Kasama]

In some cases, both the adolescent girls and their boyfriends initiated the decision for contraceptive use together, after discussing it. They discussed together and planned the use of contraceptives, and the boyfriends also reminded the girls when they were due for their injections.

"We both discuss [contraceptive use] then come up with a decision [to use contraceptives]." [FGD 2, Participant 1 Chongwe Clinic, Chongwe]

"We exchange [initiating the discussion to use contraceptives], it can be me today and he will initiate it [the discussion] the next day. He used to remind me to go and get injections when I used to be on Depo." [FGD 1, Participant 2 Chongwe Clinic, Chongwe]

3.5. Interpersonal Influencers

These mainly included people whom the adolescent girls interact with in their daily lives, including parents, friends and peers, boyfriends, and partners, as well as family members.

Parents: Parents were major influencers of contraceptive use among adolescent girls. Parents, though indirectly, have a positive influence on adolescents to use contraceptives through threats of repercussions should the girls fall pregnant. The fear of the consequences of falling pregnant based on the threats and warnings from their parents, particularly mothers, is a strong influence on them using contraceptives.

"I had a friend whose mom and my mom were friends. That friend of mine got pregnant and my mom was told. Immediately she came to me and said your friend is pregnant, should you also bring a pregnancy here, you will see what I will do to you. This motivated me to take a contraceptive." [FGD 1, Participant 2 Location Urban Clinic, Kasama]

"For parents, they say if you get pregnant you will leave this place, so we take contraceptives in fear of our parents' reactions." [FGD 2, Participant 10 Chikoyi Clinic, Luwingu]

"Yes, because the way they talk that if you get pregnant, you will be killed or beaten and chased. So, this influenced me." [FGD 1, Participant 2 Chongwe Clinic, Chongwe]

Fathers also influence adolescents to use contraceptives through what they say to the girls.

"The way my father talks that if I ever try to get pregnant, I will have a premature baby. When I hear this, I always get scared and end up getting contraceptives." [FGD 1, participant 3 Chongwe Clinic, Chongwe]

Friends and peers: Friends and peers have a strong influence on contraceptive use among adolescent girls. Friends and peers have influenced contraceptive use either directly by being a source of encouragement or by reminding them to take the contraceptives. According to one girl,

"It was my friend. After I had sex with my boyfriend, I went to my friend, told her what happened. Then she told me about morning after pill." [FGD 1, Participant 6 Location Urban Clinic, Kasama]

"We do influence each other by reminding each other to go and get the contraceptives." [FGD 1, Participant 9 Chongwe Clinic, Chongwe]

Friends played a role in influencing other adolescents to use contraceptives. This influence came in two forms, namely: through hearing about contraceptives from their friends or observing their friends using contraceptives, even without full knowledge or understanding of different types of contraceptives and possible side effects thereof. Based on what they observed and also their friends' experiences, they made decisions to also use contraceptives, often using the same methods that their friends were using.

"I heard from people that it [using contraceptives] is nice, and I decided to try." [FGD 1, participant 2, Chongwe Clinic, Chongwe]

"For me, it was peer pressure. My friends influenced me to do it." [FGD 2, participant 1, Chongwe Clinic, Chongwe]

"It's not everyone that takes contraceptives because they know what they are doing. Sometimes it's because of peer pressure or influence from friends. When they see their friends get Jadelle, they also feel they can insert Jadelle. They do it without knowledge of why they are doing it." [FGD 1, participant 7, Location Urban Clinic, Kasama]

The fear of discrimination from their friends and peers if they fell pregnant also influenced some adolescents to use contraceptives. Being shunned if they fell pregnant spurred them to use contraceptives. As one girl put it,

"There is fear of discrimination from friends. They may not want to be found with you if you get pregnant." [FGD 2, Participant 8 Namahandu Clinic, Luwingu]

Having a wedding is usually a source of pride, not just for young women but the family as well. Most adolescents who become pregnant before getting married usually do not have weddings. Therefore, for some girls, the possibility of getting married without a wedding if they fell pregnant was reason enough to use contraceptives.

"Sometimes we also envy our friends who got married with weddings that is why we take contraceptives. We do not want to get pregnant as we fear we may not have weddings like our friends." [FGD 1, Participant 7 Location Urban Clinic, Kasama]

Family members: Some family members also influence contraceptive use among adolescent girls. These include sisters, cousins, and aunts.

"For me yes, because I share the same bed with her, so even if I get the condoms, she sees them and she uses them sometimes." [FGD 1, Participant 3 Chongwe Clinic, Chongwe]

"For me, my aunt is my friend. So, we talk about these things." [FGD 1, Participant 3 Chongwe Clinic, Chongwe]

Even among adolescents who have a child, family members play a role in influencing them to use contraceptives.

"My sister.... She told me to go to the clinic and get family planning so that I do not fall pregnant again." [KII 1, Participant Mtendere Clinic, Lusaka]

Boyfriends or Partners: Sexual partners such as boyfriends also influence girls' decisions to use contraceptives. They influence the decision to use contraceptives and the type of contraceptive used. Some girls were influenced by their boyfriends to use injectables, while others used condoms.

"For me, my boyfriend who told me that he wanted us to be having sex on a regular basis. I agreed and told him that I did not want to get pregnant especially if we will be having sex regularly which was maybe once after a day except the days I am on my menstrual cycle. So, he asked for time to find me a contraceptive. He searched and found one. He explained to me what it was, and he took me to the clinic where I got it. The contraceptive was Jadelle." [FGD 1 Participant 2 Location Urban Clinic, Kasama]

"For me, my boyfriend told me he is not ready to get me pregnant, so he initiated the use of condoms." [FGD 1 Participant 10 Location Urban Clinic, Kasama]

"We remind each other but most of the times it is me who always makes sure that there is a condom because sometimes men pretend not to have condoms. It is up to him if he thinks that I am a prostitute, but I know it is my life and I need to take caution. I do not see anything wrong with a woman carrying condoms because you are protecting yourself at the end of the day." [FGD 1 Participant 3 Chongwe Clinic, Chongwe]

Boyfriends and partners, when it came to using contraceptives, were the ones who initiated the decision to use contraceptives in some instances. They decided on contraceptive use as well as the type of contraceptive that was used and also enabled access to emergency contraceptives by giving the girls money to buy them.

"It depends, if you plan to have sex with your boyfriend, he will be prepared with condoms. If it happens just at gunpoint, he will give you money to and buy a morning after pill. But if he does not, it's up to you as a girl to think if you want to get pregnant or not. Then you will know what to do." [FGD 1, Participant 7 Location Urban Clinic, Kasama]

"Sometimes the guy will after the sex give a lady money to go and buy a morning after pill." [FGD 2, Participant 3 Namahundu Clinic, Kasama]

3.6. Organisational Influencers

Churches and religious groups: Churches and religious groups also, in some way, influence contraceptive use among adolescents. The consequences of falling pregnant such as ex-communication from church positively influence adolescent girls' decision to use contraceptives.

"At my church, if you get pregnant, they make you stand in front of the church, and they ban you from going to church. So that makes us use contraceptives in fear of being banned from going to church." [FGD 2, Participant 5 Chikoyi Clinic, Luwingu]

"These days in churches they disfellowship young ladies who fall pregnant. So, to avoid that, they end up using contraceptives." [FGD 2, Participant 8 Namahundu Clinic, Luwingu]

"At our church, if you get pregnant, they stop you from going to church and taking part in church-related activities. So, we take contraceptives so that we do not get pregnant and be stopped from going to church." [FGD 1, Participant 10 Chikoyi Clinic, Luwingu]

4. Discussion

Overall, the results from this study have shown that the decision-making process by adolescent girls on whether or not to use contraceptives is influenced by a multitude of factors, which can be best understood through the socio-ecological model (SEM). The model offers a basis to understand the dynamic relationship that exists between an individual and their environment as a determining factor of health behaviour. An individual's health behaviour is not simply the result of the individual's decision, but it is moulded by a multifaceted interaction of various internal and external influences in their environment, which may include (1) individual factors, (2) interpersonal relationships, (3) organizational entities, (4) community factors, and (5) systems and policy [26]. Results from this study demonstrated that there are various motivators for the use and non-use of contraceptives among adolescent girls and the contraceptive decisions they make are also influenced by various intrapersonal, interpersonal, and societal factors. Most of the motivators for the use and non-use of contraceptives are intrapersonal while most of the influencers are intrapersonal and organisational, which raises the question whether adolescent girls actually have the power to make autonomous contraceptive decisions. These are discussed further.

