

Women's empowerment: Fertility intentions and family planning practices in Mozambique

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3. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. Front Glob Women's Heal. 2022;3 (March):1–11.
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The end of a journey. A journey of ideas and thoughts. A journey of lonely steps and shared knowledge. A long journey. Longer than expected but with never enough time. A journey of learning and growth. A journey of struggles, overcoming and going beyond. It is the end of the journey that also feels like an arrival. This journey was only possible because of those around me to whom I would like to express my deepest gratitude:

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Abstract

Women's empowerment is a critical step on the path towards gender equality and one of the Sustainable Development Goals. In Mozambique, gender inequality is one of the main challenges and barriers to access for family planning and use of contraceptives. Despite an increasing body of literature investigating the relationship between empowerment and women's reproductive health the findings are inconclusive.

This work aimed to answer the research question of how women's empowerment influences the reproductive choices of women of reproductive age in Mozambique. Using a mixed-methods approach, the study explored the relationship between different domains of empowerment and fertility intentions and family planning practices. The mixed-methods approach consisted of a quantitative analysis of the Mozambique Demographic and Health Survey data, followed by a qualitative approach which included in-depth interviews of women of reproductive age in Mozambique.

In the first quantitative study, three domains of empowerment were identified, along with their specific socioeconomic, demographic and behavioural determinants. Overall, contextual and community factors such as living in the south region or having access to media, was negatively associated with being empowered for "Beliefs about violence against women". In addition to contextual and community factors, women's characteristics such as educational level, age, and wealth were positively associated with empowerment for "Decision-making in the household" and "Control over sexuality and sex". The second quantitative study found that each identified empowerment domain was differently associated with fertility intentions and family planning practices. "Control over sexuality and sex" and "Decision-making" power were more systematically associated with smaller families or wanting to space or limit pregnancies, as well as met need for contraception and current use of contraceptives, than the domain "Beliefs about violence against women".

The two qualitative studies found that different barriers and facilitators of empowerment operate at different levels of a woman's life, from individual to societal levels. Key facilitators include developing a critical consciousness where women perceive the existence of choice and the role of collective power through networking or women's associations. Barriers were related to oppressive relationships and traditions, culture and gender norms. Women's views and meanings of empowerment were related to individual characteristics such as financial and social independence, active participation in life decisions, and freedom and manifestations (actions) of power for reproductive decision-making (namely planning family size, negotiation and/or sole decision-making).

This thesis shows that women's empowerment is better understood if examined and analysed within specific domains such as women's sexual and reproductive lives. This was observed in the strong associations found between the domain "Control over sexuality and sex" and fertility intentions and family planning practices. In Mozambique, women's sexual and reproductive empowerment pathways are particularly shaped by raised critical consciousness and/or through access to information and education. Such approaches require improved preparedness of the health system that goes beyond accessibility and availability of services and contraceptives with actions taken simultaneously at the community level, to address persistent structural barriers to women's sexual and reproductive empowerment including gender power imbalances, oppressive relationships, and harmful cultural and social norms.

Glossary of terms

<i>Agency</i>	The ability to freely decide between different choices and act accordingly.
<i>Contraception</i>	Any method used to prevent an unintended pregnancy.
<i>Empowerment</i>	Having the power to control and freely decide over one's life and body in order to achieve valued or best perceived outcomes.
<i>Empowerment domains</i>	A single indicator or a set of indicators relating to a specific area of empowerment.
<i>Empowerment dimensions</i>	Overarching topic or theme of a group of domains, theoretically related to each other.
<i>Fertility intentions</i>	Expressed desire either to start or continue with childbearing or not to do so.
<i>Family planning</i>	The actions taken to achieve the intended fertility, including using information or other means as well as modern contraceptives.
<i>Modern contraceptive methods</i>	Products or medical procedures which primary goal is to prevent an unintended pregnancy.
<i>Preconditions or resources for empowerment</i>	Necessary conditions for women's empowerment to take place including "access" or "control" of assets and of social aspects.
<i>Reproductive choice</i>	The right to choose whether to reproduce, including the right to decide whether to carry or terminate an unintended pregnancy and the right to choose the preferred method of family planning and contraception.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIS	HIV/AIDS indicator survey
DHS	Demographic and Health Survey
DPS	<i>Direcção Provincial de Saúde</i> (Provincial Health Directorate)
FP	Family planning
HDI	Human Development Index
HIP	High impact practices
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
ICPD	International Conference on Population and Development
INE	<i>Instituto Nacional de Estatística</i> (National Institute of Statistics)
IPV	Intimate partner violence
IUD	Intrauterine device
KMO	Kaiser-Meyer-Olkin test
LAPM	Long-acting and permanent methods (of contraception)
MDG	Millennium Development Goal
MIS	Malaria Indicator Survey
OR	Odds ratio
PAB	Policy advisory board
PCA	Principal Component Analysis
PFM	Preference-aligned fertility management
SARA	Service Availability and Readiness Assessment
SDG	Sustainable Development Goal
UCT	University of Cape Town
UN	United Nations
USAID	United States Agency for International Development

1. INTRODUCTION

Gender inequality is one of the most influential social determinants of health and its contribution to women's poor reproductive health outcomes has been widely recognised (1–3). Rooted in gender power relations, gender inequality often puts women in situations of vulnerability, disempowerment and with restricted access to fundamental rights such as freedom to make choices over their bodies and (4–6). Empowerment of women and girls is a step towards bridging the inequality between genders (3).

Inequality based on gender is culturally and socially rooted in beliefs that women and men are not equal and therefore do not share the same rights or cannot have the same roles within the family and wider society (7). Gender norms are often based on patriarchal concepts that shape women's social status, expected roles and culture, which can limit or deny women the power to control and make decisions about their own lives and bodies (2). The power imbalance affects all spheres of women's lives: interpersonal relations, household participation, societal and community roles, and political activity. It also has major implications for access and use of health services such as family planning (8). Ultimately, this impacts the health of women and their ability to live a fulfilling life.

Empowerment is the process of gaining power and control to decide or choose freely over one's life and body (9). An empowered woman can freely embrace opportunities and is enabled to decide based on the options she deems to be best for herself. In recent years, reinforced by the United Nations (UN) call for action with the launch of the Sustainable Development Goals (SDGs) in 2015 (10), the empowerment of women has been considered not only a mechanism to tackle gender inequality and promote sexual and reproductive health and rights for women, but also a way to improve women's life conditions and health (3,11,12). Specifically, SDG 5 aims to achieve gender equality and empower women and girls through ensuring universal access to sexual and reproductive health and rights, ending discrimination and harmful practices against women and girls and promoting opportunities and their economic participation (10).

Recent initiatives and guidelines for family planning (13–15) have a strong base in sexual and reproductive rights where women's empowerment plays an essential role. Through timely, accessible and good quality sexual and reproductive health information and services, including contraception (13), family planning should enable individuals to decide freely over the number and spacing of their children (14). A key aspect of this approach is that it should promote informed decision-making and autonomy in a sensitive environment, where individuals can voluntarily choose a suitable contraceptive method free of discrimination, coercion or violence (14,15).

In Mozambique gender inequality is one of the main challenges and barriers to access for family planning and use of contraceptives (16). Restrictive sociocultural norms limit the power of women to decide and negotiate with their partners for family planning and safe sex (17–19). Along with the lack of power to decide over one's body and health, the lack of access to basic sexual and reproductive rights are among the main factors contributing to maternal morbidity and mortality in Mozambique (16,20). Efforts have been put in place to address these challenges through the National Strategy for the Inclusion of Gender in the Health Sector 2018-2023 (21) and through the Strategic Plan for the Health Sector 2014-2019 (now extended to the end of 2024) (22). Although empowerment is a key to tackle the consequences of gender inequality in women's sexual and reproductive health, little is known about the relationship between empowerment and women's reproductive choices in the Mozambican context.

Despite an increasing body of literature investigating the relationship between empowerment and women's health care use and outcomes, the findings are inconclusive (23,24). Specifically, it is not clear how and in what ways empowerment influences fertility and family planning, and what factors can facilitate or hinder this process, particularly in Mozambique. This research focussed on measuring and understanding women's empowerment in Mozambique in relation to fertility intentions and family planning practices.

This thesis is organised in different chapters. Following this introduction, Chapter 2 provides a synthesis of the literature, conceptual models on women's empowerment, evidence on its relationship with fertility and family planning outcomes. It also highlights the main gaps and challenges that inform the design of this research study. Chapter 3 presents the research question, aims and objectives. This is followed in Chapter 4 by a description of the methods applied to achieve these aims and objectives. Chapter 5 includes the findings of the PhD study empirical research in the form of four papers, three published and one under review (25–27). The main findings of each paper are integrated and discussed in Chapter 6, considering overall strengths and limitations as well as looking at implications and recommendations for women's empowerment research and public health programmatic approaches. The overall conclusions of this research are also presented in this chapter.

1.1 References

1. Mccartney G, Collins C, Mackenzie M. What (or who) causes health inequalities: Theories, evidence and implications? *Health Policy* [Internet]. 2013;113(3):221–7. Available from: <http://dx.doi.org/10.1016/j.healthpol.2013.05.021>
2. United Nations. Convention on the elimination of all forms of discrimination against

- women. Vol. 37578. 2007.
3. United Nations Population Fund (UNFPA). Agency, choice, and access: UNFPA Strategy for promoting gender equality and the rights of women and adolescent girls. 2022;1–44. Available from: <https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA-Gender Equality Strategy2023.pdf>
 4. Sen G, Östlin P, George A. Unequal, unfair, ineffective and inefficient gender inequity in health: Why it exists and how we can change it [Internet]. World Health Organization. 2007 [cited 2020 Sep 12]. Available from: <https://eurohealth.ie/wp-content/uploads/2012/02/Unequal-Unfair-Ineffective-and-Inefficient-Gender-Inequity-in-Health.pdf>
 5. United Nations Population Fund (UNFPA). Tracking women’s decision-making for sexual and reproductive health and reproductive rights. New York; 2020.
 6. Equimundo. International men and gender equality survey: A status report on men, women and gender equality in 15 headlines [Internet]. Washington, D.C.; 2022 [cited 2024 Jan 6]. Available from: <https://www.menandgendersurvey.org>.
 7. United Nations. Challenges and opportunities in achieving gender equality and the empowerment of rural women and girls. Report of the secretary-general. Vol. 23001. Geneva; 2018.
 8. Sen G, Östlin P. Gender inequity in health: Why it exists and how we can change it. *Glob Public Health* [Internet]. 2008;3(sup1):1–12. Available from: <https://doi.org/10.1080/17441690801900795>
 9. Kabeer N. Reflection on the measurement of women empowerment. In: *Discussing Women’s Empowerment*. SIDA; 2001. p. 136.
 10. United Nations. General Assembly Resolution 70/1. Transforming our world: The 2030 Agenda for Sustainable Development [Internet]. New York; 2015 [cited 2019 Jan 15]. Available from: <https://undocs.org/A/RES/70/1>
 11. Luchsinger G. Sexual and reproductive justice cannot wait: All rights, all people, acting Now [Internet]. 2023 [cited 2024 Jan 6]. Available from: <https://www.nairobisummiticpd.org/publication/all-rights-all-people-acting-now>
 12. McGovern T, Harriet J, Heilbrunn RH. Sexual and reproductive justice as a vehicle to deliver the Nairobi Summit commitments. 2022.
 13. World Health Organization (WHO). Ensuring human rights in the provision of contraceptive information and services. Geneva: WHO; 2014.
 14. Family Planning 2020. Family Planning 2020: Rights and empowerment principles for family planning. 2019.
 15. United Nations Population Fund (UNFPA). UNFPA Strategy for family planning, 2022-2030: expanding choices – Ensuring rights in a diverse and changing world [Internet]. Vol. 39. 2022. Available from: <https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA Strategy for Family Planning 2022-2030.pdf>
 16. United Nations Population Fund (UNFPA). Por escolha, Não por acaso. Planeamento familiar, direitos humanos e desenvolvimento. In: *Relatório sobre a Situação da População Mundial*. Maputo, Mozambique; 2012.
 17. Capurchande R, Coene G, Roelens K, Meulemans H. “If I have only two children and they die... who will take care of me?” – A qualitative study exploring knowledge, attitudes and practices about family planning among Mozambican female and male

- adults. *BMC Womens Health* [Internet]. 2017 Aug 22;17:66. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568310/>
18. Tvedten I. Mozambique country case study: Gender equality and development. Background paper. 2012.
 19. Ministério da Saúde (MISAU). *Estratégia de planeamento familiar e contracepção 2011-2015* (2020). 2010;2015:1–34.
 20. Ministério do Género Criança e Acção Social. *Perfil de género de Moçambique*. Maputo, Moçambique; 2016.
 21. Governo de Moçambique. Ministério da Saúde (MISAU). *Estratégia de inclusão de género no sector da saúde 2018-2023*. 2018.
 22. Ministério da Saúde (MISAU). *Plano estratégico do sector saúde 2014-2019* (2020-2024). Maputo, Mozambique; 2014.
 23. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017 Nov; Available from: <https://doi.org/10.1007/s11205-017-1811-1>
 24. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>
 25. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique. *PLoS One* [Internet]. 2021;16(5):1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>
 26. Castro Lopes S, Constant D, Fraga S, Harries J. How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique. *PLOS Glob Public Heal*. 2022;2(9):e0000670.
 27. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. *Front Glob Women's Heal*. 2022;3(March):1–11.

2. LITERATURE REVIEW

A literature review was conducted about the concept and measurement of women's empowerment and its relationship with women's health outcomes, specifically about fertility intentions and family planning practices. For this review online databases were used, namely PubMed for peer reviewed articles and Primo database and Google Scholar to access grey literature such as technical reports. The search key words/expressions included "women's empowerment", "reproductive empowerment", "women's power", "empower", "women's health", "reproductive rights", "family planning", "contraceptive use", "fertility", "fertility intentions", "fertility preferences", "Mozambique" and "Africa". Additional articles were identified from the reference lists of the papers found in the database searches. This section starts by providing an overview of the Mozambican context.

2.1 Mozambican context

This section describes Mozambique's demographic and socioeconomic characteristics as well as gender issues and how they affect women's health, and the organization and provision of family planning services.

2.1.1 Country overview

Mozambique is located in the Southeast region of the African continent, covering a territory of 799,380 km² (1). It comprises 11 provinces and 139 districts across three regions:

1. Southern region: Maputo city, and the provinces of Maputo, Gaza and Inhambane
2. Central region: Sofala, Manica, Tete and Zambézia
3. Northern region: Nampula, Cabo Delgado and Niassa.

The population is estimated at almost 32.5 million of which 65% live in rural areas (1). Of the total population, 52% are women, of whom 44% are between the ages of 15 and 45 years (1). Life expectancy at birth is 59 years (2).

After gaining its independence from Portugal in 1975, Mozambique went through a long civil war which ended in 1992. This led to vast destruction of the country's basic infrastructure such as health services and schools, which had a profound impact on economic and social development, with consequences up to this day (3,4). For example, a pervasive lack of job opportunities impacted family structures by men often leaving home and being absent for long periods, while women took on the role of head of the household while retaining full responsibility for childcare and domestic work. The additional burden of women performing

both domestic and subsistence labour, has resulted in limited participation in the economic, social and political life in their communities and in the country (3).

In the 1980s and 1990s (post-civil war), several macroeconomic reforms were put into place by the World Bank with a view to strengthening the country's economy. Despite some important economic growth, Mozambique remains one of the poorest countries in the world. Agriculture is the main economic sector, but consists mainly of subsistence farming (4).

In 2016 Mozambique's economic growth started showing signs of slowing down (7% in 2016 to 3.5% in 2018). This was reflected in the considerable reduction of the annual state budget for health (4), compromising the quality of the health services offered in the public health system, limiting the access to health professionals, commodities, and equipment, particularly for women and other vulnerable groups (4). The natural disasters in 2019, the continuing conflict in the northern province of Cabo-Delgado, and the COVID-19 pandemic further exacerbated the country's economic and political instability. In June 2020, the National Institute of Statistics (INE) estimated that 120,000 jobs were lost, and 63,000 employment contracts suspended due to COVID-19, with women being the most affected (5,6). This caused a sudden income loss for businesses and families, worsening living conditions (6). The World Bank estimates that in the same year, 250,000 to 300,000 people living in urban settings fell into extreme poverty and that more than 60% of the Mozambican population currently lives in poverty (7). Since the start of the armed conflict in Cabo Delgado, more than one million people have been internally displaced (7), with girls and women being the most vulnerable to poverty, violence and limited access to services and basic rights (6).

Educational levels are still very low, despite the efforts of the government to meet international commitments such as the Millennium Development Goals (MDGs) and the SDGs, in the past few decades. According to the Human Development Index (HDI) 2022 report, in 2021 the average number of years of schooling in Mozambique was 3.2 while the expected number of years (up to 18 years) was 10.2 (8). This is more severe among girls, who generally have less access to education. In 2011, only 5% of girls or young women completed secondary level of school (9). Recent estimates from the USAID program show an increase in completion of secondary level to 11% despite 94% of girls enrol in primary school (10). Mozambique ranks 185 out of 189 countries included in the 2022 HDI report (8).

Girls' and women's low educational attainments are an important barrier to having and accessing opportunities. This results in women being more often involved in activities that generate low income, their earnings are considerably lower than men's and they are more affected by unemployment when compared to men (7,11). This is shaped by women's low status in Mozambican society as well as persistent gender inequalities which restrain their

abilities and agency. Furthermore, the distribution of economic goods and assets is influenced by regional cultural structures. In the north and in some districts of the central regions, matrilineal systems predominate and women are entitled to inherit goods from maternal relatives (12). Likewise in situations of divorce or widowhood women have the ownership of the house and guardianship of the children (3). In the patrilineal societies of the southern areas of Mozambique men are entitled to all household resources and must authorise women's use of them (3,12). However, in both societies, women are not given formal power of decision-making and control over assets and resources nor over other important areas such as health (3).

Mozambican women are more affected by HIV/AIDS when compared to men, with 14.8% of women of reproductive age (15 to 49 years) infected versus 8.3% of men in the same age group in 2022 (13). Along with children, women also suffer significant levels of stunting and undernourishment (14,15).

2.1.2 Mozambique: gender and women's health

The Mozambique government's efforts to improve maternal health indicators have resulted in considerable progress, including a decrease in the maternal mortality ratio from 532 to 127 maternal deaths per 100,000 live births between 2000 and 2020 (16). A reduction was also observed in the total fertility rate, falling from 5.8 children per woman in 2000 to 4.6 in 2021 (17). The prevalence of modern contraceptive use by women of reproductive age increased from 25.7% in 2015 to 36.4% in 2020 (18,19).

Despite the positive progress, there are persistent factors that slow down these advancements and contribute to disparities in fertility levels (for example, the total fertility rate in urban areas is 3.9 while in rural areas it is 5.3) and the use of family planning across the country. Some of these factors are well described in the literature and include a lack of geographical and financial access to health services, low availability of contraceptive supplies and the poor attitude of health workers (20–22). Women's own misconceptions and previous experience, or fear of experiencing, side effects due to the use of contraceptives also influences decisions about using family planning services and contraceptives (22,23). At the household and community level, gender inequality plays an important role, usually reflected in women's low social status and lack of power to decide over reproductive matters (22,24).

In Mozambique, like in other African countries, women are valued for their fertility and reproductive capacity, within families and by society in general (23). Therefore, expectations about women giving birth to a child after marriage or union are immense (22). For example,

evidence shows that communities influence the level of empowerment of women in relation to fertility behaviours and use of family planning, not only by shaping the access and quality of these services, but also by dictating the desired fertility levels of women (24). Non-compliance with this can be denigrating to a woman, with negative consequences for her and her family (12,24).

At the household level, decisions about a woman's fertility, number and spacing of pregnancies are often under her partner's control. In some settings this authority is given to the woman's mother-in-law or other members of her partner's family. This leaves the woman with little say or influence over her fertility preferences (12,20,22). The 2011 Demographic Health Survey (DHS) in Mozambique reported that fertility preferences differ by gender, with women preferring 4 and men preferring 6 children (9). In 2015, 23% of women of reproductive age, married or in a relationship, had an unmet need for contraception (18). Evidence from other African countries shows that when women have restricted decision-making power, the use of family planning is often limited (25). Also, differences in fertility preferences between a couple can lead to substantial clandestine use of contraception (26).

Cultural traditions such as "*lobolo*" (giving money or other valuable items to the woman's family as part of the marriage transaction), the rituals of female initiation, religious norms and early/child marriage, are common practices in Mozambique and contribute to the acceptance of ownership and control of women by the male partner (22). The Immunization, Malaria and HIV/AIDS (AIMS) DHS 2015 report found that 53% of women aged 20-24 had been married by the time they were 18 years old (18). Opportunities for further development and future aspirations are shut down when a girl or a young woman is forced into marriage (27). Furthermore, recent evidence shows that women in Mozambique are exposed to high levels of physical, sexual and psychological abuse. In 2015, 24% of women aged 15 to 49 years experienced, at least once, some type of intimate partner violence (IPV) (18). Another study of 869 pregnant women in the northern region of Nampula found that the prevalence of sexual and physical abuse perpetrated by a partner was 48.8% and 46.0%, respectively (28). These sociocultural norms contribute to the perpetuation of cycles of gender inequality and poverty that disproportionately affect women in Mozambique, generation after generation.

Practices and perceptions that limit women's reproductive choices in Mozambique do not occur consistently across the country (12). Women's status, empowerment, and influence over fertility and family planning outcomes differ between urban and rural contexts. Evidence suggests that women living in urban areas have gained power over some social and economic aspects of their lives and that this positively influences access to and use of family

planning and maternal health services, but that they are still faced with other challenges that create imbalances related to gender (29).

As recognised in the Mozambique Gender Profile, a government assessment conducted in 2016, these inequalities, as well as the embedded sociocultural norms and practices, still discriminate against women and prevent them from fully realising their social, economic and political potential (30). The intersection of gender inequality with other forms of discrimination such as disability, sexual orientation, age, marital status and place of living, further contributes to Mozambican women's vulnerability and disempowerment, as highlighted in the same report. Aligned with international guidelines and evidence, key policies and strategies in Mozambique such as the National Strategy for Family Planning and Contraception 2011-2015 (extended to 2020) (31) and the Strategic Plan for the Health Sector 2011-2019 (extended to 2024) (32), recognise the role of and call for male involvement to tackle gender inequality, support women's empowerment and improve women's overall health (33). However, major challenges remain in Mozambique in the implementation of national policies and strategies aiming to protect and support the realization of girls' and women's rights, including sexual and reproductive rights (30).

All of the factors described above, through different pathways, play an important role in disempowering women in relation to their fertility and bodies in Mozambique (22,24).

2.1.3 Family planning services in Mozambique: an overview

In 1977, the Government of Mozambique initiated a family planning initiative as part of the Maternal and Child Health Programme, however it was only in 1980 that the first national Family Planning Programme was launched (24). This programme defined that family planning services would be provided free of charge in all public health facilities. This aimed to improve the health of women by decreasing the risk of mortality or morbidity due to pregnancy and delivery. It also aimed to improve the health of children by spacing pregnancies by at least two years. The programme further introduced family planning as mandatory in the education and training curricula of medical doctors, maternal and child health nurses and medical technicians.

According to the World Health Organization, family planning is a set of practices that *“allows people to attain their desired number of children, if any, and to determine the spacing of their pregnancies”* (34). This set of practices include accessing and using information and other means as well as the use of contraceptive methods and the treatment of infertility (34,35). In Mozambique, family planning services includes the provision of counselling and modern contraceptive methods to women in need, and this is offered by the public health sector.

Currently, family planning is a priority for the Mozambican government and an important strategy to tackle maternal and child mortality and morbidity as well as to respond to gender inequality and promote the complete realization of women’s sexual and reproductive rights (14,36). The National Strategy for Family Planning and Contraception 2011-2015 was extended to 2020 (31). A new strategy is currently being prepared. Since 2017, the government committed to the Family Planning (FP) 2020 (now extended to 2030) initiative which aims to empower women and girls by promoting family planning as a right. FP2030 is a collaborative approach that brings together partners across the world, enabling them to implement family planning programmes and promote access to voluntary contraception by women and girls (37).

In its commitment to FP2030, the Mozambican government agreed to further consolidate the national family planning programme, between 2021 and 2030, by promoting informed demand of sexual and reproductive health and family planning services and ensure the supply of modern contraceptive methods. Based on the principles that that all women and girls should exercise their right to choose and decide about their sexual and reproductive health, Mozambique has committed to expand access to quality, rights-based and women-centred services, including through innovative approaches and promotion of self-care practices at health facility, schools and community levels (38).

The provision of family planning is offered mostly in the public health sector at any of the four levels of care outlined in Table 1. The Ministry of Health is responsible for the organization and management of the National Health System, which is organized in two levels: central level (in Portuguese “*Orgão central*”) and subnational level (Provincial Directorate of Health – “*Direcção Provincial de Saúde*”) (14).

Table 1: Mozambique national health system by type of health facility and service provided.

Level of care	Total #¹	Type of health facility and services provided
Primary	1,783	Includes health posts and health centres. These provide basic care and preventive health programmes. The health centres typology varies depending on the geographical location and level of specialized care offered - rural type I or II, or urban type A, B or C. Rural type I and urban type A provide the most specialized care.
Secondary	53	Includes rural, district and general hospitals. These serve several districts as they are considered the first level for

		referral from primary care. However, this level is also oriented for primary health care provision.
Tertiary	7	Includes provincial hospitals. These provide a range of diagnostic and curative services and include training centres for provincial health care staff.
Fourth	9	Includes three central hospitals (Maputo City, Sofala and Nampula), the major referral facilities for southern, central, and northern regions of Mozambique.

¹ Total number of health facilities by level of care in Mozambique (39)

Despite mandating the provision of modern contraceptives free of charge by all public health care facilities, the implementation of the family planning programme is hindered by the limited capacity of the Ministry of Health to manage and supply modern contraceptives to the health facilities, aggravated by cuts in the national budget for the health sector, and by the lack of trained health providers (36,40). Women's access to family planning was further undermined by the COVID-19 pandemic, with a recent study reporting nearly 30% losses in family planning services provision, mainly due to a decrease of new users, due to service disruption (41).

Modern contraceptive methods are products or medical procedures which primary goal is to prevent unintended pregnancy (42). These include oral contraceptives, implants, injectables, patches, vaginal rings, intra uterine devices (IUD), condoms and male and female sterilization (43).

In 2018, a *Service Availability and Readiness Assessment* (SARA, a methodology developed by WHO) was conducted in Mozambique (44). Of the 1643 health facilities assessed (from primary to fourth level of care), 94% provided family planning services, 90% had oral contraceptives available, 86% had male condoms, 84% had implant and 77% of the health facilities had intrauterine devices (IUDs). Despite being among the most popular modern contraceptive methods in Mozambique, the injectable was only offered in 64% of the health facilities. Less than half of the assessed facilities had emergency pill available (48%) (44). Recent estimates showed that 73% of primary service delivery points had at least 3 modern methods of contraception available on day of assessment while 100% of the secondary and tertiary facilities had at least 5 modern methods available (45).

In 2015, the most used contraceptive methods at national level by women aged 15 to 49 years were progesterone injectables and combined oral pills, 11.7% and 6.3%, respectively (18). Long-acting and permanent methods (LAPM) such as the implant and the IUD were the

least used, 1.7% and 0.7%, respectively. 72.6% of women of reproductive age were not using any contraception (18). The preliminary findings of the DHS 2022-23 for Mozambique show similar results: 25.4% of married/in union women and 46.6% of single but sexually active women use a modern method of contraception (46). Differences are found between married and single women in the choice of the contraceptive method: while injectables are slightly more used by married women (12.5% vs 11.6%), implants are preferred among single women (12.0% vs 5.2%) (46).

Furthermore, the uneven distribution of health facilities, the distance to health services, and the lack of qualified health care workers to provide high-quality care also contribute to the low use of family planning in Mozambique (36,47). In 2017, a representative study conducted in public primary health facilities reported that women's satisfaction with family planning services was highly influenced by the interaction with the health provider as well as waiting time for the provision of contraceptive services (48).

2.2 Women's empowerment and health

This section provides an overview of the main concepts and measurement of women's empowerment and how these have been explored in relation to fertility intentions and family planning outcomes generally in the literature and applied in international development. An understanding of the concepts surrounding empowerment is key to support the definition of empowerment used in this study, and identifying the best approach to measuring it.

2.2.1 Women's empowerment in international development: a brief contextualization

Women's empowerment has its origins in 1980s grassroot feminist movements, which aimed to challenge and transform unbalanced gender power relations, towards women's rights and increased equality between women and men (49). The feminist vision of women's empowerment was anchored on the processes of consciousness raising and collective action, i.e., women's own recognition of unequal power and of their entitlement to rights and to act on it. This was expected to result in an "empowerment spiral", mobilizing collective action that would lead to structural changes. A key aspect of this vision was that empowerment could not be done to or for anyone else and that it would have to depart from a woman's self-understanding and the perception of having the capacity and the right to act and influence (50,51).