4.1. Motivators for Contraceptive Use

Intrapersonal motivators: Prevention of pregnancy was a major motivation for using contraceptives and other studies have reported similar findings [18,27,28]. It can be linked to other motivations, such as the fear of the consequences of teenage pregnancy. They want to avoid socio-economic consequences, such as disturbing their education, as they will inevitably drop out of school, lack of family support and abandonment, alienation, and social as well as internalised stigma, and this is consistent with other studies [19,22,28–30]. Adolescents have the desire to prioritise their education as well as not bring disappointment and shame to their families and endure the social stigma that comes with being teenage mothers [28,29]. Poverty, or the fear of worsening it, is a strong motivator for adolescent girls to use contraceptives.

Fear of diseases is also another motivation for contraceptive use, particularly condoms. Adolescent girls who did not want to use hormonal contraceptives opted to use condoms, particularly male condoms. Comparable findings have been reported in other studies [27,31–33]. Condoms are viewed as both a means of protection against diseases and prevention of pregnancy [33], although most use them for disease protection rather than the dual role that condoms provide (disease prevention and prevention of pregnancy) [34]. Our study did not investigate the non-mentioning of female condoms as a contraceptive of choice by adolescent girls.

Adolescents who had at least one child reported using contraceptives out of fear of having more children, and among married adolescents, as a way of spacing their children, and this has been reported in other studies [35]. Adolescent mothers are motivated to use contraceptives as they seek to avoid the socio-economic and possible health consequences of having more children, or children born close together. Poverty and failure to support more children provide added incentives for adolescent mothers to use contraceptives [36].

4.2. Motivators for Non-Use of Contraceptives [1,27,36–38]

The main reasons given by the adolescent girls for non-use of contraceptives centred around three main themes, which were fear of side effects, fear of infertility, and fear of mocking or stigma by their friends. These can be categorised as intrapersonal and interpersonal motivators.

Intrapersonal motivators for non-use: The adolescents mentioned various side effects that they have experienced from using contraceptives. Similar side effects have been reported in other studies, including menstrual cycle irregularities [6,20,23], sickness, including abdominal pain [18,19,23], changes in weight (either extreme weight gain or loss)

[6,19,21–23], menstrual cycle and colour of blood, spotting, constant bleeding [21,23], amongst others. Other issues mentioned include body weakness, dizziness, fainting, blood clots during menstruation, miscarriages, becoming epileptic [6], heavy bleeding [6,18], cancer [18], reduced libido [19,23], and paralysis [21]. This fear stems from what those who have used contraceptives have experienced and also what those who have not used contraceptives have heard from those who have used them. These fears remain a strong motivation for the non-use of contraceptives, especially since the experience differs from individual to individual. Some may experience severe adverse reactions while others may not, and as these experiences are shared, and coupled with misconceptions about contraceptives, this fear of experiencing adverse side effects remains prevalent among not just adolescents, but women in general.

The fear of contraceptives causing infertility was a major reason for non-use [35,39–41]. The belief that modern contraceptive use causes infertility has been documented in other studies in sub-Saharan Africa [35,39–46]. In most societies in Africa, women face a lot of pressure to have children. For some, having children and motherhood are viewed positively and thought to give the woman respect and an elevated social status in the community [47]. Adolescent girls and women who are unable to bear children may face challenges socially and culturally, including disruption of their relationships or marriages, boyfriends or husbands resorting to polygamy, divorce, or promiscuity by the boyfriend or husband [41,48]. Therefore, when their fertility is threatened or is seemingly affected through contraceptive use, these adolescent girls, and women in general, will opt to not use contraceptives or discontinue use where they may have started already in favour of those perceived not to affect fertility such as condoms.

Interpersonal motivators for non-use: Stigma associated with contraceptive use among adolescents has been reported in other studies [27,30]. This stems from the association of contraceptive use with promiscuousness. Where contraceptive use among adolescents becomes common knowledge, they may be ridiculed and labelled ‘bad girls’ who have loose morals, as reported in similar studies [27,30,48,49]. Such mocking and judgement from their peers may lead to exclusion from their social circles and them being at the centre of gossip among their peers, including those who are married [6,20]. Therefore, to avoid being the centre of ridicule, gossip, and victims of social exclusion and for them to maintain their social circles and social life, adolescents may lean towards the non-use of contraceptives, that is, if they do not opt to hide their usage of contraceptives.

4.3. Influencers for Use/Non-Use [20,35,50]

Various factors influence adolescents’ decision whether or not to use contraceptives and the main influencers included their parents, peers and friends, family members, partners (interpersonal influencers), as well as churches and religious groups (organisational influencers).

Interpersonal influencers: Parents, particularly mothers, play a key role in influencing the contraceptive decisions of adolescent girls, as reported in several other studies [6,19–21,23], in most cases indirectly [21]. Positive parental influences involve conversations, mostly with mothers, regarding contraceptives, which help them choose, particularly if they discuss contraceptives with their mothers before choosing a method [6]. Negative influences stem from negative attitudes that parents have towards contraceptive use, which are tied to the disapproval of adolescents engaging in sexual activities. Some parents do not discuss contraceptive use due primarily to their cultural and religious beliefs as well as the belief that they are meant for adults [18]. Adolescent girls are afraid that their parents would perceive them as bad girls for engaging in sex, which, in their parents’ view, is sinful behaviour and disrespectful to the parents [6]. Repercussions, such as parental disappointment and being driven from home or disowned, should parents discover their contraceptive use tend to incline adolescent girls not to use contraceptives [6,18]. Beyond just influencing the decision to use contraceptives, parents, particularly mothers,

also influence the choice of contraceptive methods, usually advising against hormonal methods that are thought to affect fertility [19].

Sexual partners can both encourage and discourage contraceptive use. Partners tend to encourage contraceptive use to avoid the embarrassment of making a young girl pregnant [19], while others do it to engage in unprotected sex while avoiding pregnancy. Where partners encourage contraceptives, they play a key role in deciding the contraceptive method of choice [20]. Partners, however, also discourage contraceptive use through coercive tactics to ensure the non-use, misuse, or discontinuation of contraceptive use [47]. They discourage adolescent girls from using contraceptives due to concerns about contraceptives and their perceived effect on future fertility [19]. Adolescents also avoid using contraceptives for fear of their partners thinking they have multiple sexual partners [20]. Even though adolescent girls discuss contraceptive use with their intimate partners, these conversations are usually to provide approval for contraceptive use [20,51], which is linked to the unequal gender power dynamics in relationships, with males ultimately controlling the decision making on contraceptive use [51]. They also influence the choice of contraceptive method, which typically aligns with their preferred method [52].

Friends and peers have a major influence on adolescent girls' decisions regarding contraceptive use, both positively and negatively [27,36,37]. They are a key channel through which information on contraceptives is shared [1]. They, through their experience, influence adolescent girls' contraceptive decisions. As confidants, friends and peers are usually the first to know about intentions to have sex. Therefore, based on their shared fears of pregnancy, disruption of education and other such fears, coupled with some experience or knowledge about contraceptives that the friends may have, the friends have a major influence on the decision to use contraceptives. Therefore, adolescents who see their friends as contraceptive users are more likely to use contraceptives themselves [38]. As positive influences, they provide encouragement, share experiences, and also offer reminders when contraceptives are due [27,36,37]. Adolescent girls tend to use contraceptives because their friends are using them [22], and they also share contraceptives, such as condoms, with each other. As negative influences, friends and peers associate contraceptive use with promiscuous behaviour, which can discourage contraceptive use [20]. Friends may also distance themselves from those discovered to use contraceptives, so to avoid being excluded from social groups, adolescent girls may not use or may discontinue the use of contraceptives [6,27,30].

Family members, other than parents, also influence the contraceptive decisions of adolescent girls [27]. These typically include sisters, cousins, aunts, and grandmothers, depending on whether the adolescent girls were married or not. Older women encouraged contraceptive use, recommending different methods, depending on whether the girl is married or not [53]. Adolescents whose family members were more positive and had a liberal attitude and encouraged contraceptive use found it easier to use contraceptives [54]. However, family members can also discourage the use of contraceptives through the disapproval of their use [27], especially amidst perceived effects on future fertility [41].

Organisational influencers: Churches and religious groups also influence adolescent girls' decisions to use contraceptives, in some cases, a negative influence, through their religious teachings, which are against sex, particularly among young and unmarried women, with those discovered to be sexually active being shunned or rejected by their religious communities for sex and its consequences [47]. Religious groups tend to discourage the use of contraceptives, particularly among adolescents, considering it a sinful act against God and viewed in the same light as abortion [6]. However, other studies show that there are others who permit contraceptive use with regard to child spacing that positively influence contraceptive use [55]. These results and others from other studies show that religion does play a role in influencing contraceptive decisions, whether negative or positive, and should be leveraged to improve the uptake of contraceptives.

4.4. Adolescent Girls' Contraceptive Decision-Making Power

This study has shown that adolescent girls' decision making regarding contraceptive use is the result of a combination of an intimate, close, and long-term relationship; positive self-esteem; an internal locus of control; and favourable family, partner, and peer influences, and when these characteristics are conducive, decision making takes place, with contraceptive use being the final outcome [56]. However, influencers of contraceptive decisions also affect the power that these girls have to make these contraceptive decisions. There exist inherently unequal power dynamics in relationships with their sexual partners. These may result from the age difference, financial dependence of the girls on their partners, etc., and usually take away the autonomous decision-making power that the girls may have due to the potential repercussions should they go against what their partner wants. Friends and family also limit the decision-making power that adolescent girls may have regarding contraceptive use. Through their influence, adolescent girls may feel like they have no option but to go with what their friends and family are doing or saying, thus relinquishing their decision-making power.

Study Limitations

The study's findings may have been influenced by social desirability bias, and the sensitive nature of the topic may have hindered information sharing by the participants. Additionally, the study sought to capture broad and relevant themes regarding adolescent girls' contraceptive decisions to teenage experiences rather than draw conclusions from the FGDs and KIIs based on a representative sample. However, trained and experienced researchers conducted the interviews and discussions to mitigate bias. The study team also attempted to include more varied perspectives in the focus groups by implementing a more inclusive recruiting method and ensuring that all participants' opinions were heard.

The recruitment of participants from the youth-friendly services/corners may have biased recruitment to those who are inclined to seek health services from health facilities or live in proximity to the location of the centres may affect the application of these findings to dissimilar locations from where this study was conducted. However, these findings are important for understanding the motivations and influences of adolescent girls' contraceptive decisions. Future studies should consider a different approach in the recruitment to strengthen the generalizability of the findings.

5. Conclusions

Adolescents are motivated to use contraceptives by their fear of pregnancy, fear of diseases, and also socio-economic consequences that come with teenage pregnancy, such as dropping out of school, social stigma, and associated poverty. Their decision to use contraceptives is also influenced by different factors, including their parents, peers and friends, family members, partners, as well as churches and religious groups. This brings into question whether adolescent girls have the power to make decisions regarding contraceptive use, as the decision to use contraceptives as well as the choice of method are influenced by persons other than themselves. There is a need to understand and account for all these motivations and influences in the development of intervention programmes targeting increasing contraceptive use in this age group. It is vital to take an all-inclusive approach in developing interventions by including various influencers, including at institutional and policy levels, even as we seek to empower adolescents and give them autonomy to make contraceptive decisions. Parents, family members, and community and religious groups need to be engaged and sensitized on the importance and benefits of contraceptive use and dispel misinformation about contraceptives. Providing the correct information to counter misinformation is essential to improving contraceptive use for first-time users and continued use for those already using contraceptives.

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Abbreviations

CPR	Contraceptive Prevalence Rate
FGDs	Focus Group Discussions
KIIs	Key Informant Interviews
LICs	Low-Income Countries
NHRA	National Health Research Authority
SEM	Socio-Ecological Model
UKZNBREC	University of KwaZulu Natal Biomedical Research Ethics Committee
UNZABREC	University of Zambia Biomedical Research Ethics Committee
WHO	World Health Organization

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CHAPTER NINE

INTEGRATIVE SYNTHESIS

This chapter synthesises the main findings from the different research outputs, which aimed to answer the study's objectives.

9.1. Overview

Contraceptives have been proven to prevent unwanted pregnancies, early pregnancies, and unsafe abortions (1). Despite this, contraceptive use remains low, particularly in the least developed countries, such as those in Africa (2–4). In the least developed countries and Africa, contraceptive use remained as low as 40% and 33%, respectively (3). Statistics showed even lower figures among female adolescents (5,6), particularly among 15-19-year-olds in the developing world, whose overall contraceptive prevalence rate (CPR) was approximately 21% for all methods (modern and traditional) (7). This is notwithstanding the documented benefits of contraceptives, including the autonomy to decide the number and spacing of children, better health-related outcomes, such as reduced maternal and infant mortality (8–10) and better schooling and economic outcomes, especially for girls and women (11,12).

Without contraceptive use, adolescent girls are exposed to adolescent pregnancy, a significant public health problem, particularly in Africa. Adolescent pregnancy has dire consequences for young mothers and their children. Compared to older women, adolescent girls are at higher risk of maternal death, early neonatal death, anaemia, puerperal endometritis, operative vaginal delivery, and episiotomy (13). They are also at higher risks of maternal mortality, obstructed labour and obstetric fistula, which results in lower chances of receiving an education and obtaining employment (14–16). Children born to adolescent mothers also face higher mortality risks, undernourishment, low birth weight, preterm delivery, small-for-gestational-age infants and school dropout compared to their peers (13,17).

Research across Africa has shown that various factors influence contraceptive use among adolescent girls (1,18–20). These include individual (1,21,22), parental (18,19,21), peer (20,21), partner (19,22), societal and community (1,18,20), and institutional and environmental (1,23) factors. These all contribute to adolescent girls' decision to either use or not use contraceptives.

Despite evidence showing an upward trend in contraceptive prevalence among women 15–49 years in Zambia, contraceptive use among adolescents remains low, with statistics showing that only 10.2% were using any modern contraceptive method in 2013/14 (24). While considerable literature is available regarding contraceptive use among adolescent girls in the region, there is an insufficient understanding of the patterns and trends of contraceptive use among adolescent girls in Zambia and how these have changed over time, as well as the factors that influence contraceptive use and contraceptive decision making. Therefore, this study examined adolescent girls' contraceptive use patterns and trends and associated factors, including factors influencing and motivating adolescent girls' decisions regarding contraceptive use. The specific objectives of the study were:

1. To map evidence on adolescent girls' decision-making regarding contraceptive use in sub-Saharan Africa through a scoping review.
2. To examine levels, patterns, and trends of contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).
3. To determine the factors associated with contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).
4. To understand the adolescent girls' experience with accessing and using in Zambia and the perspectives and preferences that adolescent girls have regarding existing and future contraceptive methods.
5. To explore the motivators and influencers of adolescent girls' decision-making on whether or not to use contraceptives.

Therefore, this chapter seeks to synthesise the main findings from the research outputs addressing the abovementioned objectives. The research papers presented in this thesis addressed the study objectives individually or in combination. The table below details the link between the objectives and the research outputs.