The feminist work on women's empowerment applied to international development goes back to the 1970s (49), but it was with the International Conference for Population

Development (ICPD) in Cairo in 1994 that women's empowerment gained recognition and traction in the international development arena. The ICPD was in itself a milestone for women's sexual and reproductive health and rights, for the recognition of the right of women to decide over their reproductive lives free of discrimination or violence, highlighting the cornerstone of women's empowerment and gender equality approaches for population development (52). A year later, countries around the world signed the Beijing Declaration, resulting from the 4th World Conference on Women, setting a *Platform for action*, a plan for women's empowerment and gender equality (52).

Although this puts women's empowerment in the mainstream of development programmes, the weak progress achieved by the end of 90s raised concerns. Some of the concerns came from grassroots feminist groups, who believed women's empowerment was distorted to serve political agendas and it was no longer about women and their processes (53). But most of all, there was a lack of shared understanding of what women's empowerment was. There was no theoretical and conceptual basis that could support the operationalization and measurement of empowerment, leading to numerous programmatic approaches with little impact and/or the inability to track results. Women's empowerment lost momentum and was disregarded as a key approach in international development programmes (53).

In 2015, the definition of the new SDGs reinstated the importance of gender equality and women's empowerment. Not only was a specific goal defined for achieving equality and empowering women and girls, but also their contribution to other targets across different fields including education, poverty and health were amply recognised (54). Furthermore, global movements such as *#metoo* and the widespread use of social media have increased awareness of gender inequality, from high- to low-income countries.

In recognition of the risk of 'empowerment' again becoming little more than a buzzword with few tangible impacts, particularly on the most marginalized and vulnerable women, considerable research has been done on women's empowerment in the last decade. A focus on its conceptualization and measurement in different fields, including health, has offered some guidance to concerted and evidence-based practices in development programmes. Despite these advancements, important gaps remain in the literature stemming from the diversity of concepts and measurements, and inconclusive findings about empowerment (55).

2.2.2 The concept of empowerment

Empowerment is a complex concept. Building on the foundational work of Kabeer, who defined empowerment as a process where women gain power or control to make strategic

life choices where this was previously denied (50), a range of complementary definitions have emerged from different fields in the attempt to conceptualize the term. For example, empowerment has been defined as the *expansion of freedom of choice and the ability to take action to shape one's life* by Narayan (2002) (56), and by Swain & Wallentin (57) as the process of challenging "*the existing norms and culture of the society they live in*".

While the definition proposed by Kabeer in 1999 is widely accepted and used throughout the literature, its operationalization is challenging and differs across studies. An important aspect of Kabeer's definition of empowerment, that distinguishes it from concepts like "autonomy" or "status" that are often used interchangeably, is its processual nature. The processual aspect of the definition, i.e. the change from one state (no power) to the other (power to freely exercise choice), has often been a challenge in the investigation and measurement of empowerment (58,59). Key to the concept of empowerment is the notion of choice. Having choice necessarily implies that there are a number of possible alternatives to choose from. For choice to be empowering it needs to be free, it needs to challenge inequalities and it requires a redefinition of what is possible and expansion of that (50,54). Another important aspect is that not all choices have equal value. The "strategic life choices" Kabeer mentions in her definition, refer to choices that are critical in people's lives, such women's reproductive decisions (50,54) and these should be distinguished from secondary choices with less relevancy in shaping an individual's life.

In her work, Kabeer also identifies two essential components for women's empowerment: resources and agency. Resources are described as "access" or "control" of material, income and social aspects, like education; while agency is the ability to freely decide between different choices and act accordingly (50,58). Thus, resources do not confer empowerment, but the possibility of empowerment, which together with agency, enable women to make and act on decisions that are perceived as the best of a set of options. However, these concepts are sometimes used interchangeably in the literature.

Another important feature of empowerment is that it refers to both a process and an outcome (54). A process because it allows the achievement of specific development outcomes, like contraceptive use or number of pregnancies, while simultaneously being a goal in and of itself, i.e. women gaining power and control to make their own decisions (60). Some expressions of power within the process of empowerment are: *power-to*, a woman's ability to act and to shape her life (58); *power-within*, a woman's sense of self-understanding and self-confidence (54,58); and *power-with*, which concerns collaborative and collective power (49).

Theoretically, the concept of empowerment encompasses multiple dimensions, as proposed by Malhotra et al. (59,61) in their framework. This framework includes five dimensions:

economic, social, legal, political and psychological empowerment (56,59). Moreover, it suggests that the dimensions of empowerment can be examined at the household, community and broader societal levels, proposing a set of indicators for each dimension under each level (56).

The multidimensionality of the concept of empowerment attempts to capture and describe all areas of women's lives where gender power imbalances can exist. More importantly, it attempts to describe the empowerment process in each dimension of a woman's life where empowerment can take place, occurring simultaneously or not. It also takes into account that empowerment in one dimension can lead to disempowerment in another dimension (61).

The framework based on the capability theory developed by Amartya Sen, adapted to the study of empowerment and health, considers domains (rather than dimensions) of empowerment (62–64). Briefly, Sen's capability theory says "*The focus here is on the freedom that a person actually has to do this or be that – things that he or she may value doing or being according to the extent of freedom people have to promote or achieve functionings they value*" (64). This is based on two essential components: 1. freedom to choose *what to be* and *what to do* and 2. valuable functionings (the 'beings' or 'doings' that a person can choose to achieve). Applied to health, the capability approach is a function of *conversion factors* (social determinants) that shape the *women's capability* (empowerment), which is the relationship between resources and decision-making processes. These interactions will result and determine the *health functioning*, i.e., the valued health outcome or achievement. Thus, each functional empowerment domain would correspond to women's capability in this model.

It is due to this recognition of the importance of multidimensionality of empowerment, that very recently researchers came to consider the sexual and reproductive sphere of a woman's life as a distinct dimension or domain of empowerment. In the last 5 years, some attempts have been made to conceptualize and operationalise women's sexual and reproductive empowerment through different models, such as *A Conceptual Framework for Reproductive Empowerment: Empowering Individuals and Couples to Improve their Health* by Edmeades et al. (2018) (55) or the *Women and girls' empowerment in sexual and reproductive health framework* by Karp et al. (2020) (60).

While there have been remarkable advances in the conceptualization of empowerment, this has led to a considerable diversity of terms used to define empowerment, often lacking a sound theoretical basis or clear conceptualization (60,65). For example, "autonomy", "agency" and "control" have been used to define (or rather, operationalise) women's empowerment but it is not clear whether they refer to the same or different aspects of

empowerment (55). This diversity has significant implications for how empowerment is measured. More importantly, it has contributed to inconclusive findings about how women's empowerment operates and is associated with different outcomes, including for sexual and reproductive health.

2.2.3 Operationalizing and measuring women's empowerment

Investigation of empowerment in the area of reproductive health is often based on the assessment of *domains*. The terms 'domains' and 'dimensions' are sometimes used interchangeably in the literature. One perspective is that dimensions can be considered the overarching topic or theme of a group of domains, theoretically related to each other. A domain is a single indicator (or a set of indicators) relating to a specific area of empowerment, that intends to capture the process of women gaining power or "agency" through decision-making, choice or control over resources and health. Examples of domains include household decision-making, free mobility and social life, and financial autonomy. Each of these domains is expected to influence reproductive health outcomes in different ways.

However, in the available literature the process of selection of indicators under each domain is usually an *ad hoc* exercise, which combines indicators into a single index. This practice is neither theoretically nor empirically supported (62).

A small number of studies have used the multidimensional framework proposed by Malhotra et al. (2002) to study empowerment and health outcomes, but its application has been limited to social, economic and psychological dimensions (62). Furthermore, limitations on how to operationalize the framework led to a variety of indicators and approaches resulting in inconsistent findings (65,66). A recent study challenged the framework's adequacy by testing it with DHS data from Nigeria, and showing that data on domains of empowerment are best fitted when measured separately by functional domain (set of indicators) and not aggregated under dimensions (62). Further detail is provided about the use and measurement of domains in the next section.

Based on two extensive literature reviews about women's empowerment and health, the most common domains used in the study of empowerment of fertility and family planning are: "the role of women in the decision-making process at the household level", "women's mobility and social life", "financial autonomy" and "gender attitudes/beliefs of woman or partner" (67,68). Less frequent are "marriage or relationship characteristics", "sexual and reproductive decision-making", "control by a partner or family member" and "general/contraceptive self-efficacy", among others. Some studies also use indicators of

women's status as proxies of empowerment, such as education, age, wealth and employment status/occupation type, urban vs. rural residence (67). Annex A provides a comprehensive list of the domains identified in the literature and their respective indicators/variables, which alone or aggregated in an index are used for measurement of empowerment.

2.2.4 Sources and use of data about women's empowerment and health in the literature

The Demographic and Health Survey Programme has, during the past three decades, developed and refined standardized questionnaires, that support countries in monitoring essential issues affecting their populations. Along with other important health topics, the measurement of women's empowerment (69) is one of the areas included in the questionnaire and it is the most used data source for the investigation of this topic.

Survey data can be used for measuring levels of empowerment by a single indicator, additive scales using indicators from one single domain, or composite scales using indicators across different domains. The use of global/general empowerment as one single measure is not recommended as it masks areas where women might be disempowered. A small number of studies have used more advanced analysis, like principal component analysis (PCA) or factor analysis (62,67). This type of analysis aims to determine which indicators are more relevant in certain domains, thereby supporting a more accurate aggregation of indicators under each domain.

Currently, the DHS questionnaire looks at the following domains of empowerment: "in-union women and men employment", "control over women's earning/control over men's earnings", "women's and men's asset ownership", "participation in decision-making", "attitudes towards wife beating". Domestic violence is explored in a separate questionnaire. Although not commonly used to measure empowerment on its own, there is evidence that IPV should be a separate dimension of empowerment (62).

Despite the relevance of the context where women live, most studies are conducted at the individual/household level. The community, a space of great impact on women's status and power dynamics, is not considered (24,65). The few studies that tried to measure empowerment at the community level, used aggregated contextual factors including gender-specific and socio-demographic data (68). There is also a lack of consideration for structural factors and social determinants, specific to each context, and how they influence women's processes of empowerment at different levels. For example, two studies applied DHS data from Senegal and Tanzania to examine the links and pathways between women's status and women's empowerment with skilled attendance at birth, yielding considerably different

results (70,71). While the study in Senegal showed that the relationship between women's education and skilled birth attendance was mediated by the empowerment domains "attitudes towards violence" and "sex negotiation" but not by "household decision-making" (70), in Tanzania a positive association was only observed for "household decision-making", i.e. "attitudes towards violence" and "sex negotiation" were not significantly associated with skilled birth attendance (71). These findings demonstrate the importance of considering and understanding the context to fully capture the processes of women's empowerment.

There is an increasing recognition that qualitative studies are an effective approach to capture the nuances of empowerment that quantitative studies might miss, although these do not predominate in the literature. Qualitative studies are useful not only to support the interpretation of findings but also to identify and/or refine measures of empowerment (65). For example, qualitative approaches can provide detail about underlying aspects of empowerment such as perceptions and experiences in decision-making, access to choice and freedom to choose, power structures and gender dynamics (72).

2.2.5 Conceptual models to guide the examination of women's empowerment

From the literature review, three models were found to be particularly relevant to the study of women's empowerment, namely: The Conceptual model for women's empowerment process by Kabeer (1999) (50); the Capability model by Mabsout (2011) (66); and the Functional Scales of Empowerment Measurement Model by Prately (2017) (62).¹ These models conceptualizations and operationalisations of empowerment are theoretically and empirically grounded. Each model is briefly described below.

Conceptual model of women's empowerment process

The first model is based on Kabeer's foundational work (Figure 1) on the conceptualization of women's empowerment (50,65). In this model both resources and agency - the two key components of empowerment - are recognised. As previously stated, resources are enablers of the empowerment process but do not confer power or control or result in the exercise of choice *per se*. Rather, they create the conditions in which women's ability to decide and act are enhanced. Types of resources include material (for example, income), social and human

¹ Although other models focussing on women's sexual and reproductive empowerment were recently developed (55,60), they did not inform the design and conceptualization of this research (some were only published after this phase). This research departed from a broad understanding of empowerment, i.e. in all spheres or domains where empowerment can take place, in order to identify domain could be of more relevance for fertility and family planning in Mozambique. However, the new models informed and were included in the discussion of the findings of this research.

resources (for example, education) (50). Agency is the ability to define goals, make independent decisions and act upon them (50) guided by meaning, motivation and purpose and deeply based on women’s sense of agency or *power-within*. Achievements refer to the realization of the set goals (50,65), such as the decision about childbearing or the use of contraceptives.

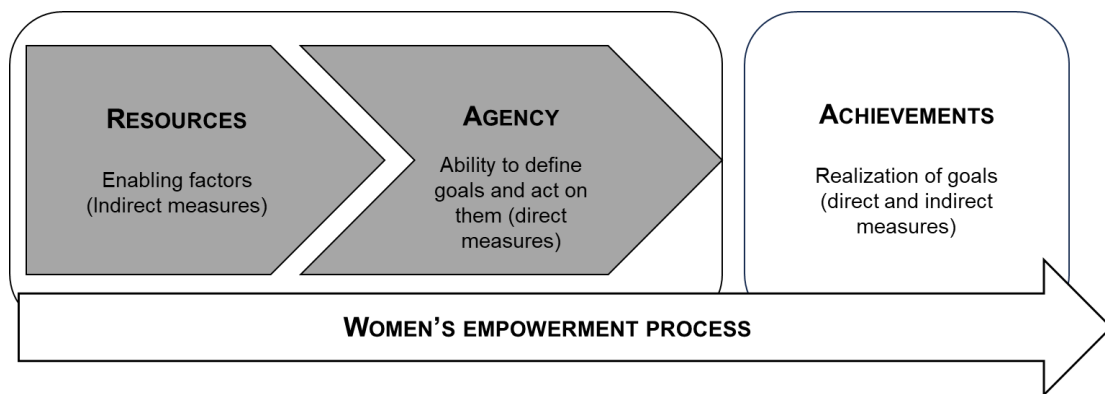


Figure 1: The conceptual model of women’s empowerment process (adapted from Kabeer, 1999).

The capability model

Initially developed based on Sen’s capability framework for social injustice and inequity, this model has been recently adapted and used in the field of health and women’s empowerment (73). In this model, empowerment is referred to as “capability” and it describes the relationships between empowerment and health outcomes. The key feature of this model is that it not only considers empowerment as a result from resources and agency (decision-making), but it also considers conversion factors, which are social and demographic determinants (Figure 2) at different levels where the empowerment takes place.

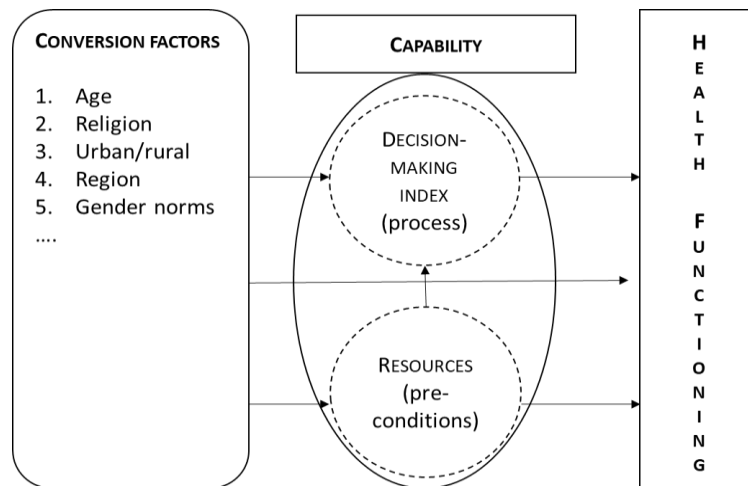


Figure 2: *The capability model (Mabsout, 2011).*

Functional scales of empowerment measurement model

The Functional Scales of Empowerment Measurement Model was included for guiding the operationalization and measurement of women’s empowerment. In this model empowerment is measured through indicators that are grouped to measure different functional domains (Figure 3) (62). From an operational and measurement perspective, using domains of empowerment seems to yield more consistent results than the overarching dimensions (i.e. social, legal, psychological, economic, etc) proposed in Malhotra’s framework (59). The term “functional domains” focusses on more specific spheres of life where decision making can take place - like sublevels under each dimension in Malhotra’s framework. The Functional scales model provides a description of the main domains often used to measure empowerment and describes the best approaches to measure it. However, in this model indicators that describe agency and those that describe access or control over resources are included as empowerment domains with no distinction between them. For example, household decision making, financial autonomy, justification of beating, appear to lead to women’s empowerment as much as access to information or IPV does, which does not align with the conceptualization proposed by Kabeer. In this research, resources and agency were described and measured separately.

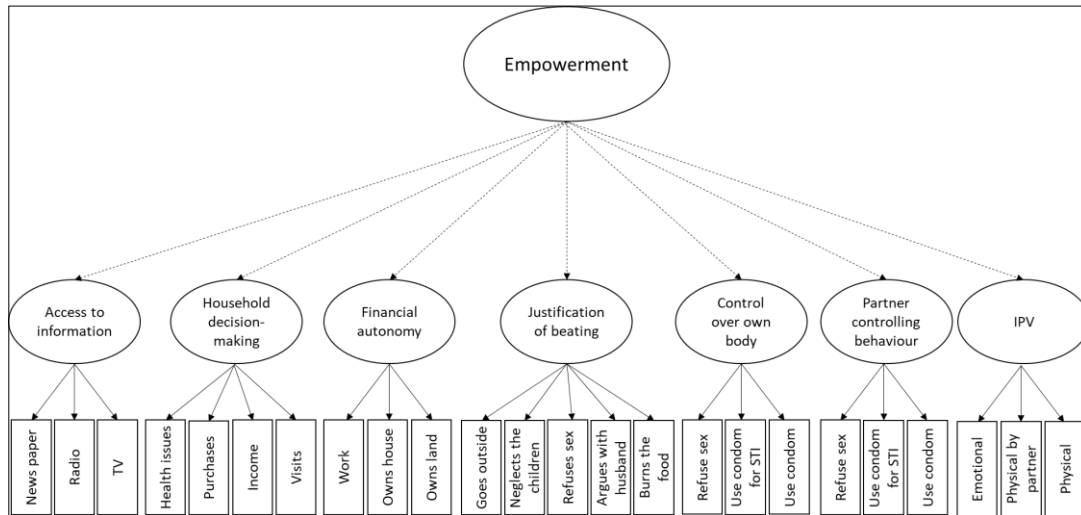


Figure 3: Functional scales of empowerment measurement model (Prately, 2017).

All these models highlight important features of women’s empowerment, for its conceptualization, operationalization and measurability in relation to health outcomes. In summary, the first model conceptualizes empowerment and identifies its key components, the second expands on the first by considering the context, and the third provides guidance on measuring domains of empowerment, excluding the idea of an overall measure. These models were key in informing the research question and the design of the PhD research study.

2.3 Women’s empowerment and fertility intentions and family planning practices

This section provides an overview of the fertility intentions and family planning practices outcomes used when investigating the relationship between empowerment and these outcomes. The evidence available from the African context is explored separately (in section 2.3.3). Such evidence is useful when identifying the most relevant and pertinent reproductive outcomes, taking into account the context, for the study of empowerment’s influence on women’s reproductive health.

2.3.1 Women’s empowerment as a predictor of fertility intentions and family planning use

The effect of empowerment on the reproductive health of women is usually assessed by measuring fertility levels and family planning and maternal health outcomes. These outcomes in turn relate to health seeking behaviours, such as the use of health services throughout a woman’s reproductive life, from family planning and use of contraception to skilled birth attendance and postpartum care.

Fertility and family planning outcomes focus on fertility intentions, behaviours, family planning and contraceptive use. Fertility intentions are generally defined as the desire, goals or plan of action to start or continue childbearing (or not) (74). By making contraceptive and counselling services available and accessible, family planning allows women and couples to plan the desired number of children and decide when to have them. Family planning practices can include, for example, knowledge about modern contraception, contraceptive use, prevalence of contraception, ever use of contraceptives and unmet need.

In studies about women's empowerment and health, DHSs are the most common source of data about fertility and family planning outcomes. Although each country adapts the survey to the specific context, generally the DHS covers the following topics: fertility and fertility preferences (e.g., total fertility rate, desired family size) and family planning (e.g., knowledge and use of contraception).

A 2014 review of the literature from Upadhyay et al. about women's empowerment and fertility showed that the most common outcome studied was the number of children – ever born or born in a specific period of time (54% of 60 articles reviewed), followed by fertility preferences, birth intervals, unintended pregnancies and finally, abortion (3% of the review articles) (68).

In 2017, a literature review conducted by Prata et al. found that current use of contraceptives was the most commonly used outcome in studies of empowerment and family planning (67). The same study also identified other important but often overlooked outcomes: ever use of family planning, unmet need, future fertility intentions, participation in family planning decision-making, and spousal communication regarding family planning (67). The authors highlighted the value of using these less explored family planning outcomes, as they provide a lifespan perspective, even in cross-sectional studies (67). This is of relevance in the study of empowerment as it converges with the processual nature of Kabeer's definition.

Interestingly, the Prata et al. review also identified different studies where participation in family planning decision-making and spousal communication regarding family planning were used as empowerment domains. According to the authors, the use of these domains can benefit the study of empowerment and family planning because they measure factors that can influence the use of family planning (67) by assessing the negotiation capacity of the woman within the couple, among other factors.

Other fertility and family planning outcomes not explored in the literature but identified in these two reviews are: unintended pregnancies (68), discontinuation of contraception use, satisfaction with contraceptive method and switching of contraceptive methods (67).

2.3.2 The relationship of women's empowerment with fertility and family planning practices

The review conducted by Upadhyay et al. (2014) showed that women's empowerment (according to a multidimensional measure synthesized into a single domain) is associated with fertility outcomes, such as reduced levels of unintended pregnancies, lower fertility and longer spacing between pregnancies (68). However, the use of an overall empowerment score masks which domains of empowerment are actually instrumental in improving women's health. The current evidence regarding this question points in a variety of directions.

In the same review, Upadhyay et al. identified a range of results for the same health outcome across different measurements of empowerment. Out of 38 articles reviewed that used the number of children as a fertility outcome, 22 showed a combination of inverse and null associations across the same domains of empowerment, while the remaining articles showed positive associations. The authors concluded that the relationships between domains and outcomes are inconsistent and unclear. These are dependent on how the domains are defined and estimated, which outcomes are selected and how they are framed in the studied context. The same pattern was observed for other fertility outcomes like fertility preferences, birth intervals and unintended pregnancies (68).

The review by Prata et al. (2017) (67) showed similar findings to the review of Upadhyay et al. (2014), described above (68). For example, most of the studies that looked at the domains of "household decision-making" (31 out of 40 studies), "mobility and freedom of movement" (31 out of 33 studies), "financial autonomy" (15 out of 26 studies) and/or "gender attitudes/beliefs of women or partner" (10 out of 14 studies), found no association with current use of contraception (67). In fact, out of all these domains of empowerment, "financial autonomy" seemed to be the most influential for current use of contraceptives. The remaining articles that included the same domains found both positive and negative associations with current use of contraception.

Education and employment status/occupation type were used in several articles as proxies for empowerment, and many studies found them to be associated with family planning outcomes. Education more than employment seems to play an important role (75) for the current use of contraception (10 out of 15 studies reporting on this association), ever use of contraception (4 out of 6 studies), future use of contraception (3 out of 5 studies) and spousal communication (3 out of 3 studies) (67).

2.3.3 The relationship of women's empowerment with fertility and family planning practices: evidence from African context

Most of the evidence as well as concepts and measurements developed to investigate empowerment and health come from Asian countries. Some of the inconsistent findings from the existing research in this field from sub-Saharan Africa are thought to be due to the use of unadjusted measurements, especially because empowerment is so highly context dependent (62,76). For example, recent evidence shows that the domain of mobility/freedom of movement is not associated with women's health in the African context (25,62,67).

In the attempt to develop appropriate measurements of empowerment for the African context, a recent study compared DHS data from 34 African countries. This study identified three main domains of women's empowerment for the African context, namely, "attitude toward violence", "social independence" and "decision-making in the household". When looking at the association of these domains with specific reproductive health outcomes, the study showed that for most countries the domains of "attitude towards violence" (holding the view that wife beating is not justified) and "decision-making in the household" were positively associated with the use of modern contraception, while "social independence" was associated with giving birth in a health facility (76).

On the other hand, this study showed some inconsistent results across countries regarding the association between women's empowerment and women desiring fewer children. These findings highlight the influence of context-specific social and cultural norms and expectations which are often overlooked in studies like this. This is so because quantitative measurements of empowerment such as the DHS standardized data or single quantitative approaches to the study of women's empowerment fail to capture the nuances of empowerment (76).

Other studies also show a diversity of findings in relation to family planning and use of contraceptives as well as fertility decisions. For example, in Zimbabwe, Hindin's (2000) study operationalised empowerment as autonomy measures (participates in the decisions of household, purchases, children and work) and women's status (work, education and ability to read). At least one measurement of autonomy was associated with each fertility outcome including the approval of family planning use, ever use of modern contraception methods, and number of children. On the other hand, the current use of contraceptives was not associated with any of the autonomy measures, it was rather associated with current employment, a measure of women's status (77).

Another study comparing Namibia, Ghana, Zambia and Uganda used a multidimensional framework to operationalise empowerment. Women's empowerment was measured in two dimensions (economic and sociocultural), and an overall empowerment score was estimated. The study found a positive association between empowerment (overall score)

and contraceptive use. However, when the analysis was adjusted for individual and community characteristics, the associations between the dimensions of empowerment and contraceptive use outcomes changed. For example, in Namibia, economic empowerment was associated only with the use of female contraceptive methods, while in Uganda this was only found for couple-use methods (25).

Evidence about the association between IPV and fertility intentions and family planning is limited for the African context, despite IPV being considered an important barrier to the use of contraception (25). A 2009 study using DHS data from 6 African countries (Cameroon, Kenya, Malawi, Rwanda, Uganda, and Zimbabwe) showed, however, that women experiencing any kind of IPV were more likely to report the use of modern contraception (78).

2.4 Facilitators and barriers of women's empowerment for fertility intentions and family planning practices

Empowerment to make choices in the area of fertility intentions and family planning is a personal journey. Throughout this process women may experience factors that support and enable them or, on the contrary, hinder them from being empowered. Identifying and exploring the factors that play a role in these processes is as important as knowing which domains of empowerment are associated with fertility intentions and family planning practices. Investigation of real-life experiences of women as they navigate the different routes to empowerment for fertility and family planning practices has, however, been given little attention in the currently available body of literature.

Evidence demonstrates that resources or preconditions are necessary pre-requisites for empowerment (58,61). These preconditions include women's education level, control over income and control over assets (for example house and land). While these resources are enabling factors in many contexts, other facilitators are still to be uncovered. Studies exploring women's trajectories of empowerment - though not exclusively related to health outcomes - point in this direction. For example, participation in community or peer-groups where there is a safe space for discussion of important issues (49), has been identified as a facilitator of the process of empowerment.

In some studies, resources for empowerment are conceptualised as determinants of empowerment. Further, the focus tends to be on economic and social resources, namely access to income and education (57,66,79). However according to Sen's Capability model, determinants (or *conversion* factors), are distinct from preconditions (66). Determinants encompass more factors, from the individual to the societal levels, than the resources or

preconditions for empowerment described in the literature. It therefore follows that determinants should be investigated separately. Some determinants can hinder the empowerment process and others can enable it, although they might not be necessary conditions for women's empowerment as resources/preconditions are. For example, a study examining internal and external factors that shape women's preferences for childbearing and family planning use in four African countries, showed that social expectations in relation to women's reproduction and roles as well as the fear of consequences related to contraceptive use were highly influential in fertility preferences and contraceptive practices, often having a hindering effect (60). Although these factors influence women's decision and agency, they might not be a necessary condition for the actual decision and exercise of agency, while women's education is.

Although women's empowerment is in itself a reaction to gender and societal imbalances and obstacles, other barriers can emerge once the process of empowerment begins. For example, it is thought that women's economic and/or social empowerment can lead to an increase in IPV, which in turn acts not only as barrier but also as a disempowerment mechanism (66,78).

Evidence about resources and determinants of women's empowerment is mostly based on quantitative studies, which lack an in-depth understanding of which factors play a role in the process of empowerment and in what ways.

2.5 Major gaps in the literature

This review of the literature synthesises the current evidence on women's empowerment and its relationship with fertility intentions and family planning practices. Overall, it highlights the growing recognition of the importance of empowerment for women's health and wellbeing, including for reproductive outcomes. However, the vast body of literature shows inconclusive and unclear findings about the relationship of empowerment and reproductive health outcomes. In particular, it is unclear how empowerment works, and through which pathways, to influence positive and improved reproductive lives.

The review of the literature revealed some gaps and challenges hindering the consolidation of knowledge around empowerment and women's health. The diversity of definitions of women's empowerment often results in a variety of operationalizations and measuring approaches, which has contributed to the slow advancements in research and generation of evidence. For example, in quantitative approaches, the use of *ad hoc* combinations of indicators condenses and overly simplifies the measure of empowerment, thus masking which domains of empowerment are more relevant for certain outcomes or spheres of life.

Furthermore, studies often use approaches that are not supported by, or intended to build on, existing theoretical or evidence-based frameworks.

It also observed that context-specificity is seldom taken into account in the conceptualization and measurement of women's empowerment. Although standardized concepts and measurements have numerous advantages, the consideration of women's empowerment processes as being embedded in contexts can support better interpretation of findings and lead to refined concepts and measures.

While the literature highlights the benefits of qualitative methods (alone or in tandem with quantitative approaches) to capture and explore the nuances of women's empowerment, this type of study does not predominate in the literature.

In Mozambique, women's empowerment could be an important strategy to tackle both gender inequality and poor women's health outcomes. Despite the government's commitment and efforts towards empowerment of women, there is a lack of evidence on how women's empowerment works and how it can accelerate improvements to women's sexual and reproductive health in Mozambique.

Together, the literature review's findings, described above, informed the research question and the methodological approaches described in the following chapters.

2.6 References

1. Instituto Nacional de Estatística (INE). Anuário Estatístico [Internet]. Maputo; 2018. Available from: <http://www.ine.gov.mz/estatisticas/publicacoes/anuario/nacionais/anuario-estatistico-2017.pdf/view>
2. World Bank. Mozambique data [Internet]. 2021 [cited 2023 Jul 3]. Available from: <https://data.worldbank.org/country/mozambique>
3. Swedish International Development Cooperation Agency. Towards gender equality in Mozambique. A profile on gender relations. Update 2006. 2007.
4. World Bank. The World Bank in Mozambique - Overview [Internet]. The World Bank Group; 2020 [cited 2022 Jul 3]. Available from: <https://www.worldbank.org/en/country/mozambique/overview#1>
5. Instituto Nacional de Estatística (INE). Resultados do inquérito sobre Impacto da COVID-19 nas empresas. [Internet]. 2020 [cited 2022 Jul 3]. Available from: <https://www.ine.gov.mz/web/guest/d/resultados-do-inquerito-sobre-impacto-da-covid-19-nas-empresas>
6. Gebregziabher FH, Pijuan Sala A, Massarongo Chivulele FAP, Massingue ACA, Casal J, De Lemos Botelho Barreto RJ, et al. Mozambique economic update: Setting the stage for recovery [Internet]. The World Bank. Washington D.C; 2021. Available

- from: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/931171614625070870/mozambique-economic-update-setting-the-stage-for-recovery>
7. World Bank. The World Bank in Mozambique. Overview. [Internet]. 2023 [cited 2023 Jul 4]. Available from: <https://www.worldbank.org/en/country/mozambique/overview#1>
 8. United Nations Development Programme. Human Development Report 2021-22. Uncertain times, unsettled lives: Shaping our future in a transforming world [Internet]. United Nations Development Programme. 2022 [cited 2023 May 10]. Available from: <http://http://report.hdr.undp.org>
 9. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICFI. Moçambique inquérito demográfico e de saúde 2011. Calverton, Maryland, USA: MISAU, INE e ICFI. 2011.
 10. United States Agency for International Development (USAID). USAID Programme. Education in Mozambique [Internet]. 2019 [cited 2019 May 12]. Available from: <https://www.usaid.gov/mozambique/education>
 11. Instituto Nacional de Estatística (INE). Pobreza e bem-estar em Moçambique. Terceira avaliação [Internet]. Maputo, Moçambique; 2010 [cited 2022 Jul 2]. Available from: http://www.ine.gov.mz/estatisticas/publicacoes/pobreza-e-bem-estar-em-mocambique_-terceira-avaliacao-nacional.pdf/view
 12. Arnfred S. Sexuality & gender politics in Mozambique: Rethinking gender in Africa. Boydell & Brewer Ltd, editor. James Currey; 2011. 310 p.
 13. United Nations Programme on HIV/AIDS (UNAIDS). HIV and AIDS estimates. Country factsheet. Mozambique 2022 [Internet]. 2022 [cited 2024 Jan 6]. Available from: <https://www.unaids.org/en/regionscountries/countries/mozambique>
 14. Ministério da Saúde (MISAU). Plano Estratégico do Sétor Saúde 2014-2019 (2020-2024). Maputo, Moçambique; 2014.
 15. World Bank. Poverty & Equity brief. Sub-saharan Africa: Mozambique. [Internet]. 2020 [cited 2022 Jun 20]. Available from: https://databankfiles.worldbank.org/public/ddpext_download/poverty/33EF03BB-9722-4AE2-ABC7-AA2972D68AFE/Global_POVEQ_MOZ.pdf
 16. Countdown to 2030. Countdown 2030 country profile: Mozambique [Internet]. 2023 [cited 2023 Jul 4]. Available from: <https://data.unicef.org/countdown-2030/country/Mozambique/1/>
 17. World Bank. Mozambique country profile. [Internet]. The World Bank Group; 2020 [cited 2022 Jun 20]. Available from: https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=MOZ
 18. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
 19. United States Agency for International Development (USAID). Improved family planning initiative [Internet]. 2022 [cited 2023 Jul 4]. Available from: <https://www.usaid.gov/mozambique/fact-sheet/improved-family-planning-initiative-usaid-ifpi>
 20. Mosha I, Ruben R, Kakoko D. Family planning decisions, perceptions and gender

- dynamics among couples in Mwanza, Tanzania: A qualitative study. *BMC Public Health* [Internet]. 2013;13(1):523. Available from: <https://doi.org/10.1186/1471-2458-13-523>
21. Ezeah P, Achonwa C. Gender inequality in reproductive health services and sustainable development in Nigeria: A theoretical analysis. *Int J Sociol Anthropol* [Internet]. 2015;7(2):46–53. Available from: <http://academicjournals.org/journal/IJSA/article-abstract/D6747C450640>
 22. Capurchande R, Coene G, Roelens K, Meulemans H. “If I have only two children and they die... who will take care of me?” – A qualitative study exploring knowledge, attitudes and practices about family planning among Mozambican female and male adults. *BMC Womens Health* [Internet]. 2017 Aug 22;17:66. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568310/>
 23. Capurchande R, Coene G, Roelens K, Meulemans H. Between compliance and resistance: Exploring discourses on family planning in community health committees in Mozambique. *BMJ Open*. 2015;5:1–7.
 24. Cau BM. Community influences on contraceptive use in Mozambique. *Health Place* [Internet]. 2015;31(Supplement C):10–6. Available from: <http://www.sciencedirect.com/science/article/pii/S135382921400152X>
 25. Do M, Kurimoto N. Women’s empowerment and choice of contraceptive methods in selected African countries. *Int Perspect Sex Reprod Health*. 2012 Mar;38(1):23–33.
 26. Kibira SPS, Karp C, Wood SN, Desta S, Galadanci H, Makumbi FE, et al. Covert use of contraception in three sub-Saharan African countries: A qualitative exploration of motivations and challenges. *BMC Public Health* [Internet]. 2020;20(1):865. Available from: <https://doi.org/10.1186/s12889-020-08977-y>
 27. United Nations Children’s Fund. Child marriage and adolescent pregnancy in Mozambique. Policy brief. Maputo, Mozambique; 2015.
 28. Chaquisse E, Fraga S, Meireles P, Macassa G, Soares J, Mbofana F, et al. Sexual and physical intimate partner violence among women using antenatal care in Nampula, Mozambique. *J Public Health Africa*. 2018;9:1–6.
 29. Pozarny PF. Gender roles and opportunities for women in urban environments (GSDRC Helpdesk Research Report 1337). Birmingham, UK; 2016.
 30. Ministério do Género Criança e Acção Social. Perfil de género de Moçambique. Maputo, Moçambique; 2016.
 31. Ministério da Saúde (MISAU). Estratégia de planeamento familiar e contracepção 2011-2015 (2020). 2010;2015:1–34.
 32. Ministério da Saúde (MISAU). Plano estratégico do sector saúde 2014-2019 (2020-2024). Maputo, Mozambique; 2014.
 33. Equimundo. International men and gender equality survey: A status report on men, women and gender equality in 15 headlines [Internet]. Washington, D.C.; 2022 [cited 2024 Jan 6]. Available from: <https://www.menandgendersonline.org>.
 34. World Health Organization (WHO). Contraception [Internet]. 2023 [cited 2023 Jul 25]. Available from: https://www.who.int/health-topics/contraception#tab=tab_1
 35. United nations Population Fund (UNFPA) ESARO. Family Planning [Internet]. 2023 [cited 2024 Jan 6]. Available from: <https://esaro.unfpa.org/en/topics/family-planning>
 36. Family Planning 2020. Family Planning 2020 Mozambique commitment [Internet].

2018. Available from: https://fp2030.org/sites/default/files/MozambiqueFP2020Commitment207_0.pdf
37. Family Planning 2020. FP2020 Initiative [Internet]. 2019 [cited 2019 May 20]. Available from: <https://www.familyplanning2020.org/>
 38. Family Planning 2030. Mozambique commitment to FP2030 [Internet]. 2022. Available from: <https://fp2030.org/mozambique>
 39. Ministério da Saúde (MISAU). Estatístico Mensal de Saúde Outubro 2023. 2023.
 40. Family Planning 2020. Mozambique actions for acceleration (2018-2019). 2019.
 41. Augusto O, Roberton T, Fernandes Q, Chicumbe S, Manhiça I, Tembe S, et al. Early effects of COVID-19 on maternal and child health service disruption in Mozambique. *Front public Heal*. 2023;11:1075691.
 42. Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception* [Internet]. 2015;92(5):420–1. Available from: <https://www.sciencedirect.com/science/article/pii/S0010782415005430>
 43. World Health Organization (WHO). Family planning/Contraception methods [Internet]. 2023 [cited 2023 Jan 6]. Available from: <https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>
 44. Sabonete AJ, Amisse Momade AJ, Botão C, Baloi C, Cláudio Muianga EA, Franco F, et al. SARA 2018. Inventário nacional. Vol. 01. 2018.
 45. Family Planning 2030. Mozambique. FP2030 Indicator summary sheet: 2022 measurement report [Internet]. 2022 [cited 2023 Jul 5]. Available from: <https://www.track20.org/Mozambique>
 46. Instituto Nacional de Estatística (INE) I. Inquérito Demográfico e de Saúde em Moçambique 2022–23. Vol. 23. Maputo, Moçambique e Rockville, Maryland, EUA; 2023.
 47. United Nations Population Fund (UNFPA). Por escolha, Não por acaso. Planeamento familiar, direitos humanos e desenvolvimento. In: Relatório sobre a Situação da População Mundial. Maputo, Mozambique; 2012.
 48. Chavane L, Dgedge M, Bailey P, Loquiha O, Aerts M, Temmerman M. Assessing women's satisfaction with family planning services in Mozambique. *J Fam Plan Reprod Heal Care* [Internet]. 2017 Jul 8;43(3):222–8. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5537550/>
 49. Cornwall A. Women's empowerment: What works? *J Int Dev* [Internet]. 2016 Apr 1;28(3):342–59. Available from: <https://doi.org/10.1002/jid.3210>
 50. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30(3):435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>
 51. Rowlands J. Questioning empowerment: working with women in Honduras. *Community Dev J*. 1997;33(4):365–76.
 52. United Nations Population Fund (UNFPA). My body is my own - Claiming the right to autonomy and self-determination. State of the world population 2021 [Internet]. 2021 [cited 2021 Apr 15]. Available from: <https://www.unfpa.org/publications/state-world-population-2021>
 53. Batliwala S. Taking the power out of empowerment: An experiential account. *Dev*

- Pract [Internet]. 2007 Jul 6;17(4/5):557–65. Available from: <http://www.jstor.org/stable/25548253>
54. Eerdewijk A van, Wong F, Vaast C, Newton J, Tyszler M, Pennington A, et al. White paper: A conceptual model on women and girls' empowerment. Amsterdam; 2017.
 55. Edmeades J, Mejia C, Parsons J, Sebany M. Conceptual framework for reproductive empowerment: Empowering individuals and couples to improve their health (Background Paper). 2018.
 56. Narayan D. Measuring empowerment [Internet]. Rayan D, editor. The World Bank; 2005. Available from: <http://elibrary.worldbank.org/doi/abs/10.1596/0-8213-6057-4>
 57. Swain RB, Wallentin FY. Economic or non-economic factors – What empowers women? Working paper 2008:11. Uppsala, Sweden; 2008.
 58. Kabeer N. Reflection on the measurement of women empowerment. In: *Discussing Women's Empowerment*. SIDA; 2001. p. 136.
 59. Malhotra A, Schuler SR, Boender C. Conceptualizing and measuring women's empowerment as a variable in international development. Paper Prepared for the World Bank Workshop on Poverty and Gender: New Perspectives. 2003. p. 59.
 60. Karp C, Wood SN, Galadanci H, Sebina Kibira SP, Makumbi F, Omoluabi E, et al. 'I am the master key that opens and locks': Presentation and application of a conceptual framework for women's and girls' empowerment in reproductive health. *Soc Sci Med* [Internet]. 2020;258:113086. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953620303051>
 61. Malhotra A, Schuler SR, Boender C. Women's empowerment as a variable in international development. 2002.
 62. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017 Nov; Available from: <https://doi.org/10.1007/s11205-017-1811-1>
 63. Sen A. *Development as freedom* [Internet]. Oxford University Press; 1999. (Oxford India paperbacks). Available from: <https://books.google.co.za/books?id=NQs75PEa618C>
 64. Sen A. Capability and well-being. In: Nussbaum, Sen, editors. *The Quality of Life*. Oxford: Clarendon Press; 1993.
 65. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>
 66. Mabsout R. Capability and health functioning in Ethiopian households. *Soc Indic Res* [Internet]. 2011 May 6;101(3):359–89. Available from: <http://link.springer.com/10.1007/s11205-010-9661-0>
 67. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017/01/10. 2017 Nov;49(6):713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>
 68. Upadhyay UD, Gipson JD, Withers M, Lewis S, Fraser CS, Huchko MJ, et al. Women's empowerment and fertility: A review of the literature. *Soc Sci Med*. 2014;31(9):1713–23.

69. Inner City Fund (ICF). The Demographic and health survey program. [Internet]. 2020. United States Agency for International Development; 2020 [cited 2021 Dec 7]. Available from: <https://dhsprogram.com/What-We-Do/index.cfm>
70. Shimamoto K, Gipson JD. Examining the mechanisms by which women's status and empowerment affect skilled birth attendant use in Senegal: A structural equation modeling approach. *BMC Pregnancy Childbirth* [Internet]. 2017 Nov 8;17(Suppl 2):341. Available from: <https://pubmed.ncbi.nlm.nih.gov/29143630>
71. Shimamoto K, Gipson JD. Investigating pathways linking women's status and empowerment to skilled attendance at birth in Tanzania: A structural equation modeling approach. *PLoS One* [Internet]. 2019;14(2):1–16. Available from: <https://doi.org/10.1371/journal.pone.0212038>
72. The Bill and Melinda Gates Foundation (BMGF). Gender equality toolbox. What gets measured matters. A methods note for measuring women and girls empowerment. 2019.
73. Agarwal B, Humphries J, Robeyns I, editors. Amartya Sen's work and ideas: A gender perspective. London; Routledge; 2005.
74. Hayford SR, Agadjanian V. From desires to behavior: Moderating factors in a fertility transition. *Demogr Res* [Internet]. 2012 May 31;26:511–42. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3634800/>
75. Al Riyami A, Afifi M, Mabry RM. Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reprod Health Matters* [Internet]. 2004 Jan 1;12(23):144–54. Available from: [https://doi.org/10.1016/S0968-8080\(04\)23113-5](https://doi.org/10.1016/S0968-8080(04)23113-5)
76. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. 2017 Sep 26;5(9):e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>
77. Hindin MJ. Women's autonomy, women's status and fertility-related behavior in Zimbabwe. *Popul Res Policy Rev* [Internet]. 2000 Jun;19(3):255–82. Available from: <https://doi.org/10.1023/A:1026590717779>
78. Alio AP, Daley EM, Nana PN, Duan J, Salihu HM. Intimate partner violence and contraception use among women in Sub-Saharan Africa. *Int J Gynecol Obstet* [Internet]. 2009 Oct 1;107(1):35–8. Available from: <https://doi.org/10.1016/j.ijgo.2009.05.002>
79. Mabsout R, van Staveren I. Disentangling bargaining power from individual and household level to institutions: Evidence on women's position in Ethiopia. *World Dev* [Internet]. 2010;38(5):783–96. Available from: <http://www.sciencedirect.com/science/article/pii/S0305750X09002022>

3. RESEARCH QUESTION AND AIM

The research question that guided this research study was:

How does women's empowerment influence the reproductive choices of women of reproductive age in Mozambique?

3.1 Aim

This PhD research study aimed to explore the relationship between empowerment, fertility intentions and family planning practices amongst women of reproductive age in Mozambique using a mixed-methods approach.

3.2 Research objectives

To achieve the main PhD thesis aim, the research was developed in three parts:

Part I – Quantitative study

Objective 1: To identify specific domains of women's empowerment for the Mozambique context and their social determinants.

Objective 2: To investigate the association between these context-specific domains of empowerment and fertility intentions and family planning practices.

Part II – Qualitative study

Objective 3: To explore women's experiences of empowerment, including facilitators and barriers in relation to fertility intentions and family planning practices.

Objective 4: To explore women's views on and meanings of empowerment for fertility intentions and family planning practices.

Part III – Integration phase

Objective 5: To examine how the qualitative and quantitative findings together can describe pathways and expand on the concept and measurement of women's empowerment for fertility intentions and family planning practices in Mozambique.

3.3 Research framework

Emerging from the models described in the literature review (section 2.2.5), a research implementation framework (Figure 4) was developed to guide the research towards achieving the overall aim and objectives of the PhD thesis. The definitions of key concepts used in this study are presented in Table 2.

Table 2: Definition of key concepts used in this study.

Key definitions
Empowerment <i>Having the power to control and freely decide over one's life and body in order to achieve valued or best perceived outcomes (1,2).</i>
Fertility intentions <i>Expressed desire either to start or continue with childbearing or not to do so (3).</i>
Family planning/contraceptive practices <i>The actions taken to achieve the intended fertility, including using information or other means as well as modern contraceptives (4,5).</i>

As illustrated in Figure 4, the first step of this research was to identify the domains of women's empowerment that are relevant in the Mozambican context, and the determinants influencing these domains including social and demographic factors, and gender norms (objective 1). Then this research looked at how these domains relate to fertility intentions, including number of children ever born, birth intervals and intention for childbearing, and family planning practices (current use of contraceptive methods, length of use of contraceptives and met need for contraceptives) in Mozambique (objective 2). Based on the quantitative findings, a qualitative approach was developed and applied to collect data on women's experiences, views and meanings of empowerment for fertility intentions and family planning (objective 4) while exploring key life events related to decision-making about fertility and family planning practices, barriers and facilitators of the processes of empowerment (objective 3). Finally, the integration of the findings provided a comprehensive analysis of the relationship between women's empowerment and fertility intentions and family planning practices in Mozambique (objective 5) looking at nuances captured in the qualitative data that could further explain and provide meaning to the quantitative findings.

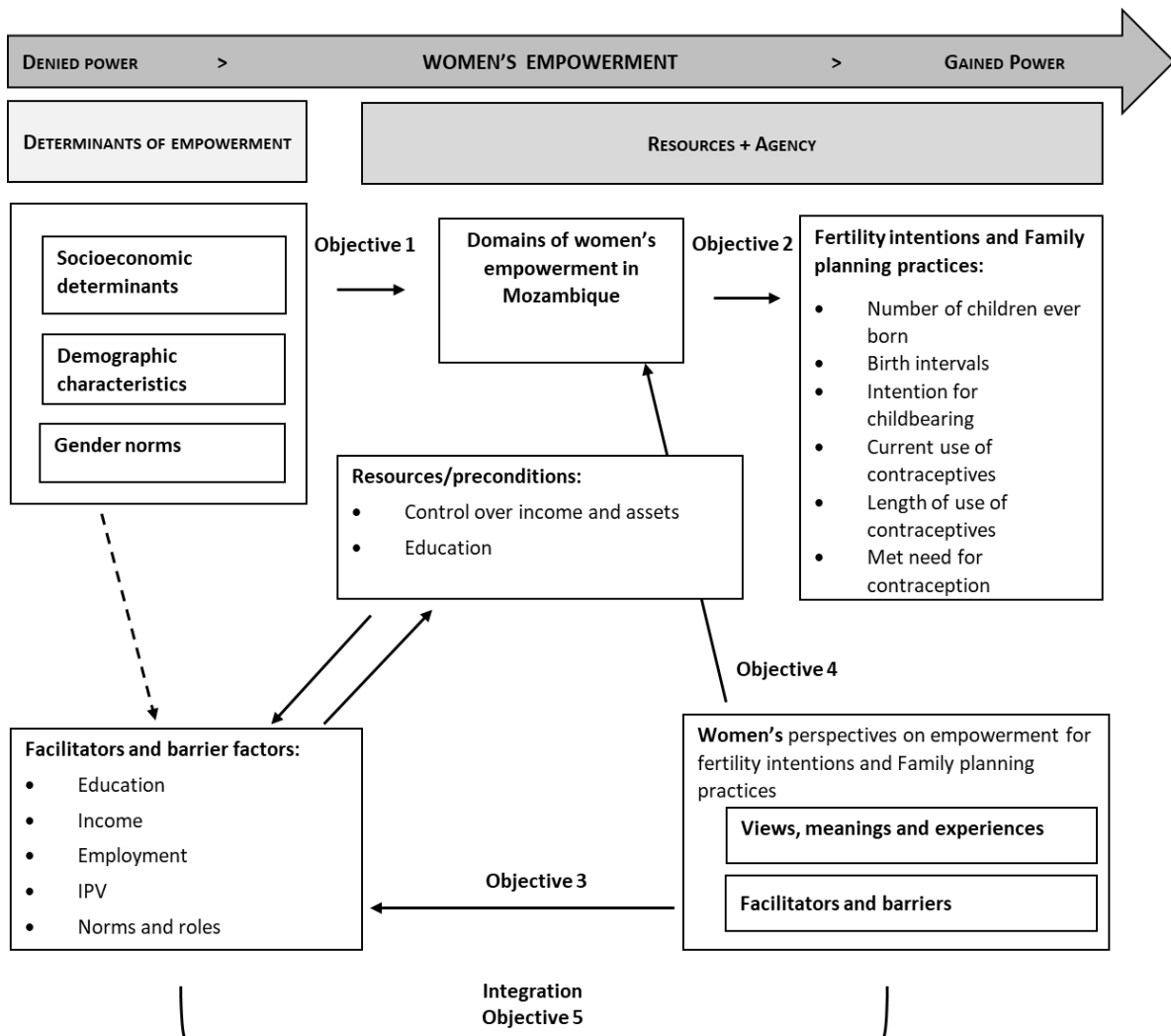


Figure 4: Research implementation framework.

3.4 References

1. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30(3):435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>
2. Sen A. Capability and well-being. In: Nussbaum, Sen, editors. *The Quality of Life*. Oxford: Clarendon Press; 1993.
3. Vignoli D, Rinesi F. Fertility Plans/Intentions. In: Michalos AC, editor. *Encyclopedia of Quality of Life and Well-Being Research* [Internet]. Dordrecht: Springer Netherlands; 2014. p. 2267–8. Available from: https://doi.org/10.1007/978-94-007-0753-5_1040
4. United nations Population Fund (UNFPA) ESARO. Family Planning [Internet]. 2023 [cited 2024 Jan 6]. Available from: <https://esaro.unfpa.org/en/topics/family-planning>
5. World Health Organization (WHO). Family planning/Contraception methods [Internet]. 2023 [cited 2023 Jan 6]. Available from: <https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>

4. METHODS

This section gives an overview of the methods applied in this study. Methods are also covered in the four publications (Chapter 5), but this section provides additional detail that was not fully captured in the published articles. It also includes insights on practical aspects of the implementation process and in-person data collection conducted by the PhD student.

4.1 Setting

Mozambique was the setting of this research. Despite recent changes in some key areas of women's health (such as decreased fertility and increased use of modern contraceptives) (1–3) described in the literature review, gender inequality impacts greatly on how women experience and live their reproductive lives in Mozambique. Furthermore, the observed changes have been uneven across the country, with disparities being reported between regions and between rural and urban areas. Mozambique has a rich and diverse sociocultural context, with a particularly strong contrast between the north and the south regions. The contrasts are shaped by matrilineal and patrilineal societies with specific traditions and norms, which possibly contribute to different gender dynamics and sexual and reproductive behaviours. It was important to capture and explore such cultural variations, to better describe women's ability to decide and how empowerment processes relate to reproductive choices in Mozambique.

4.2 Study design

This study used a mixed-methods design, combining quantitative and qualitative research methodologies. The PhD student, with the support of the supervisors, designed and conducted the study from data collection, analysis, to interpretation and writing of findings. The qualitative approach followed after the quantitative part, using an explanatory sequential design (4). The sequence of approaches is depicted in Figure 5. In this type of design, the methodologies are distinct and conducted sequentially, but inform each other. In this study the quantitative approach had precedence in addressing the research question, and the results from this phase informed the design of the qualitative part. The findings from the qualitative analysis were then used to interpret and explain the findings from the quantitative analysis (4).

Overall, the combination of both quantitative and qualitative approaches was used to capture nuanced knowledge and understanding of the concept, meanings and processes of empowerment in the specific context of Mozambique. The first quantitative study (5)

described the domains of women’s empowerment and their determinants in the Mozambican context, using indicators available in the 2015 DHS. The second study (6) examined the relationship between the different empowerment domains and fertility intentions and family planning practices (Part I). These results guided the selection of the study sites in Mozambique and helped to identify important questions to be explored in the qualitative studies (7) (Part II), namely through further looking into decision-making processes under each domain identified with special focus on women’s sexual and reproductive sphere of life. In Part III, findings from Part I and Part II were integrated and compared and are synthesised into a comprehensive response to the research question, which is included in the discussion of this research work (Chapter 6).

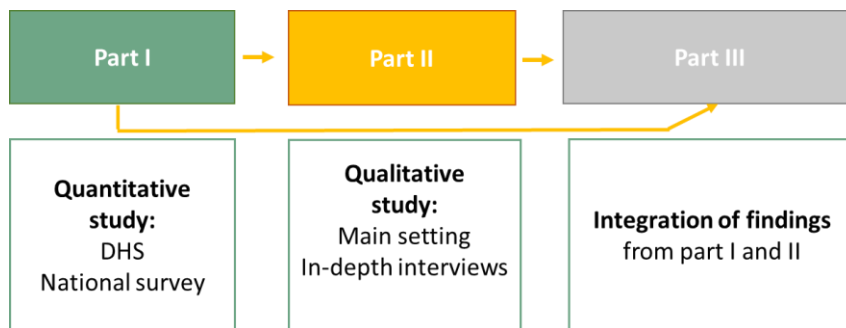


Figure 5: Mixed-method study design.

Part I: Analysing available data from Demographic and Health Surveys (DHS) - Mozambique

The DHS survey has collected, analysed, and disseminated accurate and representative data on population health in several countries, including Mozambique (8). The standardized data collection tools developed by the DHS program include the general DHS (including population, health and nutrition indicators), the Malaria Indicator Survey (MIS), and the HIV/AIDS indicator survey (AIS). In this study, data from the 2015 survey for Mozambique was used, which combined indicators from AIS, MIS and the general DHS (1). Although there was an MIS survey in 2018, this covered neither women’s empowerment nor fertility and family planning outcomes. Another general DHS was implemented in 2021, but the data will only become publicly available towards the end of 2023. DHS data can be accessed upon registration at the DHS website, specifying the purpose and intended use of the data.

A total of 7749 women (15 to 59 years) were interviewed for the 2015 DHS, of whom 2072 fulfilled the selection criteria for this study, namely being of reproductive age (15 to 49 years)

and who completed all the relevant survey sections including the empowerment and domestic violence questionnaires. This group of 2072 women were included in this analysis.

The data extracted from the DHS survey and used in the first study included women's empowerment indicators (about decision-making in the household, justified beating and decision about sexual intercourse); and socioeconomic, demographic and behavioural indicators (such as age, education, current employment situation, age of first co-habitation, polygamous marriage, religion, place of residence (region and urban vs rural setting), wealth index, access to media and exposure to controlling behaviours and IPV). For the second quantitative study, the reproductive outcomes considered under fertility intentions were: number of children ever born, intervals between births and intention for childbearing. For family planning practices, the outcomes were: current use of contraceptive methods, length of use of contraceptives and need for contraceptives.

Data analysis

Descriptive analysis of the variables of interest was performed in both quantitative studies. Cross-tabulations and Chi-square tests (5% level of significance) were used to compare proportions where relevant. In the first study, a PCA was conducted to identify the domains of women's empowerment that are relevant to the Mozambican context. This was followed by a logistic regression to estimate the association between socioeconomic, demographic and behavioural characteristics and each domain of empowerment. In the second quantitative study, a multinomial logistic regression was used to examine the association between each empowerment domain and fertility intentions and family planning practices outcomes. In both studies, crude and adjusted odds ratios (ORs) were calculated, with 95% confidence intervals. All data analysis was conducted in STATA 16 (StataCorp. 2017. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC) (9).