Table: Research outputs by study objectives

No.	Objectives	Title	Status
1	To map evidence on adolescent girls' decision-making regarding contraceptive use in sub-Saharan Africa through a scoping review.	Mapping evidence on decision-making on contraceptive use among adolescents: a scoping review protocol	Published
		Mapping evidence regarding decision-making on contraceptive use among	Published

		adolescents in sub-Saharan Africa: a scoping review.	
2	To examine levels, patterns, and trends of contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).	Patterns, trends, and factors associated with contraceptive use among adolescent girls in Zambia (1996 to 2014): a multilevel analysis	Published
3	To determine the factors associated with contraceptive use among adolescents in Zambia over the period of 18 years (1996 to 2014).	Factors contributing to changes in contraceptive use among adolescent girls in Zambia: a decomposition analysis	Under review (Accepted)
4	To understand the adolescent girls' experience with accessing and using in Zambia and the perspectives and preferences that adolescent girls have regarding existing and future contraceptive methods.	"In schools, teachers are so judgemental...": Understanding adolescent girls' experiences with accessing and using contraceptives in Zambia	Under review
5	To explore the motivators and influencers of adolescent girls' decision-making on whether or not to use contraceptives.	Motivators and Influencers of adolescent girls' decision-making regarding contraceptive use in Four Districts of Zambia	Published

9.2. Summary of findings

Results showed that contraceptive use among adolescents in Zambia remains low. Over the 18 years from 1996 to 2014, contraceptive use only increased by 3.3% from 7.6% in 1996 to 10.9% in 2014. Findings from this research showed that age, education, residence, marital status, and working status, particularly in the recent past, were significantly associated with contraceptive use among adolescent girls. Adolescents who were older and those with higher education levels were considerably more likely to use contraceptives than younger ones and those with lower education. Despite being initially significant (AOR 0.556, 95% CI 0.317, 0.974 in 1996), rural-urban differences were not significant over the period 2001/2 and 2007 but re-appeared in 2013/14 (AOR 0.654, 95% CI 0.499, 0.859). Across all survey years (1996, 2001/2, 2007, and 2014), adolescents who were either married or living with a partner, compared to those who were not married, were significantly more likely to use contraceptives. To further understand the patterns and trends of contraceptive use among adolescents and their associated factors, a decomposition analysis was performed from 1996 to 2014, described in research output one. Decomposition analysis showed that the change in contraceptive use resulted from population behaviour and compositional changes in the age group 15 – 19 years over this period. An increase in age contributed to the change in contraceptive use over the

reference period, 2.94% and 9.33% for 17- and 18-year-olds, respectively. Being married or living with a partner contributed the most significant change (about 44%) to contraceptive use while living in a rural area accounted for approximately 20%. Compositional changes also accounted for some changes in contraceptive use among adolescents over the years. Changes in composition relating to education, particularly regarding secondary education and higher, accounted for 290% of the change in contraceptive use over the reference period. Regarding rural-urban residence, rural areas contributed about 13% of the change, while changes in age composition among older adolescents, 18 and 19-year-olds, accounted for approximately 7% and 2%, respectively.

The behaviour of adolescent girls as they get older and compositional changes in this age group contributed to the increase in a population change over the reference period. The effect of women's characteristics, such as age and educational status, are comparable to other findings of similar studies (25). Older adolescents (8,30), who are married or living with a partner (26–28), and those with higher education (28,29) are more likely to use contraceptives. Older adolescents are more likely to be educated, mature, knowledgeable about contraceptives and appreciate their importance. Adolescents who were married were more likely to use contraceptives; they can likely afford more effective contraceptives compared to their unmarried counterparts because of financial support from their partner (28). They are also more likely to use contraceptives and practice family planning than the unmarried due to regular exposure to sexual intercourse and the risk of unintended pregnancy. Increases in the proportion of adolescent girls in rural areas achieving higher levels of education, and deliberate government policies, such as Comprehensive Sexuality Education for both in and out-of-school adolescents and improving access to contraceptives (30), could have contributed to the increase in contraceptive use in rural areas.

Beyond the quantitative findings which highlight the individual determinants of contraceptive use among adolescent girls, this study sought to understand the factors influencing contraceptive use among adolescent girls, their experience accessing and using contraceptives, and what influences their contraceptive decision-making. In line with the conceptual framework, the findings from the scoping review showed that various individual, parental, peer and partner, societal and community, and institutional and environmental influences positively and negatively affect adolescents' contraceptive decisions. These factors shape the patient's, in this case, adolescents', experience with contraceptives and influence and motivate their

contraceptive decisions. Their experience with accessing and using contraceptives also contributes to their contraceptive decisions. Challenges with accessing contraceptives, including unavailability of contraceptives and stockouts, health facility staff attitudes, expired drugs, and lack of confidentiality and privacy, play a role in contraceptive decisions. Experiences with using contraceptives, particularly the side effects they endure, also contribute to their contraceptive choices. These experiences, coupled with the misconceptions they have about contraceptives, such as contraceptives causing clots, infertility, and cancer, contraceptives dislodge and move around the body, they are not for nulliparous women, ultimately shape adolescent girls' motivations and influences to use contraceptives, both positively and negatively.

9.3. Motivators, influencers and experiences with using contraceptives

The findings from this study demonstrated that adolescent girls in Zambia have various motivators for the use and non-use of contraceptives and that various intrapersonal, interpersonal, and societal factors influence their decision to use contraceptives. Most motivators are intrapersonal, whereas most influencers are intrapersonal and organisational.

9.3.1. Motivators for the use and non-use of contraceptive

The desire to prevent pregnancy was a significant motivation for using contraceptives, a finding consistent with other studies (18,31,32). Fear of diseases was also a strong motivator for contraceptive use (31,33–35). There are also other motivations or reasons for contraceptive use, which include the fear of the consequences associated with teenage pregnancy. These motivations primarily relate to socio-economic consequences, such as disrupting their education because once pregnant, they will drop out of school, lack of family support and abandonment, if they get pregnant, alienation and social exclusion, as well as internalised stigma (19,22,32,36,37). Adolescents wish to prioritise their education and not disappoint and shame their families or endure the social stigma of being teenage mothers (32,36). Poverty, or the fear of worsening it, was also a strong motivator for adolescent girls to use contraceptives.

The motivators for adolescent girls' non-use of contraceptives were mainly due to the fear of side effects, infertility, and mocking or stigma by their friends. At the interpersonal level, other studies have also reported on the stigma associated with contraceptive use among adolescents (31,37). The stigma is due to the association of contraceptive use with promiscuous behaviours. When adolescents' contraceptive use becomes public knowledge, they may endure ridicule and be labelled 'bad girls' who have loose morals, as reported in similar studies (31,37–39). Such

mocking and judgement from their peers may result in exclusion from their social circles and them being at the centre of gossip among their peers, including those who are married (1,20). Therefore, to avoid being the centre of ridicule, gossip, and victims of social exclusion and to maintain their social circles and social life, adolescents may lean towards the non-use of contraceptives, that is, if they do not opt to hide their usage of contraceptives.

Concerning motivation for non-use of contraceptives, side effects from using contraceptives, including menstrual cycle irregularities (1,20,23), sickness, such as abdominal pain (18,19,23), changes in weight (either extreme weight gain or loss) (1,19,21,22,40), menstrual cycle and colour of blood, spotting, constant bleeding (21,40), are a significant demotivator for contraceptive use. Fears about contraceptive use causing infertility were also a primary motivator for the non-use of contraceptives and have been documented in other studies in Africa (41–44). The women fear the social and cultural consequences associated with the inability to reproduce, such as disruption of their relationships or marriages, boyfriends or husbands resorting to polygamy, divorce, or promiscuity by the boyfriend or husband (39,44). Therefore, they may choose not to use contraceptives or discontinue using contraceptives.