Part II: Data from the interviews

Selection of study sites

The findings from part I of this study revealed significant statistical differences between the South and the Centre and North regions in relation to indicators of women's empowerment. That phase of the study identified three empowerment domains (see Section 5.1). Different associations were found between the levels of empowerment for each of the three domains identified and the region where women lived. These differences were particularly marked between the south and the north regions. Such findings were aligned with the available

evidence reporting socio-cultural diversity across regions and provinces, embedded in traditions and ethnicity as well as in different levels of contraceptive uptake, fertility rate, number of children and exposure to violence (1).

Based on these findings, two provinces were selected for phase II of the data collection: one in the south region and one in the north region. The selected southern province was Maputo. Initially, the selected northern province was Cabo Delgado. However, the local health authorities and the Faculty of Medicine Eduardo Mondlane advised against it due to the resurgence of the armed conflict and recent humanitarian crises resulting from climate disasters. Cabo Delgado was therefore replaced with Nampula province. In addition, the city of Maputo, Mozambique's capital, was included due to being the most urbanised city in the country and therefore presenting different characteristics from any other province and location.

Although relative socioeconomic and cultural homogeneity was expected within provinces, urban and rural differences were found to be relevant in phase I. The selection of urban and rural health facilities for participants' recruitment was done with the guidance and collaboration of the Provincial Health Directorate (*Direcção Provincial de Saúde, DPS*) after the necessary authorizations for the study implementation were obtained. Health facilities were defined as study sites to increase the feasibility of implementation by the PhD student given the available financial and human resources as well as time for data collection. In order to include participants with different characteristics, recruitment also took place at the community level, with the support of a community health worker. Further details of the selection criteria and arrangements are included in publication 3 (see Section 5.3) (7).

Collaboration and involvement of local health authorities and stakeholders

The study was endorsed by the Faculty of Medicine Eduardo Mondlane in Maputo. This collaboration was instrumental for the successful implementation of the project. Several meetings were held with the Head of the Academic Department of Obstetrics/Gynaecology and Associate Professor at Faculty of Medicine Eduardo Mondlane, who provided invaluable information about necessary steps, contacts to be made and identification of key stakeholders. They also provided inputs on the design of the data collection tools, regarding their appropriateness, language adjustments and meaning.

Obtaining permission for the realization of the study from the provincial health authorities was a requirement (annex B). Their collaboration was also essential for identification of study sites, namely health facilities in urban and rural location, that met the requirements of family planning provision, as well as the capacity of the research team concerning travelling

distances and safety. With their support the PhD student hired a research assistant with knowledge of the relevant local languages to assist with all data collection. Furthermore, they liaised with the heads of the selected health facilities, preparing for, and accommodating the research team for data collection days.

At the start of data collection, the PhD student aimed to set up a Project Advisory Board (PAB) in each province, involving local policy makers and non-governmental organizations who were working in the field of women's health and rights. The goal of the PABs was to engage relevant stakeholders that could provide guidance for accessing communities and support the interpretation of the findings.

In the south region, 10 stakeholders were identified and invited to participate, of whom 5 attended a meeting on the 4th of March 2020 at the Faculty of Medicine Eduardo Mondlane, in Maputo. The findings from phase I of the study were presented, in addition to the implementation of the qualitative phases of the study and some general ideas emerging from the interviews in the south region. A second meeting was scheduled for the end of March, when data collection in the south region was completed and preliminary findings could be shared, however, due to the COVID-19 outbreak, this meeting was cancelled. COVID-19 restrictions also prevented the creation of a PAB in Nampula province, in the north region. However, the stakeholders based in Maputo had a comprehensive understanding of the sexual and reproductive health and rights of women across the country, having implemented projects in the north and south provinces.

The PAB provided insightful information on general status of women in Mozambique and the value of motherhood, the gender power dynamics existing across all socioeconomic levels, the perspective of power throughout the life course, signs of changes in gender roles and the role of religion. The discussions and comments affirmed the relevance of the questions included in the interview guide, and highlighted nuances and additional probes for use during the interview process.

Conducting interviews

In-depth interviews involving adult women of reproductive age (18-49 years) were conducted. A semi-structured interview guide was developed (annex C), which explored topics such as experiences and behaviours related to gender, decision-making processes, empowering and disempowering experiences related to fertility intentions and family planning practices. The interview guide was tested in rural and urban settings which resulted in the refinement of the questions. Language adjustments were also made throughout the implementation process to ensure understanding and cultural meaning from the participants.

Women were invited to participate on the same day of the interview, to facilitate the recruitment and rate of participation. The interviews took place in the vicinity of the health facility or in the home of the participant, for women recruited in the community.

Interviews were conducted primarily in Portuguese by the PhD student, a nurse, trained in qualitative research methods and has Portuguese as her first language. However, when necessary, the research assistant translated the questions and answers from the local dialect to Portuguese and vice-versa.

All interviews were audio-recorded after participants granted permission and the informed consent form was signed. Refreshments were made available to all participants.

In Maputo city and Maputo province, data collection was completed between February and March 2020. During this period data collection was entirely conducted by the PhD student with the support of the research assistant. When travel restrictions were imposed due to COVID-19, the PhD student had to return to South Africa. However, to ensure the completion of data collection in the north region, the research assistant, who was already trained and familiar with the study, travelled to Nampula province in August 2020 once it was considered safe and all measures were in place. As in the south region, the research assistant conducted the interviews in a health facility and communities, with the presence of a local assistant who could translate from Portuguese to the local language and vice-versa.

Ethical considerations

The study obtained ethical clearance from the Human Research Ethics Committee of the Faculty of Health Sciences - University of Cape Town (UCT) (Ref.: HREC 579/2019) and from the Institutional Committee of Bioethics for Health from the Faculty of Medicine/Central Hospital of Maputo (*Comité Institucional de Bioética em Saúde da Faculdade de Medicina/Hospital Central de Maputo*) in Mozambique (Ref: CIBS FM&HCM/98/2019). Ethical approvals can be found in annex D.

Participants were asked to sign an informed consent form (annex E) after being given a clear explanation about the purpose, nature, aims and methodology of the study. The form was provided in Portuguese. When required, translation to the local language was provided with the support of the research assistant. The participant signed two copies of the informed consent, one for the participant to keep. It was clearly explained to all participants when going through the informed consent that their participation was voluntary, and withdrawal of participation was possible at any point in the process without any consequences or harm.

It was also clarified to all participants that there were minimum risks anticipated due to the participation in this study. The PhD student was sensitive to the nature of certain topics that could cause some discomfort, ensuring that these were approached carefully and respectfully. Participants were also informed that there were no immediate benefits resulting from their participation in this study, but that the results of this study could contribute to an improved understanding of women's reproductive decision processes and choices and thus could benefit women's health care in Mozambique in the future.

The principles of anonymity and confidentiality were ensured for all participants. These aspects were particularly reinforced to women as they could feel vulnerable and exposed by sharing personal experiences. Hard copies of forms containing personal details of the participants were handled only by the researcher and the research assistant and kept in a locked cabinet. The audio recordings and transcripts were shared using a password protected Dropbox folder, and deleted as soon as all the files were uploaded to the researcher's laptop and stored in password-protected folders.

Data analysis

Thematic analysis was used to explore the views and perspectives of women, specifically on their understanding and lived experiences of empowerment and disempowerment processes in relation to fertility and family planning. According to Braun, a thematic analysis is a method to identify and organize patterns of meaning across a dataset (10). Such an approach allows the researcher to make sense of collective or shared meanings and experiences (10), identifying similarities and differences, supporting the interpretation and the generation of explanations and insights (11).

Audio-records were transcribed verbatim, and where necessary translated into Portuguese. The data analysis was conducted in Portuguese to prevent the loss of meaning and increase accuracy. Themes and subthemes and corresponding quotes were translated into English at a later stage. NVivo 12 (12), a qualitative data analysis software, was used for data management. The PhD student transcribed and analysed all data. The interpretation of findings was shared and discussed with a Mozambican researcher, collaborating in the study.

Part III: Integration of findings

According to Creswell and Plano Clark (2011) the value of mixed-methods research can be expanded via integration of quantitative and qualitative data in a systematic/structured manner (13). An explanatory sequential design (14) was used in this study in which the

quantitative data and findings provided a general understanding of the research problem while the qualitative data served to refine and explain the quantitative results by exploring participants' views, meanings and experiences in more depth (15). Part III of this study consisted of the integration of the quantitative and qualitative findings from parts I and II.

Part III comprised a narrative integration to describe quantitative and qualitative findings using a weaving approach where both types of findings are written together concept-by-concept or theme-by-theme in one single report (16). The result of the integration of findings is presented in the discussion section of the thesis (Chapter 6).

4.3 A reflexivity note from the researcher

Taking part in the data collection process, from the preparation phase with the engagement of national health authorities to the recruitment and interaction with women, offered a rich and insightful experience about conducting research, and conducting research in a country other than my own.

During the preparation phase for the data collection, it was important for me to be based in Mozambique. This allowed regular contact with the relevant local authorities and partners through face-to-face meetings and phone calls and facilitated the process of submission of documents and additional clarification requests. In addition, it ensured that I was embedded in the country's reality for three non-consecutive months, grasping a sense of the social dynamics, cultural traces, and other context specificities, which was instrumental for engagement with the participants in the data collection phase.

Notwithstanding, there were challenges at a personal level. Despite being fluent in Portuguese and having extensive knowledge about the context and the research topic, it was sometimes challenging to connect to an unfamiliar reality and most of all to listen to women's stories of hardship so distinct from my own. The women shared experiences of abuse, of neglect, of fear and of absolute disempowerment regarding their sexuality and reproduction and lives, which was unsettling at many levels. On one hand, it generated strong feelings of unfairness, and on the other, an admiration for how women navigate such struggles and are able to thrive or have children that thrive. I felt deep gratitude to them for opening up the intimacies of their lives to me. That created a sense of commitment towards these specific women, and perhaps even towards Mozambican women more generally, and a need to give them voice in the public space.

What was surprising and unexpected to me, given the challenges and nature of the research topic itself, was women's reactions to the interview. Many women of different socio-

demographic backgrounds, with distinct life stories and different experiences and levels of empowerment, expressed feelings of satisfaction and contentment at the end of the interview. In my view, this was due to the combination of women telling their own stories (never told before), reflecting on who they are and, on their lives, as well as by the questioning the unquestionable, devolving a sense of knowledge and capability. I include here the words of a woman from Maputo that I believe captures well these shared reactions and manifestations, that came as a surprise to me.

“I just want to thank you. This interview, these questions made me think and some of the things I will still reflect on them later. I think for me it was a day of knowledge, you know. I liked the interview a lot. I approve this type of initiative. Sometimes things stay just on the surface, and it is important to speak about them. As you moved through the questions, I was thinking...oh you never really thought about this...not that I didn't have an opinion, but no one ever had asked that question before. It was important for me to know that I had an opinion, that I could share something with you.” (Maputo city, 37, single, no children)

Finally, a note on the experience of conducting this research during the COVID-19 pandemic. The disruption and uncertainty caused by COVID-19 in general and in how to proceed with the work were very stressful, as experienced by most people around the world. Despite the feeling of insecurity, the plans were adjusted and flexible so the work could be completed the best way possible. This was greatly facilitated by the support provided by the local research assistant.

4.4 References

1. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
2. World Bank. Mozambique country profile. [Internet]. The World Bank Group; 2020 [cited 2022 Jun 20]. Available from: https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=MOZ
3. United States Agency for International Development (USAID). Improved family planning initiative [Internet]. 2022 [cited 2023 Jul 4]. Available from: <https://www.usaid.gov/mozambique/fact-sheet/improved-family-planning-initiative-usaid-ifpi>
4. Robinson P. Designing and conducting mixed methods research [Internet]. 3rd ed. Vol. 31, Australian and New Zealand Journal of Public Health. Sage Publications;

2007. 388 p. Available from:
<https://linkinghub.elsevier.com/retrieve/pii/S1326020023014991>
5. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique. *PLoS One* [Internet]. 2021;16(5):1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>
 6. Castro Lopes S, Constant D, Fraga S, Harries J. How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique. *PLOS Glob Public Heal*. 2022;2(9):e0000670.
 7. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. *Front Glob Women's Heal*. 2022;3(March):1–11.
 8. Inner City Fund (ICF). The Demographic and health survey program. [Internet]. 2020. United States Agency for International Development; 2020 [cited 2021 Dec 7]. Available from: <https://dhsprogram.com/What-We-Do/index.cfm>
 9. StataCorp. Stata statistical software: Release 16. College Station, TX: StataCorp LLC; 2019.
 10. Braun V, Clarke V. Thematic analysis. In: *APA handbook of research methods in psychology*. 2012. p. 57–71.
 11. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: Striving to meet the trustworthiness criteria. *Int J Qual Methods* [Internet]. 2017 Oct 2;16(1):1609406917733847. Available from: <https://doi.org/10.1177/1609406917733847>
 12. NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12. QSR International Pty Ltd.; 2020.
 13. Creswell JW, Clark VLP. *Designing and conducting mixed methods research* [Internet]. 2nd ed. SAGE Publications; 2011. 457 p. Available from: <https://books.google.es/books?id=YcdIPWPJRBcC>
 14. Ivankova N V, Creswell JW, Stick SL. Using mixed-methods sequential explanatory design: From theory to practice. *Field methods*. 2006;18(1):3–20.
 15. Feters MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs: Principles and practices. *Health Serv Res* [Internet]. 2013;48(6pt2):2134–56. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1475-6773.12117>
 16. Creswell JW. *Designing and conducting mixed methods research*. Third edit. *Designing and conducting mixed methods research*. Thousand Oaks, California: SAGE; 2018.

5. RESULTS

5.1 Paper 1: Socio-economic, demographic and behavioural determinants of women's empowerment in Mozambique.

PLOS ONE

RESEARCH ARTICLE

Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique

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Data Availability Statement: The data underlying the results presented in the study are available from the DHS Program website (<https://dhsprogram.com/>)

Abstract

Introduction

Empowerment is considered pivotal for how women access and use health care services and experience their sexual and reproductive rights. In Mozambique, women's empowerment requires a better understanding and contextualization, including looking at factors that could drive empowerment in that context. This study aims to identify socioeconomic, demographic, and behavioural determinants of different domains of women's empowerment in Mozambique.

Methods

Using the Demographic and Health Survey (DHS) conducted in 2015 for Mozambique, a sample of 2072 women aged between 15 and 49 years old were included in this study. The DHS's indicators of women's empowerment were used in a principal component analysis and the obtained components were identified as the domains of empowerment. Logistic regressions were run to estimate the association of socioeconomic, demographic, and behavioural characteristics with each domain of empowerment. Crude and adjusted odds ratios (OR) and respective 95% confidence intervals (95% CI) were calculated.

Results

Three domains of women's empowerment were identified, namely (1) Beliefs about violence against women, (2) Decision-making, and (3) Control over sexuality and safe sex. Region, rurality, the experience of intimate partner violence (IPV) and partner's controlling behaviours were associated with Beliefs about violence against women, while Decision-making and Control over sexuality and safe sex were also associated with education, age and wealth. Employment, polygamous marriage and religion was positively associated with

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Results

Three domains of women's empowerment were identified, namely 1. Beliefs about violence against women, 2. Decision-making, and 3. Control over sexuality and safe sex. Region, rurality, the experience of intimate partner violence (IPV) and partner's controlling behaviours were associated with Beliefs about violence against women, while Decision-making and Control over sexuality and safe sex were also associated with education, age and wealth. Employment, polygamous marriage and religion was positively associated with Decision-making, and access to media increased the odds of Control over sexuality and safe sex.

Conclusion

Women's empowerment seems to be determined by different socio-economic, demographic, and behavioural factors and this seems to be closely related to different domains of empowerment identified. This finding affirms the multi-dimensionality of empowerment as well as the importance of considering the context- and community-specific characteristics.

Keywords

Empowerment; women; social determinants; Mozambique

Introduction

The Sustainable Development Goals (SDGs), launched in 2015, called for a global effort in the reduction of gender inequality and promotion of empowerment of women and girls, identifying these as priorities to be achieved in the next 15 years by countries around the world (1). Women's empowerment is not only a mechanism to tackle gender inequalities, but also an end in itself by reinstating the opportunity for women to enjoy full sexual and reproductive health care and rights as well as have an active and recognized participation in society and the economy (1).

The definition of empowerment varies across the literature (2), but it can generally be described as the ability to exercise choice and free decision-making where this was previously denied (3). Evidence suggests that empowered women are more able to make fertility decisions, use contraceptives and have increased communication with their partners (4,5). Empowerment results from the combination of two essential components, 1. preconditions such as education or income; and 2. agency, which consists of the actual act of choosing and making decisions. Education and income are described as essential preconditions to the process of empowerment (3,6,7), however, some studies suggest that there are other socioeconomic factors, namely women's age, age at marriage, income of the household, religion, access to land or property, among others, that can determine women's level of empowerment (8,9).

Despite the recognition of the benefits of women's empowerment, the 2018 SDG report on goal number 5 showed that sociocultural norms and attitudes are persistent hindering factors in women's abilities to make free decisions (10). At the basis of restrictive social and cultural norms and attitudes are gender power imbalances and inequalities, where women's decision-making regarding their own lives, health, reproduction and/or use of family planning is oftentimes undermined or non-existent (11,12).

In Mozambique, the government is committed to tackling gender inequalities and power imbalances impacting on sexual and reproductive health and rights (13,14), focussing among other aspects on addressing gender barriers to health care, increasing girls' access to education, as well as reduction of violence against girls. Despite these efforts, gender inequality is still a critical barrier and men remain the gatekeepers of decision-making related to women's sexual and reproductive health (11,13,15). Women have little say and control about their fertility, the use of contraceptives and family planning (16). Moreover, important indicators of women's health fall behind the international goals for Mozambique, including the maternal mortality ratio, estimated at 289 deaths per 100,000 live births in 2017 (17,18),

fertility levels (Fertility rate: 5.2 in 2016 and 4.8 in 2019) (17,18) and prevalence of use of modern contraceptives (25% in 2015 to 35% in 2019) (19).

Empowerment is considered pivotal for how women access and use health care services and experience their sexual and reproductive rights (12). Therefore, a better understanding of the process of women's empowerment and the factors associated with it could benefit health and gender strategies and interventions in Mozambique. This study aimed to identify the characteristics of women's life that can determine empowerment in Mozambique. To achieve this, the study was performed in two steps: (1) to identify the domains of women's empowerment in Mozambique and (2) to identify socioeconomic, demographic, and behavioural determinants of these domains of empowerment.

Methods

Data source

This study used data from the most recent Demographic Health Survey (DHS) conducted in Mozambique that included information needed for this analysis (2015). The DHS is part of a USAID program that supports countries to monitor and evaluate their demographic and health parameters at national and subnational levels (20).

The DHS 2015 for Mozambique was a population-based survey, including all 11 provinces which combined indicators from the HIV/AIDS indicator survey (AIS), the Malaria Indicator Survey (MIS) and the general DHS, including a range of indicators about population, health and nutrition (21). Specifically, it encompassed information on socioeconomic and demographic characteristics of the participants, infant's vaccination, malaria, HIV (knowledge, testing and incidence and prevalence), fertility and fertility preferences, family planning, antenatal care, women's empowerment and domestic violence.

The DHS followed a rigorous population sampling process to ensure national, regional, urban, and rural representativeness. The survey was piloted in non-selected areas of the country, and changes made for improving clarity and adequacy of the questions. Interviewers received theoretical and practical training for the field work. A total of 25 teams were organised and distributed across the country. These included a supervisor, interviewers, and a person responsible to capture the data electronically.

Data was collected from all women and men, aged 15 to 59, residents or visitors that spent the night prior to the interview in one of the selected households. From the 7368 selected households, a total of 7129 were included in the survey, and 7749 women and 5283 men

were interviewed (21). Data were initially collected in paper forms, and immediately entered electronically in a data base.

This study includes women of reproductive age (15 to 49 years), who answered all sections of the survey, namely the section about empowerment including only women that were married or in a union, and the section on violence which was applied to a sub-sample of the female participants. Following these criteria, 2072 women were included in this analysis.

Outcome variables

Empowerment indicators

The DHS 2015 survey was screened, and the relevant questions related to women's empowerment were identified. This process of identification was guided by current evidence available (8,9,22,23), theoretical plausibility, and by the definition of empowerment used in this study. Empowerment was defined as having the power to control and freely decide over one's life and body to achieve valued or best-perceived outcomes. This definition is based on Kabeer's conceptualization of empowerment (3) and it incorporates the capability approach as a well-being measurement initially developed by Amartya Sen (24) and later adapted to health and empowerment studies (22).

The selected DHS empowerment indicators were related to decision-making within the household, justified beating and decisions about sexual intercourse. Similar to other approaches, these indicators were coded into a 3-point scale (i.e. values of -1, 0, 1) so that the highest value was given to categories considered to indicate greater level of empowerment (23). This approach allowed to distinguish between women who were empowered in a particular area, from those who had some level of empowerment, and from those who were completely disempowered. More detail about the selected indicators of empowerment, and respective codes, used in the subsequent analysis can be found in the 5.1S1 Table of the supporting information.

Independent variables

Socioeconomic, demographic and behavioural indicators

Using the same Mozambique DHS, socioeconomic, demographic and behavioural indicators that could be related to different empowerment levels were selected, guided by the WHO Social Determinants of Health Model, as well as recent evidence on determinants of women's empowerment (9,11,12,25).

The socioeconomic and demographic variables included in the analysis were age (Less or equal to 19, 20-29, 30-39, 40-49 years), education (No education, Primary - 1st to 7th grade, secondary and above - 8th and above), current employment situation (Working, Not working), age of first co-habitation (10 to 14, 15 to 19, 20 and above years), polygamous marriage (Not polygamous, Polygamous, Doesn't know), religion (Catholic, Protestant, Islam, Evangelist, Zion, Other and non-religious).

The 11 provinces were used in the analysis and combined in three regions following the official aggregation of provinces by the Mozambique Government (26): South – Maputo city, Maputo Province, Inhambane and Gaza; Centre – Sofala, Manica, Tete and Zambezia; and, North – Niassa, Cabo Delgado and Nampula. Urban or rural area of residency was also considered.

Wealth index, as computed by the DHS, is a composite measure based on the household cumulative living standards, namely the ownership of televisions and bicycles; the materials used for housing construction; and types of water access and sanitation facilities. Wealth index quintiles (poorest, poor, middle, rich, richest) was used in the analysis.

The indicator Access to media was created based on three variables which were the frequency (not at all, less than once a week, at least once a week) of reading a newspaper or magazine, of listening to the radio, and of watching TV. If the participant answered at least once a week to any of these options, it was coded 2, less than once a week it was coded 1, and if not at all it was coded as 0.

Women's exposure to controlling behaviours and domestic violence from their partners or husbands was also included in the analysis. The rationale for the inclusion of these behavioural indicators is the likelihood of these influencing the levels of empowerment of women, working most likely as a barrier to the process of empowerment. In some studies these indicators are included as measurements of empowerment (8,27,28), however, it does not fit the definition of empowerment used in this study. A variable showing the total number of controlling behaviours reported by women was computed and then transformed into a binary indicator, coded as "No control" and "At least one type of control". For domestic violence (hereafter: intimate partner violence), three variables were used to generate a new binary variable showing if women had ever experienced any type of violence perpetrated by her husband/partner.

Data analysis

Descriptive measures of the socioeconomic, demographic and behavioural indicators and women's empowerment indicators by region were calculated, using cross-tabulation and chi-squared tests to compare proportions across regions.

Then, a principal component analysis (PCA) was carried out. PCA is a technique to transform a data set with a large number of indicators into a smaller data set of uncorrelated indicators, while capturing as much as possible of the variation of the original data set (29). This procedure allows assessment of clustering patterns of empowerment indicators and the contribution (weight) for each component. PCA has been applied in studies on women's empowerment to avoid ad hoc estimation of summary scores in which each indicator has an equal contribution (8,23,30) From the scree plot of the PCA results, the significant components (eigenvalue above 1) were retained. An orthogonal varimax rotation was applied after confirming no correlation between the retained components, an essential criterium for this type of rotation (31–33). The retained components represented the domains of women's empowerment identified for Mozambique. The Kaiser Meyer-Olkin (KMO) measure of sampling adequacy was then applied to test how suitable the data is for PCA.

Domain-specific empowerment indexes were calculated using the PCA factors scores. Each domain index was divided into quintiles from most empowered women (5th quintile) to least (1st quintile). The quintiles were then categorized as most vs the lesser empowered women (all groups below 5th quintile) for analysis (23). Using logistic regression, we estimated the association of socioeconomic, demographic and behavioural characteristics and empowerment for each domain. The fit of the empowerment domains across regions was assessed through an interaction term/test between each domain and region. No significant differences were found therefore the results are presented together for all regions. The variable region was included in the final model. Crude and adjusted odds ratios (OR) and respective 95% confidence intervals (95% CI) were calculated. STATA® version 16 (34) was used for all data analysis. The final models were adjusted for women's education, as research has shown that education is strongly associated with both empowerment and the other socio-economic, demographic, and behavioural characteristics included in the study. By adjusting for education, we aimed to assess if the associations found between the selected characteristics and empowerment were independent of the educational level of women. The inclusion of the different characteristics in the final models were informed by both theoretical and/or statistical justification (significance level set at 0.05).

Results

The characteristics of the women included in the analysis are presented in Table 3. There were statistically significant differences among women from different regions across all socioeconomic, demographic and behavioural characteristics. Women from the South, including women from the capital city, Maputo, were slightly older, more educated, were likely to be employed, belonged to the richer or richest wealth quintiles and had more access to media than women from the centre and north regions. They were also older at the age of the first cohabitation and were less involved in polygamous marriages. On the other hand, women from the southern region were more exposed to controlling behaviours from the partner and intimate partner violence when compared to women from the centre and north regions (Table 3).

Table 3: Socioeconomic, demographic and behavioural characteristics of women included in the study (paper 1).

	Total	South	Centre	North
N	2072	627	843	602
Age (years)				
Less or equal to 19	164 (7.9)	25 (4.0)	74 (8.8)	65 (10.8)
20-29	849 (41.0)	241 (38.4)	372 (44.1)	236 (39.2)
30-39	626 (30.2)	220 (35.1)	245 (29.1)	161 (26.7)
40-49	433 (20.9)	141 (22.5)	152 (18.0)	140 (23.3)
Education¹				
No education	604 (29.2)	106 (16.9)	292 (34.6)	206 (34.2)
Primary (1 st to 7 th grade)	1086 (52.4)	374 (59.7)	410 (48.6)	302 (50.2)
Secondary and above (8 th and above)	382 (18.4)	147 (23.4)	141 (16.7)	94 (15.6)
Currently employed				
Yes	912 (44.0)	334 (53.3)	361 (42.8)	217 (36.1)
Age of first cohabitation (years)				
10 to 14	368 (17.8)	50 (8.0)	152 (18.0)	166 (27.6)
15 to 19	1154 (55.7)	363 (57.9)	470 (55.8)	321 (53.3)
20 or above	550 (26.5)	214 (34.1)	221 (26.2)	115 (19.1)
Polygamous marriage				
No polygamous	1603 (77.4)	515 (82.1)	610 (72.4)	478 (79.4)
Polygamous	406 (19.6)	81 (12.9)	206 (24.4)	119 (19.8)
Does not know	63 (3.0)	31 (4.9)	27 (3.2)	5 (0.8)
Urban vs rural residency				
Rural	1321 (63.8)	338 (53.9)	574 (68.1)	409 (67.9)
Religion				
Catholic	494 (23.8)	94 (15.0)	161 (19.1)	239 (39.7)
Protestant	402 (19.4)	169 (27.0)	219 (26.0)	14 (2.3)
Islamic	372 (18.0)	19 (3.0)	39 (4.6)	314 (52.6)
Evangelical	254 (12.3)	133 (21.2)	105 (12.5)	16 (2.7)
Zion	299 (14.4)	152 (24.2)	145 (17.2)	2 (0.3)
Other	75 (3.6)	17 (2.7)	48 (5.7)	10 (1.7)
No-religion	176 (8.5)	43 (6.9)	126 (15.0)	7 (1.2)
Wealth index				
Poorest	337 (16.3)	12 (1.9)	162 (19.2)	163 (27.1)
Poorer	381 (18.4)	22 (3.5)	204 (24.2)	155 (25.8)

	Total	South	Centre	North
Middle	430 (20.8)	105 (16.8)	204 (24.2)	121 (20.1)
Rich	475 (22.9)	233 (37.2)	143 (17.0)	99 (16.5)
Richest	449 (21.7)	255 (40.7)	130 (15.4)	64 (10.6)
Access to media²				
No access	978 (47.3)	226 (36.0)	406 (48.2)	346 (57.7)
Less than once a week	366 (17.7)	86 (13.7)	180 (21.4)	100 (16.7)
At least once a week	726 (35.1)	315 (50.2)	257 (30.5)	154 (25.7)
Partner controlling behavior				
At least one type	881 (42.5)	311 (49.6)	330 (39.2)	240 (39.9)
IPV* exposure³				
Yes	471 (22.8)	181 (29.1)	189 (22.4)	101 (16.8)

Note: All subcategories for each variable are statistically significant at a p-value .001. ¹ Based on the previous education system organization. System changed in 2018. ² Missing=2; ³ Missing=5; *IPV – Intimate partner violence

Table 4 describes the empowerment indicators of women at regional level, where some statistically significant differences could be observed. Generally, women from the south were more able to make decisions than those from the centre and north (p-value <.001) regions. Most women reported that beating is not justified in any situations across all regions. Interestingly, justified beating in any category was generally the highest in the south region; however, there were no statistically significant differences between regions, except in the category woman refuses to have sex (p-value=.005). Women from the south also reported more that women can ask the partner for the use of a condom in sexual intercourse and refuse sex, while the centre region presented the lowest percentage (p-value <.001).