9.3.2. Influencers for the use and non-use of contraceptives

Parents, peers and friends, family members, and partners (interpersonal influencers) were the leading influencers of adolescent girls' decisions on whether or not to use contraceptives. Parents are both positive and negative influencers of contraceptive use (1,20,21,40,45). Positive parental influences involve conversations, mostly with mothers, regarding contraceptives, which help them choose, mainly if they discuss contraceptives with their mothers before choosing a method (1). The influence of peers and friends on contraceptive use among adolescent girls is documented by various studies (31,46,47) and also found in this study. Through their knowledge and experience, friends tend to influence adolescent girls' decisions regarding contraceptive use. Negative influences stem from parents' negative attitudes towards contraceptive use, which are linked to adolescents' disapproval of sexual activities. Some parents do not discuss contraceptive use due to primarily their cultural and religious beliefs and the belief that they are meant for adults (18). Beyond just influencing the decision to use contraceptives, parents, particularly mothers, also influence the choice of contraceptive methods, usually advising against hormonal methods that are thought to affect fertility (45).

Sexual partners both encourage and discourage contraceptive use. They encourage contraceptive use to avoid the embarrassment of making a young girl pregnant (19), and others do it to engage in unprotected sex while avoiding pregnancy. Where partners encourage contraceptives, they play a significant role in the choice of contraceptive method (20). They influence the choice of contraceptive method, which typically aligns with their preferred method (48). Sexual partners sometimes discourage contraceptive use and use coercive tactics to ensure the non-use, misuse, or discontinuation of contraceptive use (49). They discourage adolescent girls from using contraceptives due to concerns about their perceived effect of contraceptives on future fertility (19). Adolescents also avoid using contraceptives for fear of their partners thinking they have multiple sexual partners (20). When adolescent girls discuss contraceptive use with their intimate partners, these conversations are usually to provide approval for contraceptive use (20,50), which is linked to the unequal gender-power dynamics in relationships with males, ultimately controlling the decision-making on contraceptive use (50).

Family members, such as sisters, cousins, aunts, and grandmothers, also influence the contraceptive decisions of adolescent girls (31), depending on whether the adolescent girls are married or not and whether the girl has a child or not. Older women encourage contraceptive use, recommending different methods depending on the girl's marital status (51). Adolescents whose family members were more positive and had a liberal attitude, and encouraged contraceptive use, found it easier to use contraceptives (52). However, family members can also discourage the use of contraceptives through the disapproval of their use (31), especially amidst perceived effects on future fertility (44).

Churches and religious groups also influence adolescent girls' decisions to use contraceptives. Religious teachings are primarily against pre-marital sex, particularly among young unmarried women. Those discovered to be sexually active may be shunned or rejected by their religious communities for sexual behaviour and its consequences (49). Religious groups tended to discourage the use of contraceptives, particularly among adolescents, considering it a sinful act against God and viewed in the same light as abortion (1). Therefore, such strong religious views were associated with reduced contraceptive use (41).

Cultural norms that are strong in the community also negatively influence contraceptive use among adolescent girls. Research has shown that cultural norms promoting early marriage and communities with rituals associated with initiation rites restricted adolescent girls from getting

and/or using contraceptives (53). Cultural norms have also contributed to high early pregnancy rates (54) through their influence on the non-use of contraceptives. Societal and cultural beliefs have also contributed to adolescents not using contraceptives (55).

The negative attitude of health staff also discouraged adolescents from accessing contraceptives from health facilities (31,37,47,56). Attitudes of health facility staff, particularly harsh treatment and scolding by nurses, negatively influenced decisions to use contraceptives among adolescent girls (23). Additionally, the lack of privacy, a conducive environment and policies that hinder access to contraceptives also have a bearing on the patient experience and tend to influence contraceptive use among adolescents (18) negatively. The presence of parents and community members at health facilities also raised concerns, particularly regarding privacy.

9.4. Strengths and Limitations

The study employed mixed methods, including primary and secondary data sources, to answer the research questions. Participants included in the quantitative component of the study represented all adolescents across the country. In contrast, the qualitative component included participants from rural, urban and peri-urban areas, thereby allowing for a diversity of view of adolescents regarding contraceptive use. The insights obtained from this study will be relevant to health facilities in similar settings within Zambia and beyond. The scoping review, collated literature from across the country, created the much-needed context and broader understanding of the issues affecting contraceptive use among adolescents in sub-Saharan Africa. The scoping review was essential for mapping the existing literature on contraceptive use in the sub-region, which helped to highlight the gaps and helped shape the focus of the study concerning contraceptive use decision-making among adolescent girls.

The study has some inherent strengths and limitations. The quantitative component included data from four demographic and health surveys, which is nationally representative data. This allows for generalising the findings to all adolescent girls in Zambia. However, this data is self-reported and may be subject to biases, such as social desirability bias. However, the analytical methods used to analyse the data across the different quantitative papers attempted to control for the bias in the analysis. Given that DHS data is cross-sectional, causal inferences may not be made with regard to any observed relationships.

Qualitative data was collected in youth-friendly spaces in public health facilities. Adolescent girls who do not access youth-friendly services and adolescent who access health services from private health facilities may have been excluded and/or under-represented in the sample. Furthermore, this data also included self-reported data about sexual health information, which exposes the data to social desirability bias, considering the sensitivity of the topic of the study. However, the objectives and process of the study were sufficiently explained to the participants to mitigate potential bias. Furthermore, participant verbatim quotes were also used to ensure the credibility of the findings.

9.5. Conclusion

Contraceptive use among adolescent girls in Zambia remains low, increasing by only 3.3% over the 18 years from 1996 to 2014. The age, education level, residence (whether rural or urban), marital status, and working status of adolescent girls were critical factors in this change. However, various individual, parental, peer and partner, societal and community, and institutional and environmental factors motivate or deter contraceptive use among adolescent girls. Key influencers and motivators for contraceptive use among adolescent girls are not just centred on the girls themselves but involve the significant others, including partners, family and community members, health facility staff and religious leaders. All these drive adolescents' decision-making relating to contraceptive use. Therefore, choosing contraceptives and the method may not entirely rest with adolescent girls. To improve demand, access and contraceptive use in this age group, it is vital to understand and consider these various motivations and influences in designing programmes geared towards improving contraceptive use. Considering the various influencers, it is essential to employ all-encompassing approaches involving all these different actors who play a role in adolescent girls' lives. Given its numerous benefits, education should be prioritised. Accurate information must also be provided to adolescents and all who play a role in their contraceptive choices. Interventions targeting increasing demand, access and use of contraceptives among adolescents must be innovative, participatory and implemented within the context of the local cultural norms to ensure the desired results are achieved.

9.6. Recommendations

9.6.1. Implications for practice

The 2017-2021 Adolescent Health strategy adopted by the Ministry of Health in Zambia prioritises three essential strategic components, one of which was the prioritisation of health

promotion and demand creation for health services with and for adolescents (124). However, the demand and usage of adolescent health services, such as contraceptives, remain low.

Results from this study have shown the motivators and influencers of contraceptive use which include individual, parental, peer and partner, societal and community, and institutional and environmental factors. Policies and programmes aimed at improving demand and use of contraceptive use need to consider these factors in their design and formulation and need to involve adolescents from inception. As such, existing policies and programmes targeting contraceptive use in this age group need to be revised to improve demand, access and usage of contraceptives, including strategies on how they are implemented. The ministry uses the Adolescent/Youth Friendly Corner/Space model to provide basic health information (ASRH&R and HIV, etc.), distribute IEC materials and condoms, and provide guided referrals to health services in the health centres and to health workers who have been trained on the adolescent health standards. To ensure that adolescents have confidence in these youth-friendly spaces, the ministry needs to ensure that they address barriers to access services in these locations, such as communication barriers between adolescents and health facility staff, physical barriers including lack of space in the facility, lack of confidentiality and privacy issues due to a need for a third party for interpretation. With most health facilities being short-staffed, community-based volunteers can be incorporated to support adolescent girls' understanding of and management of side effects resulting from contraceptive use and discourage discontinuation of contraceptive use.