Table 4: Indicators of empowerment among women by region (paper 1).

Indicators	Total	South	Centre	North	p-value
N	2072	627	843	602	
Who usually decides on:					
woman's health care					
Woman alone	428 (20.7)	165 (26.3)	189 (22.4)	74 (12.3)	<.001
Jointly	1271 (61.3)	396 (63.2)	474 (56.2)	401 (66.6)	
Partner or other alone	373 (18.0)	66 (10.5)	180 (21.4)	127 (21.1)	
large purchases for the household					
Woman alone	461 (22.3)	184 (29.4)	207 (24.6)	70 (11.6)	<.001
Jointly	1168 (56.4)	373 (59.5)	429 (50.9)	366 (60.8)	
Partner or other alone	443 (21.4)	70 (11.2)	207 (24.6)	166 (27.6)	
visit family and friends					
Woman alone	396 (19.1)	135 (21.5)	164 (19.5)	97 (16.1)	<.001
Jointly	1297 (62.6)	407 (64.9)	488 (57.9)	402 (66.8)	
Partner or other alone	379 (18.3)	85 (13.6)	191 (22.7)	103 (17.1)	
Beating justified if:					
wife goes out without telling husband					
Not Justified	1890 (91.2)	576 (91.9)	755 (89.6)	559 (92.9)	0.070
Don't know	13 (0.6)	1 (0.2)	9 (1.1)	3 (0.5)	

Indicators	Total	South	Centre	North	p-value
Justified	169 (8.2)	50 (8.0)	79 (9.4)	40 (6.6)	
wife neglects the children					
Not Justified	1976 (95.4)	597 (95.2)	811 (96.2)	568 (94.4)	0.174
Don't know	12 (0.6)	2 (0.3)	7 (0.8)	3 (0.5)	
Justified	84 (4.1)	28 (4.5)	25 (3.0)	31 (5.2)	
wife argues with husband					
Not Justified	1924 (92.9)	581 (92.7)	783 (92.9)	560 (93.0)	0.172
Don't know	18 (0.9)	1 (0.2)	10 (1.2)	7 (1.2)	
Justified	130 (6.3)	45 (7.1)	50 (5.9)	35 (5.8)	
wife refuses to have sex					
Not Justified	1912 (92.3)	568 (90.6)	795 (94.3)	549 (91.2)	0.005
Don't know	32 (1.5)	6 (1.0)	14 (1.7)	12 (2.0)	
Justified	128 (6.2)	53 (8.5)	34 (4.0)	41 (6.8)	
wife burns the food					
Not Justified	2008 (96.9)	609 (97.1)	823 (97.6)	576 (95.7)	0.070
Don't know	19 (0.9)	2 (0.3)	8 (1.0)	9 (1.5)	
Justified	45 (2.2)	16 (2.6)	12 (1.4)	12 (2.8)	
A woman can:					
ask husband/partner to use condom if he has STI¹					
No	504 (24.3)	98 (15.6)	267 (31.7)	139 (23.1)	<.001
Yes	1277 (61.6)	498 (79.4)	430 (51.0)	349 (58.0)	
Does not know	291 (14.0)	31 (4.9)	146 (17.3)	114 (18.9)	
ask husband/partner to use condom					
No	737 (35.7)	140 (22.3)	380 (45.1)	217 (36.1)	<.001
Yes	1090 (52.6)	449 (71.6)	342 (40.6)	299 (49.7)	
Does not know	245 (11.8)	38 (6.1)	121 (14.4)	86 (14.3)	
refuse sex					
No	547 (26.4)	104 (16.6)	313 (37.1)	130 (21.6)	<.001
Yes	1378 (66.5)	504 (80.4)	433 (51.4)	441 (73.3)	
Does not know	147 (7.1)	19 (3.0)	97 (11.5)	31 (5.2)	

¹ STI, Sexually transmitted infection

With the PCA three significant components were retained. The three retained components explained 25%, 19%, and 16% of the total variance, respectively, adding up to 60%. The KMO test value was 0.75 therefore we consider the sampling adequate for PCA. The retained components were then identified as empowerment domains and included: Beliefs about violence against women; Decision-making; and Control over sexuality and safe sex. The factor loadings of each indicator within each component are presented on supporting information 5.1S2 Table.

Table 5 shows the crude and adjusted OR for the association between the socio-economic, demographic, and behavioural characteristics and the different domains of empowerment.

After adjusting for woman's education, we observed that age, education, current employment, age of first cohabitation, polygamous marriage and the wealth index were not

associated with the domain Beliefs about violence against women. However, experiencing at least one type of controlling behaviour, being exposed to IPV, having access to media, and living in the South region of Mozambique was significant and negatively associated with being empowered in this domain, which seems to indicate that these factors are determinants of lower levels of empowerment for Beliefs about violence against women. Rurality had significant and positive impact on this domain.

Table 5: Determinants of most empowered women for each domain of empowerment (paper 1).

	Beliefs about violence against women		Decision-making		Control over sexuality and sex	
	cOR (95% CI)	aOR (95% CI) ¹	cOR (95% CI)	aOR (95% CI) ¹	cOR (95% CI)	aOR (95% CI) ¹
Age (years)						
Less or equal to 19	1	1	1	1	1	1
20-29	0.89 (0.60, 1.33)	0.90 (0.61, 1.35)	1.59 (1.00, 2.53)	1.56 (0.98, 2.48)	0.81 (0.51, 1.28)	0.78 (0.49, 1.24)
30-39	0.68 (0.44, 1.03)	0.70 (0.46, 1.06)	1.82 (1.13, 2.92)	1.96 (1.22, 3.16)	0.64 (0.39, 1.03)	0.72 (0.44, 1.17)
40-49	0.76 (0.49, 1.18)	0.78 (0.50, 1.21)	1.62 (0.99, 2.64)	1.76 (1.10, 2.90)	0.45 (0.26, 0.76)	0.51 (0.30, 0.89)
Education						
No education	1	1	1	1	1	1
Primary	1.24 (0.96, 1.61)	1.24 (0.96, 1.61)	1.21 (0.94, 1.56)	1.21 (0.94, 1.56)	1.69 (1.18, 2.40)	1.69 (1.18, 2.41)
Secondary or above	1.16 (0.84, 1.61)	1.16 (0.84, 1.61)	1.68 (1.24, 2.28)	1.68 (1.24, 2.28)	2.98 (2.01, 4.43)	2.98 (2.01, 4.43)
Currently employed						
No	1	1	1	1	1	1
Yes	0.97 (0.78, 1.21)	0.97 (0.78, 1.21)	1.64 (1.33, 2.03)	1.65 (1.33, 2.03)	0.94 (0.72, 1.22)	0.93 (0.71, 1.22)
Age of first cohabitation (years)						
10 to 14	1	1	1	1	1	1
15 to 19	1.05 (0.78, 1.42)	1.03 (0.76, 1.38)	0.81 (0.62, 1.08)	0.76 (0.58, 1.01)	1.39 (0.94, 2.06)	1.22 (0.82, 1.83)
20 or above	0.95 (0.68, 1.33)	0.94 (0.67, 1.33)	0.89 (0.65, 1.22)	0.82 (0.60, 1.12)	1.48 (0.96, 2.28)	1.26 (0.81, 1.95)
Polygamous marriage						
No polygamous	1	1	1	1	1	1
Polygamous	0.91 (0.69, 1.20)	0.92 (0.70, 1.22)	1.60 (1.25, 2.06)	1.73 (1.34, 2.24)	0.61 (0.42, 0.90)	0.69 (0.47, 1.02)
Does not know	0.76 (0.38, 1.50)	0.77 (0.39, 1.52)	2.73 (1.63, 4.60)	2.80 (1.66, 4.73)	0.84 (0.38, 1.86)	0.86 (0.38, 1.92)
Region						
North	1	1	1	1	1	1
Centre	0.88 (0.68, 1.14)	0.88 (0.68, 1.15)	1.63 (1.23, 2.16)	1.62 (1.22, 2.16)	1.17 (0.82, 1.67)	1.17 (0.82, 1.67)
South	0.77 (0.58, 1.03)	0.74 (0.55, 0.99)	2.56 (1.92, 3.42)	2.47 (1.85, 3.30)	2.00 (1.41, 2.83)	1.80 (1.26, 2.56)
Rural vs Urban						
Urban	1	1	1	1	1	1
Rural	1.24 (0.98, 1.56)	1.36 (1.05, 1.75)	0.85 (0.69, 1.10)	1.00 (0.79, 1.28)	0.51 (0.39, 0.66)	0.65 (0.48, 0.87)
Religion						
Catholic	1	1	1	1	1	1
Islamic	0.92 (0.66, 1.28)	0.92 (0.66, 1.29)	0.78 (0.54, 1.12)	0.80 (0.55, 1.15)	0.70 (0.45, 1.09)	0.73 (0.47, 1.14)
Protestant	0.86 (0.62, 1.20)	0.87 (0.62, 1.20)	1.51 (1.10, 2.08)	1.54 (1.12, 2.13)	1.17 (0.80, 1.73)	1.23 (0.83, 1.81)

	Beliefs about violence against women		Decision-making		Control over sexuality and sex	
	cOR (95% CI)	aOR (95% CI) ¹	cOR (95% CI)	aOR (95% CI) ¹	cOR (95% CI)	aOR (95% CI) ¹
Evangelical	0.84 (0.57, 1.23)	0.83 (0.56, 1.21)	1.71 (1.19, 2.44)	1.67 (1.17, 2.40)	1.00 (0.64, 1.59)	0.95 (0.60, 1.51)
Zion	0.95 (0.67, 1.35)	0.95 (0.66, 1.35)	1.56 (1.10, 2.20)	1.67 (1.17, 2.37)	0.92 (0.59, 1.44)	1.04 (0.67, 1.63)
Other	0.38 (0.17, 0.85)	0.38 (0.17, 0.86)	1.42 (0.80, 2.52)	1.48 (0.83, 2.64)	1.33 (0.68, 2.60)	1.44 (0.73, 2.84)
No religion	0.92 (0.60, 1.41)	0.94 (0.61, 1.45)	1.24 (0.81, 1.89)	1.35 (0.88, 2.08)	0.70 (0.39, 1.24)	0.83 (0.46, 1.50)
Wealth index						
Poorest	1	1	1	1	1	1
Poorer	1.13 (0.79, 1.62)	1.10 (0.77, 1.58)	1.47 (1.00, 2.16)	1.45 (0.98, 2.14)	0.88 (0.50, 1.54)	0.85 (0.48, 1.50)
Middle	0.96 (0.67, 1.37)	0.92 (0.65, 1.32)	1.50 (1.03, 2.20)	1.47 (1.01, 2.16)	1.29 (0.78, 2.16)	1.24 (0.74, 2.08)
Richer	0.81 (0.57, 1.56)	0.73 (0.51, 1.06)	1.65 (1.14, 2.38)	1.53 (1.05, 2.23)	1.73 (1.07, 2.80)	1.51 (0.92, 2.48)
Richest	0.88 (0.62, 1.26)	0.75 (0.50, 1.12)	2.05 (1.42, 2.94)	1.75 (1.17, 2.62)	3.21 (2.02, 5.08)	2.54 (1.53, 4.21)
Access to media						
No access	1	1	1	1	1	1
Less than once a week	0.82 (0.61, 1.11)	0.79 (0.59, 1.08)	1.28 (0.96, 1.71)	1.23 (0.93, 1.65)	1.36 (0.93, 2.01)	1.27 (0.86, 1.88)
At least once a week	0.75 (0.59, 0.96)	0.68 (0.52, 0.89)	1.27 (1.01, 1.60)	1.09 (0.84, 1.41)	2.01 (1.49, 2.70)	1.56 (1.13, 2.15)
Partner controlling behavior						
No control	1	1	1	1	1	1
At least one type	0.70 (0.56, 0.87)	0.69 (0.55, 0.87)	1.45 (1.17, 1.79)	1.41 (1.14, 1.74)	2.10 (1.60, 2.75)	1.99 (1.52, 2.61)
IPV exposure						
No	1	1	1	1	1	1
Yes	0.72 (0.54, 0.95)	0.71 (0.54, 0.93)	1.64 (1.30, 2.08)	1.58 (1.25, 2.01)	1.51 (1.13, 2.03)	1.39 (1.03, 1.87)

¹Adjusted for education.

After adjusting for education, Decision-making domain of empowerment was significantly and positively associated with women of older age, more educated, currently working, living in South or Centre regions and with increased levels of wealth (Table 5). IPV and controlling behaviours from the partners, were also statistically and positively associated with higher decision-making power. No associations were found between this domain of empowerment and age of first cohabitation, access to media and rural vs. urban residency.

Current employment, age at first cohabitation, polygamous marriage and religion were not associated with Control over Sexuality and safe sex after adjusting for women's education. However, having some education, living in the South region, being among the richest wealth quintile, having access to media at least once a week as well as experiencing IPV or partner's controlling behaviour had a significant and positive impact in women's empowerment level for this domain, after adjusting for education (Table 5). Being 40 to 49 years old and living in a rural area were significantly and negatively associated with women's control over their sexuality.

Discussion

This study identified three domains of women's empowerment for Mozambique which included Beliefs about violence against women, Decision-making and Control over sexuality and safe sex. Similar results were found in other studies conducted in African contexts, despite differences in the order of and contribution of each indicator for each domain (23,35,36). Despite the benefits of having standardized and comparable data across countries, DHS has few empowerment indicators, which may limit its capacity to grasp contextual specificities (4,23). Some studies attempt to overcome this limitation by using other indicators as proxies of empowerment, such as women's education, income or access to information. However, this has been identified as problematic, raising issues around conceptualization and operationalization of empowerment and contributing to inconclusive results (2,4,5,35). In order to minimize this limitation, a conservative approach was adopted in this study, where the selected indicators of women's empowerment included only those linked to actions or beliefs which could lead to actions taken by women themselves, and then we identified associated factors that may contribute to improving each empowerment domain of women's lives.

Our findings suggest that the domain of empowerment Beliefs about violence against women is shaped by the community and contextual determinants like region, place of residency (rural vs. urban) and the partner's behaviour, rather than by women's individual characteristics. The importance of community factors for impeding or facilitating women's

empowerment and its relationship with violence against women has been described in other contexts (37). Additional to community and/or contextual determinants, individual characteristics of women like education, age or wealth, also seem to play a role in determining empowerment in the domain Decision-making and Control over sexuality and safe sex in Mozambique, similar to findings from other studies (35,36). Our findings could be explained by the fact that women's individual beliefs are rooted in socio-cultural norms and traditional practices embedded in patriarchal systems, learned and maintained by the community where women live (38,39) and oftentimes perpetuated by women themselves (37,39,40). Despite the matrilineal societal organization of the north region, Mozambique is a patriarchal society with rigid gender norms that retain men in power positions (41,42). While education, wealth, age, and employment are assets or resources that women use in the process of decision-making and choice (36), therefore playing an important role in the other two domains: Decision-making and Control over sexuality and safe sex.

Partners controlling behaviour and IPV were found to be important determinants of curtailing women's empowerment in Mozambique. This is aligned with findings from studies in other sub-Saharan African countries (38,43–45). A study involving 17 African sub-Saharan countries, including Mozambique, showed that IPV is socially and culturally acceptable, giving the partner the right to control and "correct" an erring wife or woman (39). However, when women are empowered for Decision-making and Control over sexuality, they likely become enabled to identify and report on abusive experiences (38). Furthermore, available evidence suggests that when women enter the pathway of empowerment they may challenge gender norms and gender power relations, which might initially expose them to a greater risk of experiencing violence and controlling behaviours perpetrated by partners, referred to as violence backlash (37,38,43,46). However, there is evidence suggesting that empowerment can become protective against IPV throughout time, where the empowered women are less likely to be perceived as transgressing the gender norms (47). Two conclusions can be drawn from these results: each domain of empowerment is measuring different aspects of a woman's life, and there are unique pathways towards empowerment for each domain.

Education and employment have been consistently described in the literature as a key element for women's empowerment (48). Some studies have shown that the effect of women's education on institutional delivery was mediated by the different domains of empowerment (35,36). Our results are consistent with the literature about the role of education, however, they showed that being employed was only associated with Decision-making. The available evidence for the African context raises questions about the contribution of employment for women's status and empowerment (35,36). In some sub-

Saharan African countries, where women get paid not only in cash but also in-kind, or not paid at all, it is possible that not all of these offer a way to empowerment. Furthermore, women may not have the power to manage the generated income. Wealth and age were also associated with women's Decision-making and Control over sexuality and safe sex domains of empowerment, similar to what has been described in the literature for different women's empowerment domains (35,49,50).

Our findings suggest that the region plays a role in determining the level of empowerment in different domains while the role of place of residency (rural vs urban) is less clear. These findings are aligned with the available evidence (9,35,36,43,44). The negative association between tolerance to violence against women and the south region could be evidence of the patrilineal organization of the southern region of Mozambique (42). However, the higher access to education and urbanization of the south could promote more positive gender-based views when comparing to the north and centre regions. Despite the observed differences across regions, in the final model, the variable region did not change the associations found (results not showed). Notwithstanding, the region could be reflecting cultural specificities that should be considered when putting forward interventions aiming to empowerment women.

The current evidence for the relationship between access to media and empowerment is inconclusive with studies reporting different or no association (12,39,45). The media are both the vehicle of messages promoting gender equality and preventing violence against women as well as a place that perpetuates messages based on gender norms and gender inequalities based on the culture and social beliefs (44,51), and this in part explains the positive and negative relationships with empowerment found in our study. There is a need for further research and analysis on media and women's empowerment in Mozambique.

Strengths and limitations

The study's strength relates to the use of a large sample of women of reproductive age, from a population-based survey, which allowed generalizability of the findings for Mozambique. Nevertheless, the study has some limitations that should be considered. First, the DHS is a cross-sectional survey hence it cannot be used to infer causality. As empowerment is the process of gaining power, its effect should ideally be examined using longitudinal data which would allow perspective over time. Second, empowerment indicators available in the DHS involved only partnered women. This is related to a gap in empowerment literature about young and/or unmarried women. Empowered women might not be married or may marry later in life, but there is a persistent lack of data and specific indicators targeting this group of women (23). A third limitation was the use of a cut-off point in the analysis to identify and

define women with a high level of empowerment. There is no evidence available supporting how and what level of women's empowerment should be considered high or satisfactory, however, the use of quintiles offered a consistent way of doing that (the fifth quintile implying empowered women), and has been used in previous studies (23). Finally, this study focused on quantitative measures of empowerment, limited by the available data. It is possible that this data is not capturing all the domains of empowerment in the context of Mozambique. Further research, in particular qualitative research, should be conducted to fully explore domains and determinants of empowerment.

Conclusion

In Mozambique, women's empowerment seems to be determined by socio-economic, demographic, and behavioural factors, and this seems to be closely related to the different domains of empowerment identified. This finding affirms the multidimensionality of empowerment as well as the importance of considering context- and community-specific characteristics. Education of women and girls seems to play an important role for empowerment, and is an area requiring continued investment not only by the Mozambican government but also by organisations working in women's empowerment. Not surprisingly, IPV and partners' controlling behaviours were found to be important barriers to women's empowerment. The region of residency due to cultural and societal organization differences was shown to play a crucial role in women's empowerment. This not only highlights the need to capture the nuances of empowerment in each context, but also for the need to tailor and contextualise interventions and programmes. This study offers a step forward in understanding women's empowerment in Mozambique, however further studies are needed, particularly of a qualitative nature, to explore women's understanding and experiences of empowerment.

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References

1. United Nations. The Sustainable Development Goals Report. New York; 2019.

2. Gram L, Morrison J, Skordis-Worrall J. Organising concepts of 'women's empowerment' for measurement: A typology. *Soc Indic Res* [Internet]. 2019;143(3):1349–76. Available from: <https://doi.org/10.1007/s11205-018-2012-2>
3. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30(3):435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>
4. Upadhyay UD, Gipson JD, Withers M, Lewis S, Fraser CS, Huchko MJ, et al. Women's empowerment and fertility: A review of the literature. 2014;31(9):1713–23.
5. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017/01/10. 2017 Nov;49(6):713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>
6. Cornwall A. Women's empowerment: What works? *J Int Dev* [Internet]. 2016 Apr 1;28(3):342–59. Available from: <https://doi.org/10.1002/jid.3210>
7. Cornwall A. Addressing the preconditions: Women's rights and development. 2002; Available from: http://www.pathwaysofempowerment.org/archive_resources/addressing-the-preconditions-women-s-rights-and-development-in-financing-gender-equality-commonwealth-perspectives
8. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>
9. Samari G. Women's empowerment in Egypt: The reliability of a complex construct. *Sex Reprod Heal matters* [Internet]. 2019 Dec;27(1):1586816. Available from: <https://pubmed.ncbi.nlm.nih.gov/31533567>
10. United Nations Population Fund (UNFPA). Tracking women's decision-making for sexual and reproductive health and reproductive rights. New York; 2020.
11. United Nations Population Fund (UNFPA). Ensure universal access to sexual and reproductive health and reproductive rights. Measuring SDG Target 5.6. New York; 2020.
12. United Nations Population Fund (UNFPA). Global Goals Indicators 5.6.1. Research on factors that determine women's ability to make decisions about sexual and reproductive health and rights. Vol. I. 2019.
13. Ministério do Género Criança e Acção Social. Perfil de Género de Moçambique. Maputo, Moçambique; 2016.
14. Ministério da Saúde (MISAU). Plano Estratégico do Sécutor Saúde 2014-2019. Maputo, Moçambique; 2014.
15. Rachide A. Género e relações de poder na região Sul de Moçambique - uma análise sobre a localidade de Mucotuene na Província de Gaza. *Observador Rural*. Maputo, Moçambique; 2017.

16. Cau BM. Community influences on contraceptive use in Mozambique. *Health Place* [Internet]. 2015;31(Supplement C):10–6. Available from: <http://www.sciencedirect.com/science/article/pii/S135382921400152X>
17. Countdown to 2030. Countdown 2030 country profile: Mozambique [Internet]. 2023 [cited 2023 Jul 4]. Available from: <https://data.unicef.org/countdown-2030/country/Mozambique/1/>
18. Tracking progress towards universal coverage for women's, children's and adolescents' health: The 2017 report. Washington D.C; 2017.
19. Family Planning 2020. FP2020 Data Dashboard: East Africa countries [Internet]. 2019 [cited 2020 Apr 20]. Available from: <http://www.familyplanning2020.org/data-dashboard>
20. Inner City Fund (ICF). The Demographic and health survey program [Internet]. 2020. 2020 [cited 2021 Dec 7]. Available from: <https://dhsprogram.com/What-We-Do/index.cfm>
21. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
22. Mabsout R. Capability and health functioning in Ethiopian households. *Soc Indic Res* [Internet]. 2011 May 6;101(3):359–89. Available from: <http://link.springer.com/10.1007/s11205-010-9661-0>
23. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. 2017 Sep 26;5(9):e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>
24. Sen A. Capability and well-being. In: Nussbaum, Sen, editors. *The Quality of Life*. Oxford: Clarendon Press; 1993.
25. World Health Organization (WHO). Social determinants of health [Internet]. 2020 [cited 2020 Apr 7]. Available from: https://www.who.int/social_determinants/en/
26. Instituto Nacional de Estatística (INE). Anuário estatístico. Maputo, Mozambique; 2018.
27. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-Saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017 Nov; Available from: <https://doi.org/10.1007/s11205-017-1811-1>
28. Pratley P. Associations between quantitative measures of women's empowerment and access to care and health status for mothers and their children: A systematic review of evidence from the developing world. *Soc Sci Med* [Internet]. 2016;169:119–31. Available from: <http://www.sciencedirect.com/science/article/pii/S0277953616304087>
29. Jolliffe I. Principal Component Analysis. In: Lovric M, editor. *International Encyclopedia of Statistical Science* [Internet]. Berlin, Heidelberg: Springer Berlin Heidelberg; 2011. p. 1094–6. Available from: https://doi.org/10.1007/978-3-642-04898-2_455

30. Do M, Kurimoto N. Women's empowerment and choice of contraceptive methods in selected African countries. *Int Perspect Sex Reprod Health*. 2012 Mar;38(1):23–33.
31. Kline P. An easy guide to Factor Analysis [Internet]. Taylor & Francis; 2014. Available from: <https://books.google.co.za/books?id=jlTsAgAAQBAJ>
32. Yaremko RM, Harari H. Handbook of research and quantitative methods in psychology: For students and professionals [Internet]. Lawrence Erlbaum; 1986. Available from: <https://books.google.co.za/books?id=YJzAcoAYLQIC>
33. Dean J. Choosing the right type of rotation in PCA and EFA. *Shiken JALT Test Eval SIG Newsl*. 2009;13(November):20–5.
34. StataCorp. Stata statistical software: Release 16. College Station, TX: StataCorp LLC; 2019.
35. Shimamoto K, Gipson JD. Investigating pathways linking women's status and empowerment to skilled attendance at birth in Tanzania: A structural equation modeling approach. *PLoS One* [Internet]. 2019;14(2):1–16. Available from: <https://doi.org/10.1371/journal.pone.0212038>
36. Shimamoto K, Gipson JD. Examining the mechanisms by which women's status and empowerment affect skilled birth attendant use in Senegal: A structural equation modeling approach. *BMC Pregnancy Childbirth* [Internet]. 2017 Nov 8;17(Suppl 2):341. Available from: <https://pubmed.ncbi.nlm.nih.gov/29143630>
37. Schuler SR, Lenzi R, Badal SH, Bates LM. Women's empowerment as a protective factor against intimate partner violence in Bangladesh: A qualitative exploration of the process and limitations of its influence. *Violence Against Women* [Internet]. 2016/07/07. 2017 Aug;23(9):1100–21. Available from: <https://pubmed.ncbi.nlm.nih.gov/27486126>
38. Ahinkorah BO, Dickson KS, Seidu A-A. Women decision-making capacity and intimate partner violence among women in sub-Saharan Africa. *Arch Public Health* [Internet]. 2018 Jan 29;76:5. Available from: <https://pubmed.ncbi.nlm.nih.gov/29423218>
39. Uthman OA, Lawoko S, Moradi T. Factors associated with attitudes towards intimate partner violence against women: A comparative analysis of 17 sub-Saharan countries. *BMC Int Health Hum Rights* [Internet]. 2009 Dec 20;9(1):14. Available from: <https://bmcinthealthhumrights.biomedcentral.com/articles/10.1186/1472-698X-9-14>
40. McCarthy KJ, Mehta R, Haberland NA. Gender, power, and violence: A systematic review of measures and their association with male perpetration of IPV. *PLoS One* [Internet]. 2018 Nov 29;13(11):e0207091–e0207091. Available from: <https://pubmed.ncbi.nlm.nih.gov/30496217>
41. Capurchande R, Coene G, Schockaert I, Macia M, Meulemans H. "It is challenging... oh, nobody likes it!": A qualitative study exploring Mozambican adolescents and young adults' experiences with contraception. *BMC Womens Health* [Internet]. 2016 Jul 30;16:48. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4967333/>
42. Arnfred S. Sexuality & gender politics in Mozambique: Rethinking gender in Africa. Boydell & Brewer Ltd, editor. James Currey; 2011. 310 p.

43. Cau BM. Area-level normative social context and intimate partner physical violence in Mozambique. *J Interpers Violence* [Internet]. 2017 Apr 21;35(15–16):2754–2779. Available from: <https://doi.org/10.1177/0886260517704960>
44. Cau BM, Agadjanian V. Religion and use of institutional child delivery services: Individual and contextual pathways in Mozambique. *Int Perspect Sex Reprod Health* [Internet]. 2019 May 26;45:35–43. Available from: <http://www.jstor.org/stable/10.1363/45e7719>
45. Darteh EKM, Dickson KS, Doku DT. Women’s reproductive health decision-making: A multi-country analysis of demographic and health surveys in sub-Saharan Africa. *PLoS One* [Internet]. 2019;14(1):1–12. Available from: <https://doi.org/10.1371/journal.pone.0209985>
46. Cools S, Kotsadam A. Resources and Intimate Partner Violence in sub-Saharan Africa. *World Dev.* 2017;95(C):211–30.
47. Schuler SR, Nazneen S. Does intimate partner violence decline as women’s empowerment becomes normative? Perspectives of Bangladeshi women. *World Dev* [Internet]. 2017/10/10. 2018 Jan;101:284–92. Available from: <https://pubmed.ncbi.nlm.nih.gov/29371749>
48. Kabeer N. Reflection on the measurement of women empowerment. In: *Discussing Women’s Empowerment*. SIDA; 2001. p. 136.
49. Kiani Z, Simbar M, Dolatian M, Zayeri F. Correlation between social determinants of health and women’s empowerment in reproductive decision-making among Iranian women. *Glob J Health Sci* [Internet]. 2016 Sep;8(9):312–21. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5064082/>
50. Bushra A, Wajiha N. Assessing the socio-economic determinants of women empowerment in Pakistan. *Procedia - Soc Behav Sci* [Internet]. 2015 Apr;177:3–8. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S1877042815016754>
51. Arnaldo C, Cau BM, Chilundo B, Picardo J, Griffin S. Planeamento familiar e políticas de saúde sexual e reprodutiva em Moçambique. Cepsa. Langa DS, editor. Maputo, Moçambique; 2019.