Ensuring constant engagement to enhance acceptance of contraceptives at the individual and community level, particularly among adolescents and young adults, is essential. Complete and accurate information should be provided to the communities and the intended users to help dispel fears and misconceptions about contraceptives. Accessing information from reliable sources of information, particularly health providers, should also be actively encouraged. Youth-friendly spaces should be the norm in health facilities. Innovative strategies that are young people-friendly, including the use of social media platforms, text message reminders, reminders by peer educators and brochures, are also needed to improve knowledge and promote the use of contraception. Training health providers and having younger staff who can identify and communicate respectfully and non-judgementally with adolescents can help improve health staff's attitudes towards young people. The curriculum for both pre-services and in-service health facility staff needs to be revised to include training on engaging and managing

young clients. Infrastructure-wise, locating youth-friendly spaces in more secluded places that afford privacy and confidentiality can help improve access and utilisation of contraceptive services among adolescents.

As found in this study, partners, friends, family, and community members play a central role in contraceptive use among adolescents. Therefore, it is imperative to adopt holistic and inclusive approaches that embrace broader stakeholder involvement, utilise evidence-based data and promote the well-being of adolescents. Findings from this study showed that some adolescents are more comfortable accessing contraceptives from NGOs and pharmacies. Through community engagement and outreach activities, all these stakeholders, including community-based organisations, civil society organisations and non-governmental organisations who work with adolescents, must be engaged to ensure that they are all involved in efforts to promote demand, access and usage of contraceptives use among adolescents. Through these platforms, multi-sectoral linkages with activities that may affect contraceptive use in these girls, such as gender-based violence and substance abuse, and integration of health services such as HIV and sexual and reproductive health, can be effective tools to promote contraceptive use. Community-based activities can be vital to reaching non-school-going adolescents.

The introduction of comprehensive sexual and reproductive health education in schools in Zambia was a step in the right direction for targeting adolescent girls in schools. Evidence-based educational programmes that target improving adolescent girls and young women's sexual behaviours and HIV prevention strategies must be encouraged and strengthened. Extracurricular activities such as clubs that promote sexual and reproductive health and HIV services must be promoted and strengthened where they exist. These programmes may be integrated into school health programmes to reach these young girls and must include the males. Males play a significant role in influencing contraceptive use among women. Therefore, they should be involved in these activities to ensure that they have the correct information about contraceptives and also involve them in the process to ensure they allow adolescent girls and young women the freedom to make their own decisions regarding sexual behaviours and contraceptive use.

9.6.2. Implications for further research

Mixed methods employed in this study played a complementary role in this study. Therefore future studies should consider using this approach to optimise the usability of their findings. It is also important to conduct longitudinal and interventional studies to further investigate and understand adolescent girls' motivators for contraceptive use, contraceptive use changes, influencers, and patterns over time. Future research should test interventions to find a balance between improving the adolescent uptake of contraceptives while being responsive to cultural and societal contexts. Furthermore, there is a need for innovative research to understand adolescent behaviours within the context of their communities that drive their contraceptive choices. It is essential to understand the community structures and mindsets underpinning their health-seeking behaviours related to contraceptive use.

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APPENDICES

Appendix 1: Consent Form

UKZN BIOMEDICAL RESEARCH ETHICS COMMITTEE

APPLICATION FOR ETHICS APPROVAL

For research with human participants (Biomedical)

INFORMED CONSENT FORM

Information Sheet and Consent to Participate in Research

Date:

Good morning/afternoon.

My name is Mumbi Chola, a PhD student from University of KwaZulu Natal, Discipline of Public Health Medicine, School of Nursing and Public Health, 236 George Campbell Building, Howard College Campus, King George V Avenue, Durban, 4041, South Africa, Tel: + 2731-260-4383, Fax: +2731-260-4211, Email: 217082141@stu.ukzn.ac.za.

You are being invited to consider allowing your child to participate in a study that involves research on contraception use among adolescents specifically how adolescents make decisions on whether or not to use contraceptives. The aim and purpose of this research is to understand the different things that adolescents consider when deciding whether or not to use contraceptives and also the experiences that adolescents have had with contraceptive use, what adolescents think about contraceptives that are currently available and also what kinds of contraceptives they would like to see on the market. The study is expected to enroll about 160 participants in total. These will be in groups of 10 and the groups will be according to age and sex. The groups will include females in age groups 10-14 years and 15-19 years. These groups will be done in will be in four towns, two in Lusaka Province and two in Northern Province. The study will involve discussions on several topics around sexual activity, contraceptive use and decision making on contraceptive use.

The duration of your child's participation, if you choose allow him/her to enroll and remain in the study, is expected to be approximately 1 hour 30 minutes to 2 hours. The study is funded

through a scholarship from the College of health Sciences at University of KwaZulu Natal, South Africa.

The study may involve the following risks and/or discomforts. Your child may not be comfortable with discussing your sexual activity and contraceptive use in a group. However, we will try to minimize this by ensuring that all information shared with us is not shared with anyone and anything that may be used to identify your child as a participant will be removed. The study will not provide any direct benefits to your child as a participant but information provided will help understand how adolescents make decisions on using contraceptives which is important for programs aimed at prevention of teenage pregnancies.

This study has been ethically reviewed and approved by the UKZN Biomedical Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at 217082141@stu.ukzn.ac.za or +260968832646 or the UKZN Biomedical Research Ethics Committee, contact details as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

Please understand that your child's participation in this study is voluntary. You can choose whether or not to allow your child participate in the study. If you allow your child to participate, he/she is free to withdraw his/her participation at any point. Refusal or withdrawal of your child's participation will not result in any penalties or consequences on your child's part. If you do opt to withdraw your child from the study, please inform the researcher at the contact details provided. Where possible, please provide the reason for your withdrawal.

Participation may also be terminated by the researcher in the even that your child poses a threat to other participants in the group discussions. Threats of violence or violent conduct will result in participation being terminated.

With their participation, your child may be required to spend on transport to get to the venue of the group discussion. They will be provided with a refund of K30 to cover their transport costs to and from the venue for the discussions.

We will need to record the discussions so that at a later time, we can listen to the recordings and be able to accurately capture your views and opinions. Please understand that this is purely for report writing purposes. We will make sure that your child's confidentiality is protected. We will ensure this by making sure that any information that can be used to identify your child is removed. We will also make sure that only the main research team will have access to the recordings. The data will be securely stored and password protected and kept by the principal researcher.

--

CONSENT

I, _____ have been informed about the study entitled
Contraceptive use among adolescent girls in Zambia: A study on patterns, trends and
adolescents' decision making on contraception methods by
_____.

I understand the purpose and procedures of the study which is to understand the different things that adolescents consider when deciding whether or not to use contraceptives and also the experiences that adolescents have had with contraceptive use, what adolescents think about contraceptives that are currently available and also what kinds of contraceptives they would like to see on the market.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my child's participation in this study is entirely voluntary and that I may withdraw my child from the study at any time without any consequences to my child or myself.

I have been informed about any available compensation or medical treatment if injury occurs to my child as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study, I understand that I may contact the researcher at 217082141@stu.ukzn.ac.za or +260968832646.

If I have any questions or concerns about my child's rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

Signature of Participant

Date

Signature of Witness

Date

(Where applicable)

Signature of Translator

Date

(Where applicable)

Appendix 2: Assent Form

UKZN BIOMEDICAL RESEARCH ETHICS COMMITTEE

APPLICATION FOR ETHICS APPROVAL

For research with human participants (Biomedical)

INFORMED ASSENT FORM

Information Sheet and Assent to Participate in Research

Date:

Good morning/afternoon.

My name is Mumbi Chola, a PhD student from University of KwaZulu Natal, Discipline of Public Health Medicine, School of Nursing and Public Health, 236 George Campbell Building, Howard College Campus, King George V Avenue, Durban, 4041, South Africa, Tel: + 2731-260-4383, Fax: +2731-260-4211, Email: 217082141@stu.ukzn.ac.za.

You are being invited to consider participating in a study that involves research on contraception use among adolescents specifically how adolescents make decisions on whether or not to use contraceptives. The aim and purpose of this research is to understand the different things that adolescents consider when deciding whether or not to use contraceptives and also the experiences that adolescents have had with contraceptive use, what adolescents think about contraceptives that are currently available and also what kinds of contraceptives they would like to see on the market. The study is expected to enroll about 160 participants in total. These will be in groups of 10 and the groups will be according to age and sex. The groups will include females in age groups 10-14 years and 15-19 years. These groups will be done in will be in four towns, two in Lusaka Province and two in Northern Province. The study will involve discussions on several topics around sexual activity, contraceptive use and decision making on contraceptive use.

The duration of your participation if you choose to enroll and remain in the study is expected to be approximately 1 hour 30 minutes to 2 hours. The study is funded through a scholarship from the College of health Sciences at University of KwaZulu Natal, South Africa.

The study may involve the following risks and/or discomforts. You may not be comfortable with discussing your sexual activity and contraceptive use in a group. However, we will try to minimize this by ensuring that all information you share is not shared with anyone and anything that may be used to identify you as a participant will be removed. The study will not provide any

direct benefits to you as a participant but information you provide will help understand how adolescents make decisions on using contraceptives which is important for programs aimed at prevention of teenage pregnancies. Describe the scientific/other benefits hoped for from the study).

This study has been ethically reviewed and approved by the UKZN Biomedical Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at 217082141@stu.ukzn.ac.za or +260968832646 or the UKZN Biomedical Research Ethics Committee, contact details as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

Please understand that your participation in this study is voluntary. You can choose whether or not to participate in the study. If you do decide to participate, you are free to withdraw your participation at any point. Your refusal or withdrawal of participation will not result in any penalties or consequences on your part. If you do opt to withdraw from the study, please inform the researcher at the contact details provided. Where possible, please provide the reason for your withdrawal.

Participation may also be terminated by the researcher in the even that you pose a threat to other participants in the group discussions. Threats of violence or violent conduct will result in your participation being terminated.

With your participation, you may be required to spend on transport to get to the venue of the group discussion. You will be provided with a refund of K30 to cover your transport costs to and from the venue for the discussions.

We will need to record the discussions so that at a later time, we can listen to the recordings and be able to accurately capture your views and opinions. Please understand that this is purely for report writing purposes. We will make sure that your confidentiality is protected. We will ensure this by making sure that any information that can be used to identify you is removed. We will also make sure that only the main research team will have access to the recordings. The data will be securely stored and password protected and kept by the principal researcher.

--
ASSENT

I, _____ have been informed about the study entitled
Contraceptive use among adolescent girls in Zambia: A study on patterns, trends and
adolescents' decision making on contraception methods by
_____.

I understand the purpose and procedures of the study which is to understand the different things
that adolescents consider when deciding whether or not to use contraceptives and also the
experiences that adolescents have had with contraceptive use, what adolescents think about
contraceptives that are currently available and also what kinds of contraceptives they would
like to see on the market.

I have been given an opportunity to ask questions about the study and have had answers to my
satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any
time without affecting any treatment or care that I would usually be entitled to.

I have been informed about any available compensation or medical treatment if injury occurs
to me as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study, I understand that I may
contact the researcher at 217082141@stu.ukzn.ac.za or +260968832646.

If I have any questions or concerns about my rights as a study participant, or if I am concerned
about an aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: BREC@ukzn.ac.za

Signature of Participant

Date

Signature of Witness

Date

(Where applicable)

Signature of Translator

Date

(Where applicable)

Appendix 3: Data Collection Tools

Focus Group Discussion Guide

Title: Contraceptive use among adolescent girls in Zambia: A study on patterns, trends and adolescents' decision making on contraception methods.

Section A: Interview Particulars

Date: ____/____/____

Start Time: ____/____ End time: ____/____ (Total Time spent: ____)

Name of Moderator:

Name of Note Taker:

Introduction

Hello, my name is **[insert your name]** and this is **[insert note taker's name]**. I would like to thank you for agreeing to take part in this group discussion. I will be leading the discussion.

I am asking you to take part in a group discussion that will help us to better understand your needs, preferences and perspectives, as adolescents, regarding existing and future contraceptive methods as well as how you make decisions to use contraceptives. Sometimes a discussion among a group of people leads to better understanding of issues because then we get to hear many different options at the same time. I would like to encourage all of you who have decided to participate to share openly and honestly about any questions you will be asked. We want to hear the experience of everyone even if it's different from what others have said. What you will tell us will help us understand issues of contraception among adolescents and will possibly help to come up with possible solutions to the issues we will discuss today. We will also make recommendations that may help improve the health services in your community. Before we start, we would like you to know a few things.

We would ask you that you not use real names or anything that will identify you or others but that you use the numbers that have been assigned to each one of you. Please be honest in sharing your options and experiences as this will help us make better recommendations to meet the needs of young people like yourselves. We will also ask you not to share anything that the other participants have expressed to other people.

We will ask for your permission to tape record this discussion because there will be a lot of information that I will not be able to remember or write down. There will also be times that I will ask follow up questions so that I can better understand what you are saying. By tape recording this discussion, we can also make sure that our notes do not leave out the most important information you have shared. The meaning of your view points and experiences will also not change. I would like to assure you that these recordings will not be shared with anyone

else and will only be used to help us clearly express your views as we write our report. This discussion will last about an hour and a half.

Do you have any questions before we start? **[Take time to address all the questions and concerns]**

With your permission I would like to turn on the tape recorder and begin the interview? **[Turn the tape recorder if permission if granted]**. My colleague here will also take notes on some of the key things that we will be discussions.

[INTERVIEWER: START RECORDING]

Remember to probe, get concrete examples and spend time (up to 90 minutes). Let the informant speak at length and make sure that you use this only as a true guide in the interview process, and not as a list of questions to be covered one after the other. Try to have the participants speak one at a time.

1. Introduction <ul style="list-style-type: none"> • What do you do? Are you in school? What grades are you in? • What's the one thing you like doing in your free time? • Have you ever heard of contraceptives? 	
2. Experiences with Sex <ul style="list-style-type: none"> • How many of you have had sex before? • What was your experience like? • How often do you have sex? • When was the last time you had sex? 	
3. Knowledge and access to contraceptives <ul style="list-style-type: none"> • What comes to your mind when you hear the word contraception or contraceptive? • What do you know about contraceptives? • Which types of contraceptives do you know of? What do you know about them? - <i>List all the contraceptives mentioned and probe on each one</i> 	

<ul style="list-style-type: none"> - <i>Ask and probe those not mentioned</i> • Where do you get information on contraceptives? <ul style="list-style-type: none"> - <i>List all sources mentioned and probe on possible sources such as teachers, parents, relatives, friends, hospital etc.</i> - <i>Ask what information was obtained from each source</i> • Do you have access to contraceptives? Where do you get them from? • How easy is it for you to get contraceptives? • What are some of the problems you have when getting contraceptives? <ul style="list-style-type: none"> • <i>Make a note of all problems mentioned</i> • <i>Ask for more details and examples</i> 	
<p>4. Contraceptive Use</p> <ul style="list-style-type: none"> • How often do you use contraceptives? • What contraceptives do you use? When did you start using it? • What made you decide to start using contraceptives? What things did you consider when deciding to use the contraceptive? • What are the main reasons why you used contraceptives? • Which contraceptives have you used before? <ul style="list-style-type: none"> - <i>List all contraceptives mentioned</i> • Why did you pick on the contraceptive you used? <ul style="list-style-type: none"> - <i>List all reasons given</i> • What was your experience with the contraceptive you used? <ul style="list-style-type: none"> - <i>Probe and discuss each contraceptive mentioned. Probe for what they liked and didn't like</i> • What are the fears and concerns that you and your peers have with regard to using contraceptives? <ul style="list-style-type: none"> - <i>Take time to list down all the concerns and complaints</i> 	