Supporting material for paper 1

5.1S1 Table: Indicators of empowerment identified in Mozambique DHS 2015.

Selected indicators	Codes	Recoding
Who usually decides on women's health care?	Respondent alone=1; Respondent and husband/partner=2; husband/partner alone=4; Someone else=5; Other=6	Respondent alone =1; Jointly= 0; Partner or other alone= -1
Who usually decides on large purchases for the household?	Respondent alone=1; Respondent and husband/partner=2; husband/partner alone=4; Someone else=5; Other=6	Respondent alone =1; Jointly= 0; Partner or other alone= -1
Who usually decides on visits to family and friends?	Respondent alone=1; Respondent and husband/partner=2; husband/partner alone=4; Someone else=5; Other=6	Respondent alone =1; Jointly= 0; Partner or other alone= -1
Is beating justified if wife goes out without telling husband?	No=0; Yes=1; Don't know=8	Not Justified=1; Don't know=0; Justified =- 1
Is beating justified if wife neglects the children?	No=0; Yes=1; Don't know=8	Not Justified=1; Don't know=0; Justified =- 1
Is beating justified if wife argues with husband?	No=0; Yes=1; Don't know=8	Not Justified=1; Don't know=0; Justified =- 1
Is beating justified if wife refuses to have sex with husband?	No=0; Yes=1; Don't know=8	Not Justified=1; Don't know=0; Justified =- 1
Is beating justified if wife burns the food?	No=0; Yes=1; Don't know=8	Not Justified=1; Don't know=0; Justified =- 1
Can a wife ask a husband/partner to use condom if he has STI?	No=0; Yes=1; Don't know=8	Yes= 1; Don't know=0; No= -1
Can a wife refuse sex?	No=0; Yes=1; Don't know=8	Yes= 1; Don't know=0; No= -1
Can a wife ask the husband/partner to use condom?	No=0; Yes=1; Don't know=8	Yes= 1; Don't know=0; No= -1

5.1S2 Table: Retained components' factor loadings after orthogonal varimax rotation.

	Indicator	Components		
		Beliefs about violence against women	Decision-making	Control over sexuality and safe sex
1	Who usually decides on the respondent's health care	-0.0176	0.5967	-0.0197
2	Who usually decides on large purchases for the household	-0.0075	0.5611	0.0321
3	Who usually decides on visits to family and friends	0.0257	0.5714	-0.0127
4	Beating justified if wife goes out without telling husband	0.4336	-0.0167	-0.0055
5	Beating justified if wife neglects the children	0.4591	-0.0193	-0.0210
6	Beating justified if wife argues with husband	0.4767	-0.0145	-0.0147
7	Beating justified if wife refuses to have sex with husband	0.4545	-0.0103	0.0276
8	Beating justified if wife burns the food	0.4050	0.0266	0.0246
9	Wife justified asking husband to use condom if he has STI	-0.0290	0.0259	0.5264
10	Wife can refuse sex	-0.0154	-0.0148	0.5981
11	Wife can ask the husband to use condom	0.0353	-0.0068	0.6013

5.2 Paper 2: How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique.

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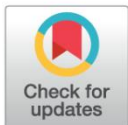
RESEARCH ARTICLE

How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique

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Data Availability Statement: Data can be accessed online on the MEASURE DHS program website. The dataset used for this study was from the Mozambique Survey of Indicators on Immunization, Malaria and HIV/AIDS, 2015 (Mozambique AIS 2015), specifically the Survey dataset which contains individual data for women ("Individual recode" - MZIR71DT.ZIP). The permission to use the data was obtained after submission of the online request at <https://dhsprogram.com>.

Abstract

Women's empowerment could be a crucial step for tackling gender inequality and improve women's reproductive health and rights in Mozambique. This study aims to examine how different domains of women's empowerment influence fertility-related outcomes and contraceptive practices in Mozambique. We used the 2015 Demographic Health Survey (DHS) conducted in Mozambique from which a sample of 2072 women aged 15 to 49 years were selected and included in this analysis. A principal component analysis was performed, and the components retained were identified as the domains of empowerment. These were: Beliefs about violence against women, Decision-making, and Control over sexuality and safe sex. A multinomial logistic regression was run to estimate the association between levels of empowerment for each domain and the study outcomes. Crude and adjusted odds ratio (OR) were calculated, with 95% confidence intervals (95% CI). Beliefs about violence against women and Control over sexuality and safe sex were positively associated with having 1 to 4 children. Control over sexuality and safe sex also increased likelihood of women wanting to space childbearing over more than 2 years. Decision-making increased the odds of women not wanting more children. Middle to high empowerment levels for Control over sexuality and safe sex also increased the chances of using any type of contraceptive method and using it for longer periods. All domains, from the middle to high levels of empowerment, decreased the chances of women not wanting to use contraception. Our study confirmed the multidimensional nature of empowerment showing that each domain had a different effect over specific fertility and contraceptive outcomes and reinforced the importance of a domain approach for estimating and understanding empowerment. It also revealed the critical role of Control over sexuality and safe sex domain for improving women's ability to decide over fertility and contraceptive practices in Mozambique.

Abstract

Women's empowerment could be a crucial step for tackling gender inequality and improve women's reproductive health and rights in Mozambique. This study aims to examine how different domains of women's empowerment influence fertility-related outcomes and contraceptive practices in Mozambique. We used the 2015 Demographic Health Survey (DHS) conducted in Mozambique from which a sample of 2072 women aged 15 to 49 years were selected and included in this analysis. A principal component analysis was performed, and the components retained were identified as the domains of empowerment. These were: Beliefs about violence against women, Decision-making, and Control over sexuality and safe sex. A multinomial logistic regression was run to estimate the association between levels of empowerment for each domain and the study outcomes. Crude and adjusted odds ratio (OR) were calculated, with 95% confidence intervals (95% CI). Beliefs about violence against women and Control over sexuality and safe sex were positively associated with having 1 to 4 children. Control over sexuality and safe sex also increased likelihood of women wanting to space childbearing over more than 2 years. Decision-making increased the odds of women not wanting more children. Middle to high empowerment levels for Control over sexuality and safe sex also increased the chances of using any type of contraceptive method and using it for longer periods. All domains, from the middle to high levels of empowerment, decreased the chances of women not wanting to use contraception. Our study confirmed the multidimensional nature of empowerment showing that each domain had a different effect over specific fertility and contraceptive outcomes and reinforced the importance of a domain approach for estimating and understanding empowerment. It also revealed the critical role of Control over sexuality and safe sex domain for improving women's ability to decide over fertility and contraceptive practices in Mozambique.

Introduction

In 1994, during the International Conference on Population and Development (ICPD) in Cairo, the right of women to freely decide on their reproductive lives without discrimination was recognised by nations around the world (1). More recently, the Sustainable Development Goal (SDG) 5 reiterated that women's empowerment is a priority for improving family planning and reproductive health outcomes and for tackling gender inequality (2–4). Empowerment enables women to decide and act on their decisions which is key for informed decision-making in accessing family planning services and using of modern methods of contraception (5).

Women's empowerment as defined by Kabeer includes "the expansion of people's ability to make strategic life choices in a context where this ability was previously denied" (6). The process of empowerment is individual, involving building a critical consciousness of women's rights and changing unequal gender power relations (7). When women understand that they can aspire to a different life and that it is their right to decide, their ability to make strategic life choices is enhanced (8). They are enabled to make decisions, including about their sexual and reproductive lives (1), such as deciding freely the number, spacing and timing of childbearing, which then influences other life changing decisions and opportunities including to have a job, a career, political participation, among others.

Resources or pre-conditions are an essential component for the process of women's empowerment (6). This includes not only the access to material resources such as education or financial resources but also human and social capital (6). Recent studies have expanded on individual, and structural factors that can influence the process of empowerment (9–11). For example, women's age, where they live or participating in women's associations (networking with other women) play an important role in how empowerment unfolds (10).

Evidence has shown the influencing role of women's empowerment in reproductive health behaviours. Overall empowerment has been associated with women's desire in having a smaller number of children, using modern methods of contraception, having higher levels of met need for contraception and having better spousal communication (4,12,13). However, the results available in the literature are inconsistent across countries and different associations have been found between different dimensions of empowerment and reproductive outcomes (13,14). Often this is related to the conceptualization and operationalization of empowerment (13,14) Studies use different definitions of empowerment, not always fully based in the evidence and theory available (15). While empowerment's multidimensional nature has been recognised, overall empowerment is still used to quantitatively measure it. Empowerment is a process that occurs in different spheres

of a woman's life and through different pathways (16) and recent evidence supports the use of specific domains of empowerment in its operationalisation and measurement. For example, measuring reproductive empowerment when considering women's ability to make decisions on sexual and reproductive health (5).

As empowerment became a mainstream concept and part of development strategies, a shift in focus occurred, which also contributed to different approaches and definitions (8). Great emphasis was put into women's access to materials and resources, not considering the internal processes of questioning and change that are encompassed in the empowerment process (8). This has created fragilities in understanding of empowerment. Furthermore, the attempts to capture it quantitatively was shown to be challenging. The use of Demographic and Health Survey (DHS) as the main source of data offers many advantages, such as standardization and comparability, however the availability of indicators and depth of what it captures is limited (7,13), impacting on how empowerment is operationalised and possible conclusions. Mozambique, like other sub-Saharan countries, has experienced a decline in fertility levels only in the last decade. The total fertility rate at national level was 5.5 in 2003, 5.9 in 2011 (17), 5.2 in 2016 and 4.8 in 2019 (18,19). The prevalence of the use of modern contraceptives remains low. From 2003 to 2011, contraceptive prevalence decreased from 17% to 12% (17), followed by a steady increase to 25% and to 35% in 2015 and in 2019, respectively (20). The change in the trend of contraceptive prevalence may result from a strengthened commitment from the government not only to improve access and supply to contraceptives but also to increase the educational levels of girls and women, improve their knowledge on contraception and reduce gender-based violence (21,22).

Important disparities between urban and rural areas remain, with rural areas presenting small changes in the high fertility rate and low contraceptive use patterns (23). Also, studies on fertility transition in various developing countries show that despite the presence of triggering factors for lowering fertility rates, such as economic and social development, decrease in mortality, desire for smaller families and awareness that childbearing can be planned (24,25), this may not result in a decrease of fertility if women are not able to control their fertility through the use of modern contraception and according to their preferences (26,27).

In patriarchal societies like Mozambique, men are entitled to exert control over women, particularly with respect to the number of children, spacing of pregnancies and use of contraceptives (26,28). This is based on deep-rooted sociocultural practices and traditions, where large families are valued, and women's social recognition (and value) is tied to how many children she can bear (26). Despite the efforts of the government in implementing and

expanding family planning programmes focussing on the free supply of modern methods of contraception and sensitization and knowledge campaigns about modern contraception (26), evidence has shown that these actions may not be enough to enable women to use them if not empowered or in control of their reproductive health (29).

As gender inequality remains one of the main barriers for women's ability to use family planning methods and make reproductive choices in Mozambique (22,28), women's empowerment could contribute towards tackling gender inequality and improve women's reproductive health and rights. Enabling women to make decisions about their bodies and reproductive lives, based on information and free of coercion, contributes largely to the fulfilment of their human, sexual and reproductive rights, to living up to their full capabilities, and to better health outcomes (30,31).

Understanding how women's empowerment work and which reproductive outcomes are more influenced by it in the Mozambican context, could support and inform the design of health and gender strategies. This study aims to examine how different domains of women's empowerment influence fertility related outcomes and contraceptive practices in Mozambique.

Methods

Data source

We used the 2015 Demographic Health Survey (DHS) conducted in Mozambique which included indicators about women's empowerment, fertility-related outcomes, and contraceptive practices (23). The DHS is part of a USAID program that supports countries to monitor and evaluate their demographic and health parameters at national and subnational levels (32) and the datasets can be assessed online upon registration.

The 2015 DHS was a population-based survey, involving the 11 provinces of Mozambique, which collected data from women and men, aged 15 to 59. In total, 7749 women and 5283 men were interviewed from 7129 households included in the survey.

The survey's section about empowerment was applied to married women only, and the section about domestic violence to a sub-sample of female participants. The criteria of participants inclusion in this analysis were age (15 to 49 years) and those who answered all sections of the survey, including the section about empowerment, and the section on domestic violence. A total of 2072 women of reproductive age (15 to 49 years) were included in this analysis. Those excluded (unmarried/unpartnered women [n=4874]), when compared

to participants included, had fewer children, different intention to childbearing, and a higher proportion of contraceptive met- or no need as they were not sexually active.

Variables

Outcomes

1. Fertility-related outcomes

Three indicators characterising women's fertility were selected from the DHS Mozambique 2015. This included the number of children ever born, categorised in '0', '1-4', '5 or more', based on the total fertility rate of 4.8 in 2019 (19). Also, this was based on the theoretical plausibility that women with no children or with more than expected average may have different levels of empowerment. Time interval between the last 2 births in the 6 years prior to the survey was also used as an outcome. The categories defined for this variable were 'Less than 2 years', '2 to 6 years', and '1 or less children born in the previous 6 years'. It was decided not to exclude women the latter group of women, after confirming that no significant changes existed after exclusion. The last fertility outcome included in this study was intention for childbearing, defined as women's desire of wanting to and when to have a child in the future. This outcome was categorized in the following way: 'Less than 2 years', '2 years or more', 'Undecided', and 'Does not want'.

2. Contraceptive practices

From the DHS 2015 we selected three outcomes that describe contraceptive practices of women, namely: Current use of contraceptives (No use, Modern, and Traditional), Length of use (2 years or less, More than 2 years, and No use), and Met need for contraception (Unmet need, Met need, No want - despite being sexually active; and, No need – those not sexually active, infertile or menopause).

Independent variables

Empowerment domains

We identified empowerment domains in a previous study (10). In brief, the selection process of empowerment consisted of the identification of the relevant questions related to empowerment from the DHS 2015 survey for Mozambique. The relevancy was assessed by current evidence available and theoretical plausibility as well as the definition of empowerment used in the study. The included indicators related to women's decision-making within the household (Who usually decides on visits to family and friends, on large

purchases, and women's health care), women's justified beating (if wife goes out without telling husband, if neglects the children, if argues with husband, if refuses to have sex, if burns the food), and decisions about sexual intercourse (wife ask husband to use a condom, to use a condom if he has a sexually transmitted disease, can refuse sex). Each question was coded into a 3-point scale (values of -1, 0, 1) and the highest value was given to categories considered to indicate greater level of empowerment (7,10). For women's justified beating, the answers 'Not justified' were coded 1, while 'Justified' -1, and 'Don't know' as 0.

A principal component analysis (PCA) was performed (7,34,35) which allowed the assessment of how the selected empowerment indicators cluster and how much each contributes to a specific component (7). The components with an eigen value above 1 were considered significant and therefore were retained. The scree plot of the PCA is included in supporting information (Figure 5.2S1) and the factor loadings of the retained components are shown in Table S2 of the article Castro Lopes et al, 2021 (10). The Kaiser Meyer-Olkin test value was 0.75 which confirmed the sampling adequacy for PCA (10).

Based on the indicators clustering and contribution to each retained component, we identified and named three domains of empowerment: 'Beliefs about violence against women'; 'Decision-making', and; 'Control over sexuality and safe sex' (10). The three retained components explained 60% of the total variance in the data set (10). Further detail on the PCA estimates can be obtained in Castro Lopes et al (2021) (10).

The factors' scores of the PCA for each indicator were used to estimate a domain-specific index. Given the distribution of the index of each domain of empowerment, and the need to understand if the study outcomes, vary across levels of empowerment, we stratified each domain of empowerment into terciles. The first tercile represented women with low levels of empowerment, the second tercile, women with middle levels, and the third, those with high levels of empowerment.

Covariates

Socio-economic, demographic and behavioural characteristics

The key role of women's sociodemographic and economic characteristics for the empowerment process has been widely recognised (35). Some of these characteristics are considered essential pre-conditions or resources for the process of empowerment to take place as they enable women's decision-making and agency (6,11). These encompass education, employment, financial resources, among others (6,16). Empowerment levels are

also expected to change throughout life, with age (35). Therefore, the following covariates were included in the analysis: women's age (Less or equal to 19, 20-29, 30-39, 40-49 years), education (No education, Primary - 1st to 7th grade, secondary and above - 8th and above), and current employment situation reported by women (Working, Not working). Wealth index was also used, a composite measure estimated by the DHS, based the ownership of assets (23). The index was recoded into quintiles: poorest, poor, middle, rich, richest.

Furthermore, the number of living children (0, 1-4, 5 or more) was considered a covariate as it can influence or change the fertility preferences of women, including the intention or wish of future childbearing.

Provinces were combined into regions, following the official aggregation of provinces by the Mozambique government into South, Centre, and North regions (36). Urban and rural residency areas were also considered as evidence suggests the existence of important differences (10).

Behavioural characteristics, including women's exposure to controlling behaviours from their partners (No control; At least one type of control) and intimate partner violence (IPV - Yes, No) experienced in the past 12 months (23) were included in the analysis as these are considered main barriers to women's empowerment processes (37,38).

Data analysis

A descriptive analysis of the outcome variables, empowerment domains and the socio-economic, demographic and behavioural characteristics was performed. Proportions were compared using the Chi-square test (level of significance 5%).

A multinomial logistic regression was run to estimate the association between levels of empowerment for each domain and the fertility-related outcomes and the contraceptive practices. Crude and adjusted odds ratio (OR) were calculated, with 95% confidence intervals (95% CI). The final models were adjusted for both statistically and theoretical relevant socio-economic, demographic, and behavioural characteristics. These included number of live children, age, education, region, and wealth quintile. Hosmer–Lemeshow goodness-of-fit test for multinomial logistic regression models was used to test the fit of the models (39).

We used the STROBE cross sectional checklist when writing the results section (40).

Ethics statement

This study is a secondary data analysis of DHS data (32). The DHS program secured ethical clearance and participant informed consent (23).

Results

Descriptive results

Table 6 described women's Socio-economic, demographic, and behavioural characteristics. Most women had a primary level of education, were 20 to 29 years old, unemployed, belonged to the middle to richest wealth quintiles, lived in rural areas and Central region. More than 40% of women reported being exposed to controlling behaviours from their partner and 23% to IPV (Table 6). Similar characteristics were found among the DHS female participants, except for age, where our sample was slightly older. This could be related to the inclusion of only married or partnered women.

Table 6: Women's socio-economic, demographic, and behavioural characteristics (paper 2).

Women's sociodemographic, economic and behavioural characteristics	
Age	
<19	164 (7.4)
20-29	849 (41.0)
30-39	626 (30.2)
40-49	433 (20.9)
Education¹	
No education	604 (29.2)
Primary (1 st to 7 th grade)	1086 (52.4)
Secondary and above (8 th and above)	382 (18.4)
Number of living children	
0	161 (7.8)
1-4	1376 (66.4)
5 or more	535 (25.8)
Currently employed	
Yes	912 (44.0)
Wealth index	
Poorest	337 (16.3)
Poorer	381 (18.4)
Middle	430 (20.8)
Richer	475 (22.9)
Richest	449 (21.7)
Regions	
North region	602 (29.1)
Central region	843 (40.7)
South region	627 (30.3)
Urban vs rural residency	

	Rural	1321 (63.8)
Partner/Husband controlling behavior		
	No control	1191 (57.5)
	At least one type	881 (42.5)
IPV exposure		
	No	1596 (77.2)

¹ Based on the previous education system organization. System changed in 2018.

Table 7 describes the outcome variables and the empowerment domains. More than 60% of women had 1 to 4 children (average births was 3.7 [SD ±2.6]) and 63% had 1 or less children in the 6 years prior to the survey. Most women wished not to have more children or to wait more than 2 years to have another child. However, the contraceptive practices showed low uptake of modern contraceptives (approximately 30%), with 20% of women using for more than 2 years. Interestingly, 30% of women reported unmet need for contraception while 30% did not want to use contraception. Most women had high level of empowerment for ‘Decision-making’ and middle levels of empowerment for ‘Beliefs about violence against women’ and, ‘Control over sexuality and safe sex’ domains of empowerment (Table 7). Supporting information 1 describes the outcome variables by selected socio-economic, demographic, and behavioural characteristics of women (see 5.2S1 Table).

Table 7: Description of outcome variables and the empowerment domains (paper 2).

OUTCOMES		N= 2072		
Fertility-related		Contraceptive practices		
Number of children ever born		Current use of contraceptive methods		
	0		No method	1441 (69.6)
	1-4		Modern method	604 (29.2)
5 or more	685 (33.0)	Traditional method	27 (1.3)	
Time interval between the last 2 births¹		Length of use of contraceptives		
	Less than 2 years		No use	1450 (70.0)
	2 to 6 years		2 years or less	430 (20.8)
1 or less children born in the previous 6 years	1301 (62.8)	More than 2 years	192 (9.3)	
Intention for childbearing		Need for contraceptives		
	Less than 2 years		Met need	461 (22.3)
	2 years or more		Unmet need	631 (30.5)
	Undecided		No need (no want)	611 (29.5)
Does not want	718 (34.8)	No physiological need ²	366 (17.7)	
Domains of empowerment, terciles, N (%)				
Beliefs about violence against women				

	Low	652 (31.5)
	Middle	743 (35.9)
	High	677 (32.7)
Decision-making		
	Low	653 (31.5)
	Middle	675 (32.6)
	High	744 (35.9)
Control over sexuality and safe sex		
	Low	715 (34.5)
	Middle	786 (37.9)
	High	571 (27.6)

¹ The difference in months between the two most recent births in the prior 6 years to the DHS survey. ² Women who are not sexually active or are infertile.

Table 8 describes the association between the fertility-related outcomes and contraceptive practices by empowerment levels for each domain. Women with 5 or more children had lower levels of empowerment for 'Beliefs about violence against women' and 'Control over sexuality', while not wanting more children was associated with high levels of 'Decision-making'. No children was also associated with lower levels of 'Control over sexuality'. For contraceptive practices, the use of modern contraceptives was associated with women with middle level of empowerment for 'Beliefs about violence against women' and 'Control over sexuality and sex' and high level of 'Decision-making'. The use of traditional contraceptives was also associated with high levels of empowerment for 'Decision-making' and 'Beliefs about violence against women'. Longer periods of use of contraceptives and met need for contraception were associated with middle and higher levels of 'Control over sexuality and sex' and 'Decision-making', respectively.

Table 8: Description of fertility-related outcomes and contraceptive practices by women's empowerment domains in Mozambique (paper 2).

	Fertility-related outcomes												
	Number of children ever born				Time interval between the last 2 births				Intention for childbearing				
	0	1-4	5 or more	p-value	Less than 2 years	2 to 6 years	1 or less children born ²	p-value	Less than 2 years	2 years or more	Undecided	No want	p-value
Beliefs about violence¹													
Low	39 (31.0)	362 (28.6)	247 (36.1)	0.012	36 (29.8)	213 (32.8)	403 (30.9)	0.933	123 (29.8)	225 (31.6)	75 (33.9)	223 (31.1)	0.246
Middle	47 (38.5)	561 (44.6)	278 (40.6)		45 (37.2)	229 (35.2)	469 (36.1)		190 (46.0)	299 (42.1)	101 (45.5)	290 (40.4)	
High	36 (29.5)	391 (27.0)	160 (23.4)		40 (33.1)	208 (32.0)	429 (33.0)		100 (24.2)	186 (26.2)	46 (20.7)	205 (28.5)	
Decision-making													
Low	41 (33.6)	390 (30.8)	222 (32.4)	0.800	41 (33.8)	229 (35.2)	383 (29.4)	0.061	139 (33.7)	254 (35.8)	74 (33.3)	182 (25.4)	<.001
Middle	39 (31.9)	424 (33.5)	212 (31.0)		40 (33.1)	211 (32.5)	424 (32.6)		143 (34.6)	211 (29.7)	83 (37.4)	235 (32.7)	
High	42 (34.4)	451 (35.7)	251 (36.6)		40 (33.1)	210 (32.3)	494 (38.0)		131 (31.7)	245 (34.5)	65 (29.3)	301 (41.9)	
Control over sexuality and safe sex													
Low	50 (41.0)	382 (30.2)	283 (41.3)	<.001	41 (33.9)	238 (36.6)	436 (33.5)	0.344	157 (38.0)	225 (31.7)	87 (39.2)	242 (33.7)	0.063
Middle	42 (34.4)	485 (38.3)	259 (37.8)		50 (41.3)	226 (34.8)	510 (39.2)		162 (39.3)	267 (37.6)	81 (36.5)	273 (38.0)	
High	30 (24.6)	398 (31.5)	143 (20.9)		30 (24.8)	186 (28.6)	355 (27.3)		94 (22.8)	218 (30.7)	54 (24.3)	203 (28.3)	
	Contraceptive practices												
	Current use of contraceptive methods				Length of use of contraceptives				Need for contraceptives				
	No use	Modern	Traditional	p-value	No use	2 years or less	More than 2 years	p-value	Unmet need	Met need	No want	No need	p-value
Beliefs about violence¹													
Low	452 (31.4)	195 (32.3)	5 (18.5)	<.001	455 (31.4)	138 (32.1)	59 (30.7)	0.097	131 (28.4)	200 (31.7)	206 (33.7)	115 (31.4)	0.023
Middle	495 (34.4)	243 (40.2)	5 (18.5)		499 (34.4)	162 (37.7)	82 (42.7)		179 (38.8)	248 (39.3)	187 (30.6)	129 (35.3)	
High	494 (34.3)	166 (27.5)	17 (63.0)		496 (34.2)	130 (30.2)	51 (26.6)		151 (32.8)	183 (29.0)	218 (35.7)	122 (33.3)	
Decision-making													
Low	476 (33.0)	167 (27.7)	10 (37.0)	0.002	479 (33.0)	131 (30.5)	43 (22.4)	<.001	147 (31.9)	177 (28.1)	228 (37.3)	100 (27.3)	<.001
Middle	484 (33.6)	187 (31.0)	4 (14.8)		488 (33.7)	134 (31.2)	53 (27.6)		154 (33.4)	191 (30.3)	179 (29.3)	149 (40.7)	
High	481 (33.4)	250 (41.4)	13 (48.2)		483 (33.3)	165 (38.4)	96 (50.0)		160 (34.7)	263 (41.7)	204 (33.4)	117 (32.0)	
Control over sexuality and safe sex													
Low	566 (39.3)	144 (23.8)	5 (18.5)	<.001	571 (39.4)	107 (24.9)	37 (19.3)	<.001	166 (36.0)	149 (23.6)	250 (40.9)	147 (40.2)	<.001
Middle	533 (37.0)	236 (39.1)	17 (63.0)		534 (36.8)	163 (37.9)	89 (46.4)		167 (36.2)	253 (40.1)	224 (36.7)	142 (38.8)	
High	342 (23.7)	224 (37.1)	5 (18.5)		345 (23.8)	160 (37.2)	66 (34.4)		128 (27.8)	229 (36.3)	137 (22.4)	77 (21.0)	

Relationship of empowerment with fertility-related outcomes and contraceptive practices

Figure 6 presents the results from the multinomial adjusted logistic regression for fertility-related outcomes and contraceptive practices (crude and adjusted OR provided in 5.2S2 Table). Figure 6.a) shows that middle of empowerment for the domain 'Believes about violence against women' and high level of empowerment for 'Control over sexuality and safe sex' were positively associated with having 1 to 4 children when compared with women with low levels of empowerment. Having high empowerment for 'Control over sexuality' also increased likelihood of women wanting to space childbearing for more than 2 years when compared with women with low levels of empowerment. Women with high 'Decision-making' power had increased odds of not wanting more children compared with those with low level of empowerment and who want in less than 2 years and. Being empowered for 'Beliefs about violence' decreased the likelihood of women not wanting children.

Figure 6.b) shows that women with high levels of empowerment for 'Believes about violence against women' had increased likelihood of using currently traditional methods of contraception, while high empowerment for 'Control over sexuality and safe sex' increased the odds of using modern contraceptives when compared to women in the lowest level of empowerment. Middle to high empowerment levels for 'Control over sexuality and safe sex' also increased the chances of using any type of contraceptive methods, traditional or modern, and using it for longer periods (less or more than 2 years). Having high empowerment for the domains 'Control over sexuality and safe sex' and 'Decision-making' was positively associated with contraceptive met need when compared to low levels of empowerment in these domains. All domains, from middle to high levels of empowerment, decreased the likelihood of women not wanting to use contraception.

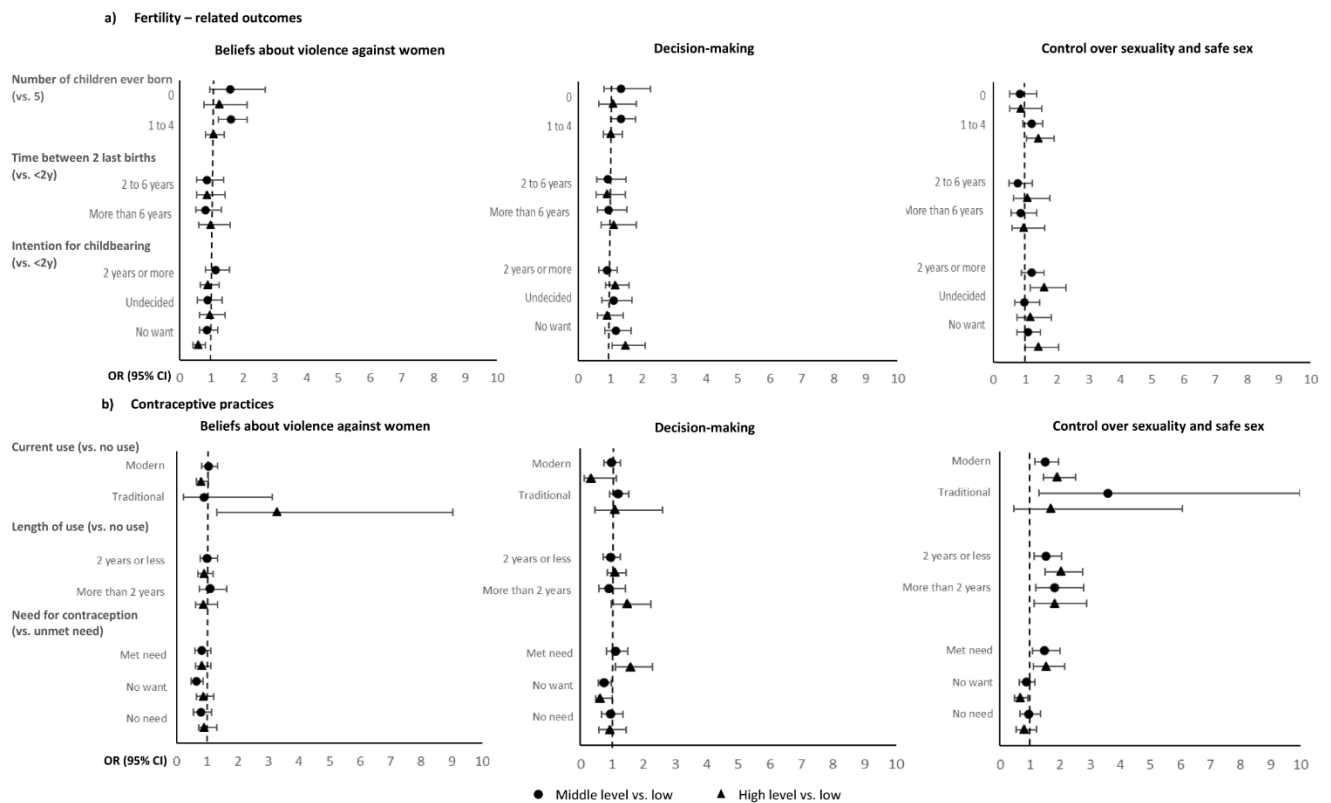


Figure 6: Adjusted odds ratio with 95% CI from multinomial regression analysis: a) Fertility related outcomes (adjusted for number of live children, age, education and region), and b) contraceptive practice (adjusted for number of live children, age, education) (paper 2).

Discussion

Our results suggest that women’s empowerment influences women’s contraceptive practices and fertility outcomes. However, each domain of empowerment influences differently the various fertility and contraceptive outcomes. In particular, the domains of ‘Control over sexuality and safe sex’, and of ‘Decision-making’ seem to be important for the context of Mozambique. This highlights the importance of considering the multidimensionality of empowerment and its relationship with specific areas of a woman’s life within a particular social context. Recent efforts have been made to conceptualize specific areas of empowerment, such as reproductive empowerment or empowerment in sexual and reproductive health, (35) and our findings support this approach. This challenges the use of the DHS data to quantify empowerment, which has often lead to ad hoc measures of overall empowerment, with weak conceptualization (15). Expansion of the current indicators of empowerment from the DHS and other global sources of data is required, together with qualitative approaches to grasp context-specific aspects of the empowerment process and its influence in sexual and reproductive health.

In some African countries, women’s decision-making power in the household has been associated with their ability to make their own decisions in terms of reproductive choices,

including desiring fewer children and in some countries with the use of contraceptives (41). Our study showed that high levels of decision-making power was positively associated with not wanting more children and met the need for contraception. This suggests that when women in Mozambique decide limiting childbearing, they are more likely to have this need satisfied. The relationship between 'Decision-making' and current use of contraception, specifically, has not been established in the literature with studies reporting both null or positive effect especially after adjusting for community characteristics (13) which supports our findings. This could be explained by the various ways of operationalising 'Decision-making' domain of empowerment, oftentimes informed by an ad hoc process of estimation (14). Furthermore, one should note that the current use of contraception could be dependent on the availability and accessibility of contraceptive services, which do not necessarily dependent on women's decision-making power levels (13).

Our study showed that 'Control over sexuality and safe sex' is a key empowerment domain for both women's fertility decision and contraception practices, and this relationship is independent of women's education and wealth. The 'Control over sexuality and safe sex' has been less explored in the literature as a domain of empowerment therefore evidence is scarce. A possible interpretation of our findings is that women's perception and understanding of their right to sexual and reproductive health might be a key for both the process of empowerment as well as to the choices themselves (29,42,43). Thus, it is the building critical consciousness of having rights and possibilities of women that are fundamental for the many decisions that unfold from there (42).

'Beliefs about violence against women' domain of empowerment seemed to play a less important role for the outcomes studied. Contrary to what has been shown in a multi-country study that included Mozambique (7), we did not find any association between high levels of empowerment for this domain and the current use of modern contraception. A possible reason for the different results is that current use of modern methods was computed as a binary outcome (using, not using) in the other study. However, we observed that empowered women in this domain, were more likely to use traditional methods of contraception. This could point to the strength of community believes and traditions in women's choices (11) and also reinforces the multidimensionality of empowerment and how this might play an less important role for reproductive empowerment. Furthermore, women with middle level of empowerment for 'Beliefs about violence against women' had an increased chance of having less children than those with high level. Such observation could be related to experiencing an environment where violence against women is accepted and normalised (44), and women tolerate it more, but which could result in women wanting to have less children as a protection mechanism.

Women's empowerment, in each of its domains, does not seem to influence the time interval between the last two births in Mozambique, with our results showing null associations. Similar results have been described in other studies in the African context and the explanation put forward suggests that large time intervals (average 35 months) (25) are often observed in these settings due to cultural practices and traditions which expose women to long abstinence periods postpartum (45). This highlights the importance of assessing the utility and relevance of the selected outcomes for the context (13).

Our findings support the idea that empowerment influences fertility and contraceptive outcomes through different pathways and it offers an opportunity to hypothesize about possible routes through which empowerment works (41). In our results we saw that 'Decision-making' increased the chances of a woman not wanting more children and having her contraceptive needs met, but this was not reflected in the likelihood of having smaller families or current contraceptive use. However, the domain 'Control over sexuality and safe sex', seem to also influence women's ability to reduce the number of children ever born by prolonged use of modern contraceptives. A possible explanation for this difference is that when women are empowered for 'Decision-making' in the household they may still be prone to suffer the influence of the community and context; but when women are empowered on 'Control over sexuality and safe sex', they have incorporated the knowledge and understanding of the fundamental right to their bodies and participate in decisions that affect their lives (29), namely the ability to control the number of children they have.

Context-specific characteristics are also relevant for fertility-related outcomes. In Mozambique, like in other sub-Saharan countries, large families are still valued by society and shaped by cultural norms and traditions (28,41,45), where fertility is often associated with the woman's status. Furthermore, evidence shows that women who reside in areas with high child and infant mortality levels, prefer and tend to have more children to compensate for the actual or anticipated loss of a child (46). These contextual factors can modify the effect of women's empowerment on reproductive outcomes.

Strengths and limitations

This study used a population-based survey for Mozambique which allowed representativeness of the sample of the target population and generalizability of the findings. The large sample size ensured sufficient power for conducting the analysis. Despite these strengths, some limitations should be noted. Causality cannot be inferred due to the cross-sectional design of the DHS. A longitudinal approach would benefit the understanding of both how empowerment levels change as well as how it influences fertility outcomes and behaviours over time. Only partnered women were included in the analysis which should be considered in the interpretation of the findings. It is possible that other fertility outcomes would better describe the ability of women to make decisions and exercise choice. For

example, the use of time intervals between births in the 6 years prior to the survey might not be the best variable to characterised fertility intentions. Also, the way this variable was categorised in this study might have reduce the validity and therefore compromise the interpretation of the findings. In the future, using women's ideal number of children would help to better understand women's ability/power of achieving this and through which pathways empowerment operates (4). Similarly, the outcomes ever use of contraception or the intention of future use could provide an overview of contraception practices over time (13). The empowerment domains were defined based on the available data in the DHS, there could be other indicators of relevance to describe women's empowerment in Mozambique. Qualitative research involving Mozambican women could shed light on new and refine current empowerment domains and reproductive outcomes and may provide an explanation to understand why the domains influence differently each outcome.

Conclusion

Our study confirmed the multidimensional nature of empowerment showing that each domain had a different effect over specific fertility and contraceptive outcomes. This reinforces the need of a domain approach to estimating and understanding empowerment. More importantly, our findings revealed the critical role of 'Control over sexuality and safe sex' domain for improving women's ability to decide over fertility and contraceptive practices in Mozambique. This is important because it enables women's basic fundamental rights, namely the right to have control over their bodies and the right to participate in decisions that concern their lives which in turn can enable their participation in society (7,43). We also highlighted the importance of context-specific factors for defining appropriate outcomes but also for a more accurate understanding of empowerment within the cultural and societal frame where it is being measured. While we believe this evidence could contribute to improving and refining existing family planning programmes in Mozambique, there is the need to continue this work closer to women lives and realities in Mozambique, so their voices can be included, and the nuances of the processes of empowerment can be captured.

Acknowledgment

Not applicable.

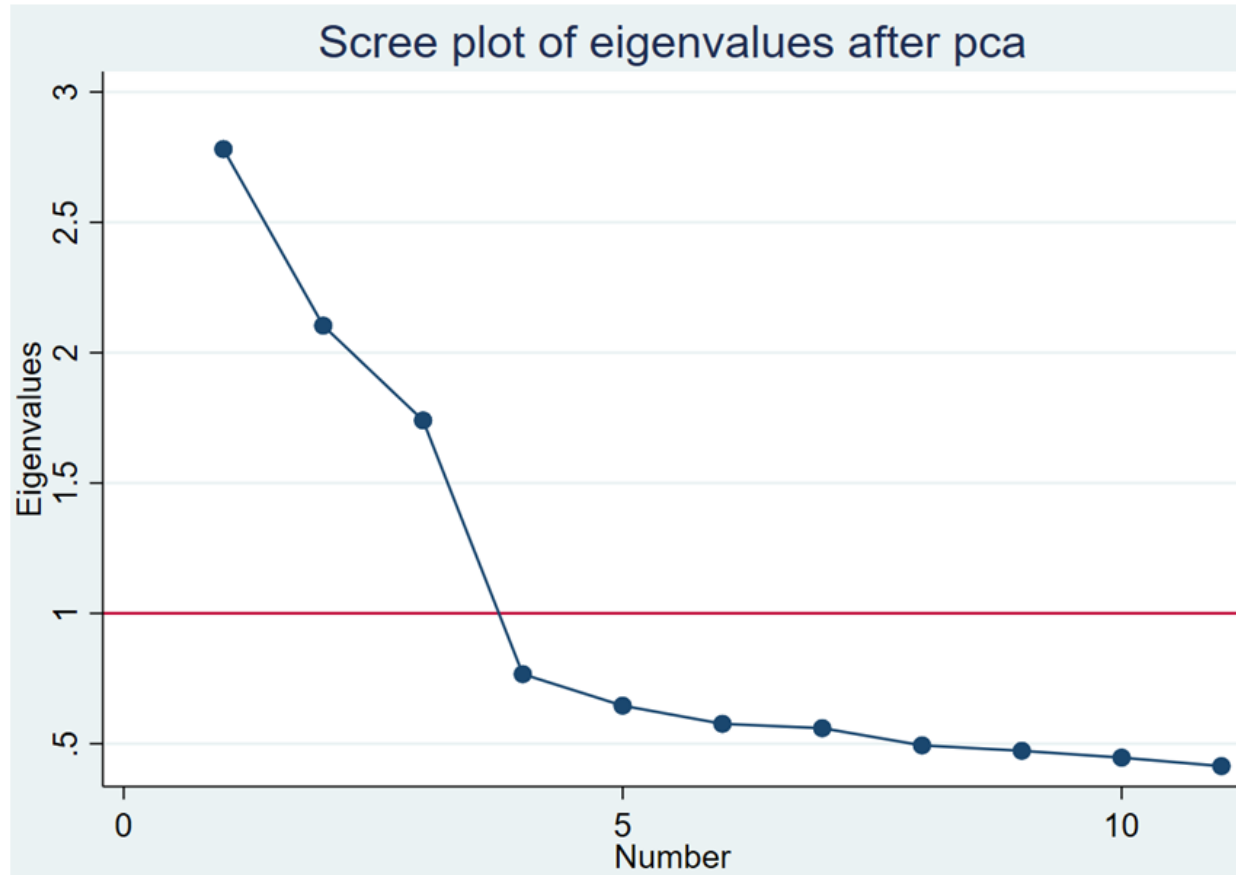
References

1. United Nations Population Fund (UNFPA). Programme of action of the International Conference on Population and Development 1994. 20th anniversary edition. Vol. 2. 2014.
2. United Nations Population Fund (UNFPA). Ensure universal access to sexual and reproductive health and reproductive rights. Measuring SDG Target 5.6. New York; 2020.
3. United Nations Population Fund (UNFPA). Tracking women's decision-making for sexual and reproductive health and reproductive rights. New York; 2020.
4. Upadhyay UD, Gipson JD, Withers M, Lewis S, Fraser CS, Huchko MJ, et al. Women's empowerment and fertility: A review of the literature. *Soc Sci Med*. 2014;31(9):1713–23.
5. United Nations Population Fund (UNFPA). Global goals indicators 5.6.1. Research on factors that determine women's ability to make decisions about sexual and reproductive health and rights. Vol. I. 2019.
6. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30(3):435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>
7. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. 2017 Sep 26;5(9):e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>
8. Cornwall A, Rivas A-M. From 'gender equality and 'women's empowerment' to global justice: Reclaiming a transformative agenda for gender and development. *Third World Q* [Internet]. 2015 Feb 1;36(2):396–415. Available from: <https://doi.org/10.1080/01436597.2015.1013341>
9. Shimamoto K, Gipson JD. Investigating pathways linking women's status and empowerment to skilled attendance at birth in Tanzania: A structural equation modeling approach. *PLoS One* [Internet]. 2019;14(2):1–16. Available from: <https://doi.org/10.1371/journal.pone.0212038>
10. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique. *PLoS One* [Internet]. 2021;16(5):1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>
11. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. *Front Glob Women's Heal*. 2022;3(March):1–11.
12. Pratley P. Associations between quantitative measures of women's empowerment and access to care and health status for mothers and their children: A systematic review of evidence from the developing world. *Soc Sci Med* [Internet]. 2016;169:119–31. Available from: <http://www.sciencedirect.com/science/article/pii/S0277953616304087>
13. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017/01/10. 2017 Nov;49(6):713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>
14. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>

15. Richardson RA. Measuring women's empowerment: A need for context and caution. *Lancet Glob Heal* [Internet]. 2018 Jan 1;6(1):e30. Available from: [http://dx.doi.org/10.1016/S2214-109X\(17\)30460-6](http://dx.doi.org/10.1016/S2214-109X(17)30460-6)
16. Malhotra A, Schuler SR, Boender C. Conceptualizing and measuring women's empowerment as a variable in international development. Paper Prepared for the World Bank Workshop on Poverty and Gender: New Perspectives. 2003. p. 59.
17. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Moçambique inquérito demográfico e de saúde 2011. Calverton, Maryland, USA MISAU, INE e ICFI. 2011;412.
18. Tracking progress towards universal coverage for women's, children's and adolescents' health: The 2017 report. Washington D.C; 2017.
19. Countdown to 2030. Countdown 2030 country profile: Mozambique [Internet]. 2023 [cited 2023 Jul 4]. Available from: <https://data.unicef.org/countdown-2030/country/Mozambique/1/>
20. Family Planning 2020. FP2020 Data Dashboard: East Africa countries [Internet]. 2019 [cited 2020 Apr 20]. Available from: <http://www.familyplanning2020.org/data-dashboard>
21. Ministério da Saúde (MISAU). Plano Estratégico do Sétor Saúde 2014-2019. Maputo, Moçambique; 2014.
22. Ministério do Género Criança e Acção Social. Perfil de género de Moçambique. Maputo, Moçambique; 2016.
23. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
24. Frye M, Bachan L. The demography of words: The global decline in non-numeric fertility preferences, 1993-2011. *Popul Stud (NY)*. 2017 Jul;71(2):187–209.
25. Bongaarts J, Casterline J. Fertility transition: Is sub-Saharan Africa different? *Popul Dev Rev* [Internet]. 2013 Feb;38(Suppl 1):153–68. Available from: <https://pubmed.ncbi.nlm.nih.gov/24812439>
26. Arnaldo C, Cau BM, Chilundo B, Picardo J, Griffin S. Planeamento familiar e políticas de saúde sexual e reprodutiva em Moçambique. Cepsa. Langa DS, editor. Maputo, Moçambique; 2019.
27. Hayford SR, Agadjanian V. Uncertain future, non-numeric preferences, and the fertility transition: A case study of rural Mozambique. *Etude Popul Afr* [Internet]. 2011;25(2):419–39. Available from: <https://pubmed.ncbi.nlm.nih.gov/26430294>
28. Cau BM. Community influences on contraceptive use in Mozambique. *Health Place* [Internet]. 2015;31(Supplement C):10–6. Available from: <http://www.sciencedirect.com/science/article/pii/S135382921400152X>
29. Crissman HP, Adanu RM, Harlow SD. Women's sexual empowerment and contraceptive use in Ghana. *Stud Fam Plann*. 2012;43(3):201–12.
30. United Nations Population Fund (UNFPA). My body is my own - Claiming the right to autonomy and self-determination. *State of the world population 2021* [Internet]. 2021 [cited 2021 Apr 15]. Available from: <https://www.unfpa.org/publications/state-world-population-2021>
31. United Nations Population Fund (UNFPA). Women's ability to decide. 2020.
32. Inner City Fund (ICF). The Demographic and health survey program. [Internet]. 2020. United States Agency for International Development; 2020 [cited 2021 Dec 7]. Available from: <https://dhsprogram.com/What-We-Do/index.cfm>

33. Kline P. An easy guide to Factor Analysis [Internet]. Taylor & Francis; 2014. Available from: <https://books.google.co.za/books?id=jITsAgAAQBAJ>
34. Dean J. Choosing the right type of rotation in PCA and EFA. *Shiken JALT Test Eval SIG Newsl.* 2009;13(November):20–5.
35. Karp C, Wood SN, Galadanci H, Sebina Kibira SP, Makumbi F, Omoluabi E, et al. 'I am the master key that opens and locks': Presentation and application of a conceptual framework for women's and girls' empowerment in reproductive health. *Soc Sci Med* [Internet]. 2020;258:113086. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953620303051>
36. Instituto Nacional de Estatística (INE). *Anuário Estatístico.* Maputo, Mozambique; 2018.
37. Ahinkorah BO, Dickson KS, Seidu A-A. Women decision-making capacity and intimate partner violence among women in sub-Saharan Africa. *Arch Public Health* [Internet]. 2018 Jan 29;76:5. Available from: <https://pubmed.ncbi.nlm.nih.gov/29423218>
38. Darteh EKM, Dickson KS, Doku DT. Women's reproductive health decision-making: A multi-country analysis of demographic and health surveys in sub-Saharan Africa. *PLoS One* [Internet]. 2019;14(1):1–12. Available from: <https://doi.org/10.1371/journal.pone.0209985>
39. Fagerland MW, Hosmer DW. A generalized Hosmer – Lemeshow goodness-of-fit test for multinomial logistic regression models. *Stata J.* 2012;(3):447–53.
40. von Elm E, Altman DG, Egger M, Pocock SJ, Gotsche PC VJ. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. 2020.
41. Atake E-H, Gnakou Ali P. Women's empowerment and fertility preferences in high fertility countries in Sub-Saharan Africa. *BMC Womens Health.* 2019 Apr;19(1):54.
42. Cornwall A. Women's empowerment: What works? *J Int Dev* [Internet]. 2016 Apr 1;28(3):342–59. Available from: <https://doi.org/10.1002/jid.3210>
43. Cornwall A. Addressing the preconditions: Women's rights and development. 2002; Available from: http://www.pathwaysofempowerment.org/archive_resources/addressing-the-preconditions-women-s-rights-and-development-in-financing-gender-equality-commonwealth-perspectives
44. Uthman OA, Lawoko S, Moradi T. Factors associated with attitudes towards intimate partner violence against women: A comparative analysis of 17 sub-Saharan countries. *BMC Int Health Hum Rights* [Internet]. 2009 Dec 20;9(1):14. Available from: <https://bmcinthealthhumrights.biomedcentral.com/articles/10.1186/1472-698X-9-14>
45. Caldwell JC, Orubuloye IO, Caldwell P. Fertility decline in Africa: A new type of transition? *Popul Dev Rev* [Internet]. 1992 Nov 15;18(2):211–42. Available from: <http://www.jstor.org/stable/1973678>
46. Novignon J, Djossou NG, Enemark U. Childhood mortality, intra-household bargaining power and fertility preferences among women in Ghana. *Reprod Health* [Internet]. 2019 Sep 10;16(1):139. Available from: <https://pubmed.ncbi.nlm.nih.gov/31500638>

Supplementary material for paper 2



5.2S1 Figure: Scree plot of eigenvalues after PCA.

5.2S1 Table A: Description of the fertility-related outcomes by selected sociodemographic characteristics.

	Fertility-related outcomes												
	Number of children ever born				Time interval between the last 2 births				Intention for childbearing				
	0	1-4	5 years or more	p-value	Less than 2 years	2 to 6 years	More than 6 years	p-value	Less than 2 years	2 years or more	Undecided	No want	p-value
Age													
<19	35 (28.7)	129 (10.2)	0	<.001	16 (11.3)	19 (3.0)	129 (9.9)	<.001	40 (9.7)	101 (14.2)	15 (6.8)	8 (1.1)	<.001
20-29	58 (47.5)	708 (56.0)	83 (12.1)		69 (48.9)	338 (53.7)	442 (34.0)		192 (46.5)	415 (58.5)	86 (38.7)	154 (21.5)	
30-39	16 (13.1)	293 (23.2)	317 (46.3)		45 (31.9)	206 (32.7)	375 (28.8)		123 (29.8)	159 (22.4)	77 (34.7)	263 (36.6)	
40-49	13 (10.7)	135 (10.7)	285 (41.6)		11 (7.8)	67 (10.6)	355 (27.3)		58 (14.0)	35 (4.9)	44 (19.8)	293 (40.8)	
Education¹													
No education	34 (27.9)	273 (21.6)	297 (43.4)	<.001	43 (30.5)	206 (32.7)	355 (27.3)	<.001	114 (27.6)	180 (25.4)	81 (36.5)	225 (31.3)	<.001
Primary	54 (44.3)	675 (53.4)	357 (52.1)		83 (58.9)	334 (53.0)	669 (51.4)		219 (53.0)	361 (50.9)	113 (50.9)	390 (54.3)	
Secondary and above	34 (27.9)	317 (25.1)	31 (4.5)		15 (10.6)	90 (14.3)	277 (21.3)		80 (19.4)	169 (23.8)	28 (12.6)	103 (14.4)	
Currently employed													
No	72 (59.0)	731 (57.8)	357 (52.1)	0.043	80 (56.7)	361 (57.3)	719 (55.3)	0.688	231 (55.9)	450 (63.4)	114 (51.4)	360 (50.1)	<.001
Yes	50 (41.0)	534 (42.1)	328 (47.9)		61 (43.3)	269 (42.7)	582 (44.7)		182 (44.1)	260 (36.6)	108 (48.7)	358 (49.9)	
Live children													
0	122 (100.0)	38 (3.0)	1 (0.15)	<.001	0	1 (0.2)	160 (12.3)	<.001	95 (23.0)	36 (5.1)	10 (4.5)	20 (2.8)	<.001
1-4	0	1227 (97.0)	149 (21.8)		80 (66.1)	424 (65.2)	872 (67.0)		281 (68.0)	574 (80.9)	148 (66.7)	369 (51.4)	
5 or more	0	0	535 (78.1)		41 (33.9)	225 (34.6)	269 (20.7)		37 (8.9)	100 (14.1)	64 (28.8)	329 (45.8)	
Regions													
North region	43 (35.3)	331 (26.2)	228 (33.3)	<.001	44 (31.2)	195 (31.0)	363 (27.9)	0.001	144 (34.9)	261 (36.8)	33 (14.9)	163 (22.7)	<.001
Central region	46 (37.7)	503 (39.8)	294 (42.9)		59 (41.8)	283 (44.8)	502 (38.6)		153 (37.1)	295 (41.6)	141 (63.5)	249 (34.7)	
South region	33 (27.1)	431 (34.1)	163 (23.8)		38 (27.0)	153 (24.3)	436 (33.5)		116 (28.1)	154 (21.7)	48 (21.6)	306 (42.6)	
Urban vs rural residency													
Urban	56 (45.9)	508 (40.2)	187 (27.3)	<.001	36 (25.5)	188 (29.8)	527 (40.5)	<.001	150 (36.3)	245 (34.5)	71 (32.0)	281 (39.1)	0.837
Rural	66 (54.1)	757 (59.8)	489 (72.7)		105 (74.5)	442 (70.2)	774 (59.5)		263 (63.7)	465 (65.5)	151 (68.0)	437 (60.9)	
Wealth index													
Poorest	22 (18.0)	193 (15.3)	122 (17.8)	<.001	25 (17.7)	127 (20.2)	185 (14.2)	<.001	71 (17.2)	125 (17.6)	47 (21.2)	93 (13.0)	0.001
Poorer	25 (20.5)	199 (15.7)	157 (22.9)		38 (27.0)	129 (20.5)	214 (16.5)		59 (14.3)	164 (23.1)	48 (21.6)	107 (14.9)	
Middle	22 (18.0)	248 (19.6)	160 (23.4)		26 (18.4)	145 (23.0)	259 (19.9)		92 (22.3)	137 (19.3)	49 (22.1)	152 (21.2)	
Richer	20 (16.4)	302 (23.9)	153 (22.3)		30 (21.3)	134 (21.3)	311 (23.9)		111 (26.9)	147 (20.7)	48 (21.6)	166 (23.1)	
Richest	33 (27.1)	323 (25.5)	93 (13.6)		22 (15.6)	95 (15.1)	335 (25.5)		137 (19.3)	137 (19.3)	30 (13.5)	200 (27.9)	

Fertility-related outcomes													
	Number of children ever born				Time interval between the last 2 births				Intention for childbearing				
	0	1-4	5 years or more	p-value	Less than 2 years	2 to 6 years	More than 6 years	p-value	Less than 2 years	2 years or more	Undecided	No want	p-value
Partner/Husband controlling behavior													
No control	70 (57.4)	719 (56.8)	402 (58.7)	0.733	72 (51.1)	367 (58.3)	752 (57.8)	0.275	224 (54.2)	428 (60.3)	141 (63.5)	392 (54.6)	0.020
At least one type	52 (42.6)	546 (43.2)	283 (41.3)		69 (48.9)	263 (41.8)	549 (42.2)		189 (45.8)	282 (39.7)	81 (36.5)	326 (45.4)	
IPV exposure													
	96 (79.3)	964 (76.5)	536 (78.3)	0.563	107 (75.9)	487 (77.3)	1002 (77.3)	0.927	308 (74.9)	571 (80.7)	182 (82.0)	527 (73.5)	0.002
	25 (20.7)	297 (23.6)	149 (21.8)		34 (24.1)	143 (22.7)	294 (22.7)		103 (25.1)	137 (19.4)	40 (18.0)	190 (26.5)	

5.2S1 Table B: Description of contraceptive practices by selected sociodemographic characteristics.