<ul style="list-style-type: none"> - <i>Ask for more details and examples</i> • Are there any specific reasons why you have not used any contraceptives? <ul style="list-style-type: none"> - <i>List all reasons given and probe for myths and misconceptions, fear of side effects</i> • What challenges or problems do you face when using contraceptives? <ul style="list-style-type: none"> - <i>Take time to list down all the challenges or problems</i> 	
<p>5. Decision making</p> <ul style="list-style-type: none"> • What motivated you to use contraceptives? <ul style="list-style-type: none"> • <i>Probe on motivation to prevent pregnancy</i> • <i>List all mentioned</i> • What are your personal beliefs about pregnancy? Did they influence your decision to use contraceptives? In what way? • How about your religious beliefs? Did they influence your decision to use contraceptives? In what way? • Do you think your parents influenced your decision to use contraceptives? In what way? • Do you think your family (sisters, cousins, aunts, in-laws) influenced your decision to use contraceptives? In what way? • How about your friends? Did they influence your decision to use contraceptives? In what way? • Do you think your cultural beliefs or your tribal beliefs influence your decision to use contraceptives? How so? • How did you decide which contraception to use? What do you consider when selecting one contraceptive over another? What determines what contraceptive you will use? • Does what you know about the contraceptive method help you make decisions on which one to use? In what way? 	

<ul style="list-style-type: none"> • When you want to use contraception, who initiates the discussion on contraception? Is it you or your partner (boyfriend or husband)? • When you want to use contraceptives, how do you decide which contraceptive to use? Is it a decision you make alone or with your partner (boyfriend or husband)? 	
<p>6. Perspectives on existing contraceptives</p> <ul style="list-style-type: none"> • What do you think of the contraceptives that are presently available to you? Do you think they are the kind of contraceptives that you need? • If a new contraceptive were to be developed specifically for young people like you, what would you want this contraceptive to be like? • What are the features you would like the contraception have? 	

Appendix 4: Ethical Approvals

University of KwaZulu-Natal Biomedical Research Ethics Committee (UKZNBREC)



23 September 2019

Mr M Chola (217082141)
School of Nursing and Public Health
College of Health Sciences
Mumbi24@gmail.com

Dear Mr Chola

Protocol: Contraceptive use among adolescent girls in Zambia: A study on adolescents needs preferences and perspective on contraception methods.

Degree: PhD

BREC Ref No: BE288/18

EXPEDITED APPLICATION: APPROVAL LETTER

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 23 April 2019.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 08 September 2019 to BREC letter dated 26 November 2018 has been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have been met and the study is given full ethics approval and may begin as from 23 September 2019. Please ensure that outstanding site permissions are obtained and forwarded to BREC for approval before commencing research at a site.

This approval is valid for one year from 23 September 2019. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be noted by a full Committee at its next meeting taking place on 12 November 2019.

Yours sincerely

Prof V Rambiritch
Chair: Biomedical Research Ethics Committee

cc postgraduate administrator: ramlalmg@ukzn.ac.za Supervisor: Ginindzag@ukzn.ac.za Co-Supervisor: Hlongwanak@ukzn.ac.za

Biomedical Research Ethics Committee

Professor V Rambiritch (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 2486 Facsimile: +27 (0) 31 260 4809 Email: brec@ukzn.ac.za

Website: <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>



Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

University of Zambia Biomedical Research Ethics Committee (UNZABREC)



UNIVERSITY OF ZAMBIA BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067

Telegrams: UNZA, LUSAKA

Telex: UNZALU ZA 44370

Fax: + 260-1-250753

Federal Assurance No. FWA00000338

Ridgeway Campus

P.O. Box 50110

Lusaka, Zambia

E-mail: unzarec@unza.zm

IRB00001131 of IORG0000774

29th August, 2019.

REF. No. 157-2019

Mr. Mumbi Chola,
University of Kwa-Zulu Natal,
Discipline of Public Health Medicine,
South Africa.

Dear Mr. Chola,

**RE: "CONTRACEPTIVE USE AMONG ADOLESCENT GIRLS IN ZAMBIA: A
STUDY ON ADOLESCENTS' NEEDS, PREFERENCES AND PERSPECTIVES ON
CONTRACEPTION METHODS" (Ref. No. 157-2019)**

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee Meeting on 28th August, 2019. The proposal is **approved**. The approval is based on the following documents that were submitted for review:

- a) Study proposal
- b) Questionnaires
- c) Participant Consent Form

APPROVAL NUMBER

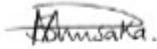
: REF. 157-2019

This number should be used on all correspondence, consent forms and documents as appropriate.

- **APPROVAL DATE** : 28th August 2019
- **TYPE OF APPROVAL** : Standard
- **EXPIRATION DATE OF APPROVAL** : 27th August 2020
After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the UNZABREC Offices should be submitted one month before the expiration date for continuing review.
- **SERIOUS ADVERSE EVENT REPORTING**: All SAEs and any other serious challenges/problems having to do with participant welfare, participant safety and study integrity must be reported to UNZABREC within 3 working days using standard forms obtainable from UNZABREC.
- **MODIFICATIONS**: Prior UNZABREC approval using standard forms obtainable from the UNZABREC Offices is required before implementing any changes in the Protocol (including changes in the consent documents).
- **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the UNZABREC using standard forms obtainable from the UNZABREC Offices.
- **NHRA**: Where appropriate, apply in writing to the National Health Research Authority for permission before you embark on the study.

- **QUESTIONS:** Please contact the UNZABREC on Telephone No.256067 or by e-mail on unzarec@unza.zm.
- **OTHER:** Please be reminded to send in copies of your research findings/results for our records. You're also required to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study. Use the online portal: unza.rhinno.net for further submissions.

Yours sincerely,



Sody Mweetwa Munsaka, BSc., MSc., PhD

CHAIRPERSON

Tel: +260977925304

E-mail: s.munsaka@unza.zm

Appendix 5: Authorisation and Permission Letters

National Health Research Authority



NATIONAL HEALTH RESEARCH AUTHORITY

Paediatric Centre of Excellence, University Teaching Hospital, P.O. Box 30075, LUSAKA

Tell: +260211 250309 | Email: znhrasec@gmail.com | www.nhra.org.zm

Ref No:.....

Date: 20th September, 2019

The Principal Investigator
Mr. Mumbi Chola
University of KwaZulu Natal,
School of Nursing and Public Health,
236 George Campbell Building,
Howard College Campus,
King George V Avenue,
DURBAN, SOUTH AFRICA.

Dear Mr. Chola,

Re: Request for Authority to Conduct Research

The National Health Research Authority is in receipt of your request for authority to conduct research titled "Contraceptive use among adolescent girls in Zambia: A study on patterns, trends and adolescents' decision making on contraception methods." I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been approved on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA quarterly from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

Dr. Godfrey Biemba
Director/CEO
National Health Research Authority

All correspondences should be addressed to the Director/CEO National Health Research Authority

Ministry of Health

All Correspondence should be addressed to the
Permanent Secretary
Telephone: +260 211 253149/1
Fax: +260 211 253144


REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

In reply please quote:
MH/101/23/10
No. _____

NDEKE HOUSE
P. O. BOX 30205
LUSAKA

07 October, 2020

Mr. Mumbi Chola
Department of Public Health Medicine
School of Nursing and Public Health
University of KwaZulu
King George V Avenue
Durban, 4041
South Africa

RE: PERMISSION TO CONDUCT RESEARCH STUDY

The Ministry of Health is in receipt of your request to conduct Research Study titled
**"Contraceptive use among Adolescent girls in Zambia: A study of patterns, trends
and Adolescents' decision making on contraception methods".**

I wish to inform you that permission to conduct Research has been granted and
information obtained will be used only for the intended purpose as stipulated in
the request.

By copy of this letter, District Health Directors are hereby informed.


Dr. Kennedy Malama
Permanent Secretary- (TS)
MINISTRY OF HEALTH

cc: PHD- Northern and Lusaka
cc: DHD- Lusaka, Chongwe, Kasama and Luwingu