	Contraceptive practices												
	Current use of contraceptive methods				Length of use of contraceptives				Need for contraceptives				
	No use	Modern	Traditional	p-value	No use	2yrs or less	More than 2yrs	p-value	Unmet need	Met need	No want	No need	p-value
Age													
<19	134 (9.3)	29 (4.8)	1 (3.7)	<.001	134 (9.3)	29 (6.7)	1 (0.5)	<.001	35 (7.6)	30 (4.8)	95 (15.6)	4 (1.1)	<.001
20-29	598 (41.2)	247 (40.9)	8 (29.6)		598 (41.2)	200 (46.5)	51 (26.6)		198 (43.0)	255 (40.4)	325 (53.2)	70 (19.1)	
30-39	400 (27.5)	223 (36.9)	7 (25.9)		400 (27.5)	150 (34.9)	76 (39.6)		139 (30.2)	230 (36.5)	159 (26.0)	97 (26.5)	
40-49	318 (22.0)	105 (17.4)	11 (40.7)		318 (22.0)	51 (11.9)	64 (33.3)		89 (19.3)	116 (18.4)	32 (5.2)	195 (53.3)	
Education¹													
No education	466 (32.3)	129 (21.4)	9 (33.3)	<.001	468 (32.3)	102 (23.7)	34 (17.7)	<.001	140 (30.4)	138 (21.9)	177 (29.0)	146 (39.9)	<.001
Primary	750 (52.1)	321 (53.2)	15 (55.6)		755 (52.1)	230 (53.5)	101 (52.6)		242 (52.5)	336 (53.3)	321 (52.5)	187 (51.1)	
Secondary and above	225 (15.6)	154 (25.5)	3 (11.1)		227 (15.7)	98 (22.8)	57 (29.7)		79 (17.1)	157 (24.9)	113 (18.5)	33 (9.0)	
Currently employed													
No	860 (59.7)	286 (47.4)	14 (51.9)	<.001	867 (59.8)	216 (50.2)	77 (40.1)	<.001	297 (64.4)	300 (47.5)	365 (59.7)	196 (53.6)	<.001
Yes	581 (40.3)	318 (52.7)	13 (48.2)		583 (40.2)	214 (49.8)	115 (59.9)		164 (35.6)	331 (52.5)	246 (40.3)	170 (46.5)	
Live children													
0	155 (10.7)	6 (1.0)	0	<.001	155 (10.7)	4 (0.9)	2 (1.0)	<.001	14 (3.0)	6 (1.0)	84 (13.8)	57 (15.6)	<.001
1-4	952 (66.1)	406 (67.2)	18 (66.7)		957 (66.0)	294 (68.4)	125 (65.1)		312 (67.7)	424 (67.2)	425 (69.6)	213 (58.2)	
5 or more	334 (23.2)	192 (31.8)	9 (33.3)		338 (23.3)	132 (30.7)	65 (33.9)		135 (29.3)	201 (31.9)	102 (16.7)	96 (26.2)	
Regions													
North region	452 (31.4)	138 (22.9)	12 (44.4)	<.001	456 (31.3)	109 (25.4)	39 (20.3)	<.001	124 (26.9)	150 (23.8)	196 (32.1)	132 (36.1)	<.001
Central region	650 (45.1)	191 (31.6)	2 (7.4)		605 (45.2)	144 (33.5)	44 (22.9)		211 (45.8)	193 (30.6)	296 (48.5)	140 (38.3)	
South region	339 (23.5)	275 (45.5)	13 (48.2)		341 (23.5)	177 (41.2)	109 (56.8)		126 (27.3)	288 (45.6)	119 (19.5)	94 (25.7)	
Urban vs rural residency													
Urban	467 (32.4)	273 (45.2)	11 (40.7)	<.001	470 (32.4)	172 (40.0)	109 (56.8)	<.001	150 (32.5)	284 (45.0)	193 (31.6)	124 (33.9)	<.001
Rural	974 (67.6)	331 (54.8)	16 (59.3)		980 (67.6)	258 (60.0)	83 (43.2)		311 (67.5)	347 (55.0)	418 (68.4)	242 (66.1)	
Wealth index													
Poorest	266 (18.5)	68 (11.3)	3 (11.1)	<.001	267 (18.4)	59 (13.7)	11 (5.7)	<.001	81 (17.6)	71 (11.3)	119 (19.5)	66 (18.0)	<.001
Poorer	306 (21.2)	68 (11.3)	7 (25.9)		309 (21.3)	61 (14.2)	11 (5.7)		99 (21.5)	75 (11.9)	133 (21.8)	71 (19.4)	
Middle	327 (22.7)	100 (16.6)	3 (11.1)		328 (22.6)	74 (17.2)	28 (14.6)		99 (21.5)	103 (16.3)	145 (23.7)	83 (22.7)	
Richer	311 (21.6)	158 (26.2)	6 (22.2)		313 (21.6)	111 (25.8)	51 (26.6)		99 (21.5)	164 (26.0)	125 (20.5)	87 (23.8)	
Richest	231 (16.0)	210 (34.8)	8 (29.6)		233 (16.1)	125 (29.1)	91 (47.4)		83 (18.0)	218 (34.6)	89 (14.6)	59 (16.1)	
Partner/Husband controlling behavior													
No control	860 (59.7)	320 (53.0)	11 (40.7)	0.004	862 (59.5)	230 (53.5)	99 (51.6)	0.020	268 (58.1)	331 (52.5)	371 (60.7)	219 (59.8)	0.018
At least one type	581 (40.3)	284 (47.0)	16 (59.3)		588 (40.6)	200 (46.5)	93 (48.4)		193 (41.9)	300 (47.5)	240 (39.3)	147 (40.2)	
IPV exposure													
No	1144 (79.6)	431 (71.6)	21 (77.8)	<.001	1152 (79.6)	307 (71.7)	137 (71.4)	<.001	363 (78.7)	452 (71.9)	489 (80.3)	290 (79.5)	0.002
Yes	294 (20.5)	171 (28.4)	6 (22.2)		295 (20.4)	121 (28.3)	55 (28.7)		98 (21.3)	177 (28.1)	120 (19.7)	75 (20.6)	

5.2S2 Table A: Crude and adjusted odds ratio (95% CI) from the multinomial logistic regression to estimate the association between the empowerment domains and fertility-related outcomes.

Fertility-related outcomes, Crude and adjusted OR (95% CI)														
	Children ever born Ref: 5 or more				Time interval between the last 2 births Reference: Less than 2 years				Intentions for childbearing Ref: Less than 2 years					
	Crude		Adjusted		Crude		Adjusted		Crude			Adjusted		
	0	1-4	0	1-4	2 to 6 years	1 or less children born in the previous 6 years	2 to 6 years	1 or less children born in the previous 6 years	2 years or more	Undecided	No want	2 years or more	Undecided	No want
Beliefs about violence														
Low	1.47 (0.90, 2.38)	1.58 (1.26, 1.99)	1.60 (0.95, 2.69)	1.61 (1.22, 2.13)	0.86 (0.53, 1.38)	0.93 (0.59, 1.47)	0.85 (0.53, 1.38)	0.82 (0.51, 1.32)	1.08 (0.80, 1.47)	0.80 (0.53, 1.20)	0.86 (0.64, 1.16)	1.14 (0.82, 1.56)	0.87 (0.56, 1.34)	0.86 (0.62, 1.21)
Middle														
High	1.25 (0.78, 2.02)	1.04 (0.82, 1.30)	1.27 (0.76, 2.12)	1.07 (0.82, 1.41)	0.88 (0.54, 1.43)	0.96 (0.60, 1.53)	0.88 (0.54, 1.43)	0.99 (0.61, 1.60)	0.91 (0.67, 1.24)	0.96 (0.64, 1.42)	0.62 (0.45, 0.83)	0.90 (0.65, 1.24)	0.95 (0.63, 1.43)	0.59 (0.42, 0.82)
Decision-making														
Low														
Middle	1.00 (0.62, 1.61)	1.14 (0.90, 1.44)	1.34 (0.80, 2.25)	1.35 (1.02, 1.80)	0.94 (0.59, 1.52)	1.13 (0.72, 1.79)	0.92 (0.57, 1.49)	0.96 (0.60, 1.53)	0.81 (0.60, 1.09)	1.09 (0.74, 1.61)	1.25 (0.93, 1.70)	0.90 (0.66, 1.23)	1.12 (0.74, 1.69)	1.18 (0.84, 1.66)
High	0.91 (0.57, 1.44)	1.02 (0.82, 1.28)	1.10 (0.66, 1.83)	1.04 (0.79, 1.38)	0.93 (0.59, 1.51)	1.32 (0.84, 2.08)	0.91 (0.56, 1.47)	1.13 (0.71, 1.83)	1.02 (0.76, 1.38)	0.93 (0.62, 1.40)	1.75 (1.30, 2.37)	1.16 (0.85, 1.59)	0.92 (0.60, 1.41)	1.50 (1.06, 2.11)
Control over sexuality and safe sex														
Low														
Middle	0.92 (0.59, 1.43)	1.38 (1.11, 1.72)	0.83 (0.51, 1.35)	1.19 (0.92, 1.55)	0.78 (0.50, 1.22)	0.96 (0.62, 1.48)	0.76 (0.48, 1.21)	0.86 (0.55, 1.35)	1.15 (0.87, 1.53)	0.90 (0.62, 1.31)	1.09 (0.83, 1.45)	1.19 (0.88, 1.60)	0.97 (0.66, 1.44)	1.08 (0.73, 1.48)
High	1.19 (0.72, 1.94)	2.06 (1.61, 2.63)	0.87 (0.50, 1.51)	1.41 (1.04, 1.90)	1.07 (0.64, 1.78)	1.11 (0.68, 1.81)	1.06 (0.62, 1.78)	0.96 (0.57, 1.62)	1.62 (1.18, 2.22)	1.04 (0.68, 1.59)	1.40 (1.02, 1.92)	1.61 (1.15, 2.27)	1.16 (0.73, 1.82)	1.42 (0.99, 1.05)

Adjusted for: number of live children, age, education, and region.

5.2S2 Table B: Crude and adjusted odds ratio (95% CI) from the multinomial logistic regression to estimate the association between the empowerment domains and contraceptive practices.

Contraceptive practices, Crude and adjusted OR (95% CI)														
	Current use of contraceptives Ref. No use				Length of use of contraceptives Ref. No use				Need for contraceptives Ref. Unmet need					
	Crude		Adjusted		Crude		Adjusted		Crude			Adjusted		
	Modern	Traditional	Modern	Traditional	2 year or less	More than 2 years	2 year or less	More than 2 years	Met need	No want	No need	Met need	No want	No need
Beliefs about violence														
Low (ref.)														
Middle	1.14 (0.91, 1.42)	0.91 (0.26, 3.17)	1.05 (0.82, 1.34)	0.89 (0.26, 3.13)	1.07 (0.83, 1.39)	1.27 (0.89, 1.81)	1.02 (0.78, 1.34)	1.12 (0.76, 1.64)	0.91 (0.68, 1.22)	0.66 (0.49, 0.90)	0.82 (0.59, 1.15)	0.83 (0.62, 1.12)	0.64 (0.47, 0.87)	0.79 (0.55, 1.15)
High	0.78 (0.61, 0.99)	3.11 (1.13, 8.50)	0.82 (0.63, 1.06)	3.29 (1.20, 9.03)	0.86 (0.66, 1.13)	0.79 (0.53, 1.18)	0.90 (0.68, 1.20)	0.89 (0.59, 1.35)	0.79 (0.58, 1.08)	0.92 (0.68, 1.24)	0.92 (0.65, 1.30)	0.83 (0.60, 1.12)	0.89 (0.65, 1.21)	0.92 (0.63, 1.33)
Decision-making														
Low (ref.)														
Middle	1.10 (0.86, 1.40)	0.39 (0.12, 1.26)	0.97 (0.75, 1.26)	0.35 (0.11, 1.13)	1.00 (0.77, 1.32)	1.21 (0.79, 1.84)	0.95 (0.71, 1.26)	0.91 (0.59, 1.42)	1.03 (0.74, 1.40)	0.75 (0.56, 1.01)	1.42 (1.01, 2.00)	1.12 (0.83, 1.50)	0.74 (0.56, 0.97)	0.95 (0.68, 1.34)
High	1.48 (1.17, 1.87)	1.29 (0.56, 2.96)	1.20 (0.93, 1.54)	1.11 (0.47, 2.61)	1.25 (0.96, 1.62)	2.21 (1.51, 3.24)	1.10 (0.84, 1.46)	1.48 (0.99, 2.23)	1.37 (1.02, 1.83)	0.82 (0.61, 1.10)	1.07 (0.76, 1.52)	1.60 (1.12, 2.29)	0.64 (0.48, 1.01)	0.94 (0.60, 1.46)
Control over sexuality and safe sex														
Low (ref.)														
Middle	1.74 (1.37, 2.21)	3.61 (1.32, 9.85)	1.50 (1.16, 1.94)	3.60 (1.29, 9.99)	1.62 (1.24, 2.14)	2.57 (1.72, 3.84)	1.53 (1.15, 2.04)	1.82 (1.19, 2.79)	1.68 (1.26, 2.27)	0.89 (0.67, 1.18)	0.96 (0.70, 1.31)	1.47 (1.08, 1.99)	0.87 (0.65, 1.16)	0.95 (0.67, 1.35)
High	2.57 (2.01, 3.30)	1.65 (0.46, 5.76)	1.91 (1.46, 2.51)	1.69 (0.47, 6.07)	2.47 (1.87, 3.21)	2.95 (1.93, 4.51)	2.03 (1.50, 2.75)	1.82 (1.14, 2.88)	1.99 (1.46, 2.71)	0.71 (0.52, 0.97)	0.68 (0.47, 0.97)	1.55 (1.12, 2.15)	0.67 (0.48, 0.94)	0.82 (0.55, 1.23)

Adjusted for: number of live children, age, education, region, and wealth quintile.

5.3 Paper 3: “There are things we can do and there are things we cannot do.” A qualitative study about women’s perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique.



“There Are Things We Can Do and There Are Things We Cannot Do.” A Qualitative Study About Women’s Perceptions on Empowerment in Relation to Fertility Intentions and Family Planning Practices in Mozambique

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Introduction: The restrictive socio-cultural norms in Mozambique limit the power of women to decide, voice, and act on their reproductive choices. This study aimed to explore women’s perceptions and experiences of empowerment relating to fertility intentions and family planning practices in Mozambique, focusing on facilitators and barriers toward reproductive empowerment.

Methods: Qualitative in-depth interviews were undertaken with women of reproductive age (18–49 years) in Nampula and Maputo provinces and Maputo city, Mozambique. Data collection took place between February and March 2020 in Maputo region and during August 2020 in Nampula Province. Convenience sampling was used to recruit participants from both urban and rural healthcare facilities and from within the communities serving the healthcare facilities. In Maputo city, a snowball sampling technique was used to recruit women from the community. A total of 64 women were interviewed, 39 from Maputo and 25 from Nampula. A thematic analysis was conducted with the support of NVivo12 software.

Results: Several factors that hinder and facilitate women’s empowerment toward fertility and family planning practices in Mozambique were identified and were interpreted within the socio-ecological model. The identified barriers included women’s lack of critical consciousness and oppressive relationships. At the community and societal levels, the role of traditions, culture and gender expectations and limited access to family planning and misinformation were also important hindering factors. The facilitators of reproductive empowerment included building critical consciousness and access to economic resources at the individual level. Negative experiences at the household level were triggers of women’s empowerment for family planning. Building collective

Abstract

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Conclusions

This study identified various factors that positively or negatively influence women's empowerment journeys in Mozambique. The role of tradition, culture, and gender expectations, and oppressive relationships, were important barriers in both provinces. Women from rural areas would benefit from building of consciousness about their rights, and power to decide on their reproductive lives. Interactions with the health providers offer an

opportunity to do this by favoring controlling behaviors concerning their reproductive lives, promoting social networking and leveraging collective power.

Keywords

Women's empowerment; Mozambique; Women's perceptions; Fertility intentions; Family planning; Reproductive empowerment; Qualitative research

Introduction

While the expansion of the family planning program in Mozambique has been effective to increase access to and the uptake of contraceptives from 17% in 2003 (1) to 35% in 2019 (2), recent evidence shows that progress towards universal access to reproductive health care is compromised when women's capacity to make their own decisions with regards to fertility intentions and family planning is constrained (3–6). In Mozambique, gender inequality is one of the main barriers to sexual and reproductive health and rights impacting women's health and lives (6,7). The restrictive socio-cultural norms in Mozambique limit the power of women to decide, voice, and act on their reproductive choices, including negotiating with their partners or deciding when to get pregnant, how many children to have, and accessing family planning services (5,7).

Gender equality and the empowerment of all women and girls are prioritized in goal number 5 of the Sustainable Development Goal (SDGs) (8). Women's empowerment is considered both a mechanism to tackle gender inequality and a goal in itself as empowered women more often have active participation in society, tend to acquire positive behaviors, achieve their full potential, and have better health outcomes (4,9). In the Family Planning 2020 (FP2020 – now extended to 2030) initiative, empowerment is also considered key for family planning programs and practices (10).

Family planning services with the provision of modern contraceptives are expected to be available free of charge in all public health care facilities in Mozambique. However, the supply of such commodities to health care services is often compromised by stockouts and by the limited capacity of the government to supply health services nationwide which contributes to the lack of women's access and use (6). Furthermore, there is a dearth of trained health providers on family planning who support women in informed decision-making regarding their reproductive choices.

Overall empowerment has been associated with women's increased chances of using modern contraception (11), preventing unintended pregnancy (12,13), being able to negotiate sexual relationships (14), accessing antenatal care, and having a birth with a qualified professional (15). Despite the undeniable benefits of overall empowerment of women, the evidence from two recent systematic reviews shows inconsistent relationships between empowerment and family planning (14) and women's fertility (13). This is in part related to the diversity of definitions, conceptualization, measures, and operationalization of the term empowerment across studies (11,16,17).

Women's decision-making is the most studied domain of empowerment for reproductive outcomes (17). However, this is focused on decision-making about the functioning of the

household rather than on reproduction, assuming that reproductive decisions take similar pathways (17), which is not supported by recent findings (18,19). The need for tracking progress towards SDG 5.6.1: Proportion of women aged 15–49 years who make their own informed decisions regarding sexual relations, contraceptive use, and reproductive health care, has refined the use of indicators to better capture the processes of women’s decision-making on their reproductive issues (20,21). While these indicators are widely available through the Generations and Gender Survey (22) and Demographic and Health Surveys (23), allowing comparison of standardized data, they fail to capture important components of empowerment such as women’s agency (24). Furthermore, empowerment is intrinsically linked to specificities of the context in which it is measured (18). Access to resources like education or employment as well as normative views, values, and women’s own understanding of empowerment in different settings can shape negatively or positively the pathways of empowerment (24,25).

Despite the recent efforts to support the conceptualization and operationalization of empowerment for sexual and reproductive health, these efforts fail to include women’s own perceptions and lived experiences that look at factors that can facilitate or hinder empowerment in this sphere of a woman’s life (24). This has contributed to the limited understanding of the relationship between women’s empowerment and reproductive outcomes and the ability to develop effective interventions (17). The inclusion of women’s views and experiences considering the specificities of the contexts where they live, could uncover important nuances of empowerment for sexual and reproductive health expanding on the conceptualization and measurements of empowerment, and support the development of relevant interventions.

This study aimed to explore women’s perceptions and experiences of empowerment relating to fertility intentions and family planning practices in Mozambique focusing on facilitators and barriers women face in their journeys towards reproductive empowerment. This study builds on the existing literature on reproductive empowerment and specifically contributes to informing family planning strategies and programs in Mozambique that could enhance women’s decision-making and agency on reproductive matters.

Methods

Study design and setting

Qualitative in-depth interviews were undertaken with women of reproductive age (18-49 years) in two provinces in Mozambique, Nampula in the north and Maputo in the south, and Maputo city. The selection of the study sites was based on the 2015 Demographic and

Health Survey results (26) showing differences in contraceptive use and the level of empowerment of women across these provinces pointing to heterogeneity in how women perceive and experience empowerment concerning fertility intentions and family planning practices. Study participants were recruited from both urban and rural health care facilities and from within communities served by the health care facilities. The health care facilities were health centers chosen with the support of the Provincial Health Directorates (DPS – Direcção Provincial de Saúde) and the Health Directorate of the City of Maputo. In total, 5 health centers were selected, 3 urban and 2 rural.

The health centers are the primary level of care facilities whose services varied depending on the geographical location and level of specialized care. The selection of the health care facilities was based on the provision of the different types of contraceptive methods; the largest population served for increased diversity and, the feasibility to accessing it by the research team.

The Provincial Health Directorates liaised with the head of each health care facility for permission to conduct the study. In each health center, the research project was briefly presented by the researchers to its Director and health providers. The fieldwork team involved a lead researcher, the first author (SCL), who conducted the interviews, and a research assistant who supported translation from local languages to Portuguese.

Study participants

Women of reproductive age (18 to 49 years), not pregnant (confirmed verbally), attending one of the selected health facilities or living in the communities served by the health care facility were invited to participate in the study. A total of 64 women were interviewed, 39 from Maputo city and province (Health center - 21; Community-18), 25 from Nampula (Health center -19; Community-6), corresponding to 41 and 23 women from urban and rural areas, respectively.

The complete list of participants and respective characteristics are presented in Table 5.3S1 in the supplementary material. A summary of the main characteristics of the participants is presented in the results section.

Recruitment

The lead researcher approached women in the health center, in a group and then individually, briefly explaining the purpose of the study and what their participation would entail and, provided flyers with additional information about the study. Women interested in

participating were taken to a private location in the health care facility and provided with more detailed information about the research and eligibility was confirmed. All participants signed an informed consent form after confirming their willingness to participate. The in-depth interview was conducted immediately after in the same space.

At the community level, in both Maputo and Nampula provinces, a convenience sample was used to identify and recruit eligible women with the support of the local community leaders. The community leaders invited women of reproductive age who do not attend a health facility often, who are less likely to use contraceptives, and who were available to do the in-depth interview on the scheduled days. In Maputo city, a snowball sampling technique was used since community leaders are no longer influential in the communities. In-depth interviews were conducted in the participant's home or a public space, agreed upon with the participant.

Data collection

Data collection took place between February and March 2020 in Maputo city and Province, and during August 2020 in Nampula Province. Due to the COVID-19 pandemic, data collection in Nampula province had to be postponed to August 2020 when all safety measures could be put in place.

A semi-structured interview guide was developed, and the topics included were based on the published literature (17,25,27). Specifically, the key research questions were: how do women experience empowerment in relation to fertility intentions and family planning? What are the barriers and facilitators to the processes of empowerment for fertility intentions and family planning? In the first part of the interview, a life timeline technique was used to explore women's experiences of empowerment about their reproductive lives. The use of a timeline elicited biographical data relating to important life events, changes, decisions, and experiences (28). With the application of this technique, fertility intentions and family planning practices were mapped and explored starting at the age of women's first menstruation, going through first co-habitation, looking at moments of decision-making and processes involved around pregnancies, and power dynamics within the household and in the health services context. Other events that could indirectly have an impact such as having a paid job, death of a family member, exposure to violence or participation in a women's group or association were also explored when appropriate. The second part of the interview focused on women's perceptions around gender roles and gender power imbalances in their communities and Mozambican society. In both sections, facilitators and barriers were

explored. During the interview, the questions were adjusted to the interviewee for better understanding.

Before the start of data collection, two training sessions were organized with the research assistant on the implementation of the interview guide and the informed consent process. The interview guide was piloted in the urban and rural selected locations (4 interviews) in both provinces and adjustments and improvements were made in terms of language and terminology used to improve clarity.

The interviews were conducted in Portuguese, the official language of Mozambique, but, when necessary, translation to local languages was provided. The interviews had an average duration of 45 minutes and were audio-recorded. Interviewers kept a reflective diary.

Data analysis

A thematic analysis was conducted according to Braun and Clarke (2006) (29). The qualitative software package NVivo 12 was used to sort and manage data (30). Both deductive and inductive approaches were employed in the data analysis. First, SCL coded all transcripts by identifying sentence by sentence the topics related to the theme of this work, namely barriers and facilitators of reproductive empowerment. Then a coding framework was developed together with a codebook which was validated by SF. The code framework was useful for organizing the codes that emerged inductively from the analysis under each topic. Codes and respective participant quotes with similar meanings were grouped into themes deductively based on theoretical models for reproductive empowerment (9,24).

All interviews were transcribed verbatim and analyzed in Portuguese to prevent loss of meaning and increase the accuracy of the interpretation of the findings. At a later stage of the analysis process, when the themes and sub-themes were identified, translation of the illustrative quotes and passages was done from Portuguese into English. To guarantee the rigor and quality of data analysis, a triangulation strategy was used. The first author identified, sentence by sentence, topics related to the theme under study, and the last author collaborated in the certification of the coding framework. The barriers and facilitators' themes were then analyzed within the socio-ecological model framework (31) as a second step of the analysis. The socio-ecological model considers factors, and their interactions, at individual, relationship, community, and societal levels.

Ethical considerations

Ethical clearance was obtained from the Human Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town (Ref: HREC 579/2019) and from the Institutional Committee of Bioethics for Health from the Faculty of Medicine/Central Hospital of Maputo, Mozambique (Ref: CIBS FM&HCM/98/2019). The DPS and the Directorate of Health of the City of Maputo approved the implementation of the study before its commencement. All participants provided written informed consent and verbal permission to the audio recording prior to the interview. Confidentiality and anonymity were ensured. Digital data and hard copies were stored in a secure place with access limited to the research team only.

Results

Sociodemographic and economic characteristics of the participants are described in Table 9. Women from Maputo were slightly older than women from Nampula (32.5 vs 27.8 years). They were also more educated, and a higher proportion were single. However, the mean number of years of education was similar for women in urban areas and low for women in rural areas, particularly in Nampula. 46% and 12% of the participants were employed in Maputo and Nampula, respectively, of which most lived in urban areas. Contraceptive use was more prevalent among women from Maputo, with all women having used modern contraceptive methods at some point in their lives. In both provinces, women living in urban areas used more contraception than women from rural areas. In Maputo, oral contraceptives and injectables were the most prevalent methods, while in Nampula the injectable was the most preferred method. Women living in urban areas of Maputo delayed their first pregnancy on average by 3 years and had fewer children compared to women in the Maputo rural areas, however, these differences were not found between rural and urban areas in Nampula province.

Table 9: Sociodemographic and economic characteristics of participants from urban and rural areas of Maputo city and province and Nampula province (paper 3).

	Maputo			Nampula		
	Total	Urban ¹	Rural	Total	Urban	Rural
	39	27	12	25	14	11
Age, mean years [±SD]	32.5 [±8.0]	33.6 [±8.1]	29.9 [±7.1]	27.8 [±9.1]	29.5 [±9.6]	26.6 [±7.7]
Education, mean years [±SD]	9.2 [±4.4]	10.6 [±4.1]	6.1 [±3.6]	8.0 [±3.5]	10.1 [±2.2]	5.2 [±3.0]
Currently employed						
Yes	18 (46.1)	17 (62.9)	1 (8.3)	3 (12.0)	3 (21.4)	0

	Maputo			Nampula		
	Total	Urban ¹	Rural	Total	Urban	Rural
Marital status (%)						
Single	12 (30.8)	9 (33.3)	1 (8.3)	3 (12.0)	1 (7.1)	2 (18.2)
Married or in union	23 (59.0)	14 (51.9)	9 (75.0)	20 (80.0)	11 (78.6)	9 (81.8)
Separated, divorced, or widowed	6 (15.4)	4 (14.8)	2 (16.7)	2 (8.0)	2 (14.2)	0
Age of 1st pregnancy, median [min, max]	17 [14, 27]	19.6 [15,27]	16.5 [14,21]	18.6 [16, 21]	18.5 [16, 20]	18.5 [17, 21]
Number of pregnancies, mean [±SD]	2.9 [±1.9]	2.6 [±1.8]	3.8 [±2.1]	4.5 [±3.6]	4.6 [±3.7]	4.3 [±3.5]
Parity, mean [±SD]	2.3 [±1.7]	1.9 [±1.5]	3.3 [±1.8]	3.8 [±2.6]	3.8 [±2.6]	3.6 [±2.6]
Number of live children, mean [±SD]	2.3 [±1.8]	1.9 [±1.6]	3.3 [±1.8]	3.2 [±2.3]	3.4 [±2.3]	2.9 [±2.1]
Current use of contraception (%)						
Yes	32 (82.1)	23 (82.2)	8 (66.7)	16 (64.0)	11 (78.6)	5 (45.5)
Ever use of contraception (%)						
Yes	39 (100.0)	27 (100.0)	12 (100.0)	14 (56.0)	9 (64.2)	5 (45.45)
Contraceptive method currently used (%)²						
Oral contraceptive	9 (23.1)	8 (29.6)	1 (8.3)	2 (8.0)	1 (7.1)	1 (9.1)
Injection	9 (23.1)	6 (22.2)	3 (25.0)	13 (52.0)	9 (64.3)	4 (36.4)
Intrauterine device	2 (5.1)	2 (7.4)	0	0	0	0
Implant	3 (7.7)	2 (7.4)	1 (8.3)	1 (4.0)	1 (7.1)	0
Condom	8 (20.5)	5 (18.5)	3 (25.0)	0	0	0
No use	7 (17.9)	4 (14.8)	3 (25.0)	9 (36.0)	3 (21.4)	6 (54.5)

¹ Includes participants from Maputo city and urban area of Maputo province; ² One woman reported being sterilized.

Several factors that hinder and facilitate women's empowerment towards fertility and family planning practices in Mozambique were identified by exploring women's perceptions and lived experiences. These factors were organized in themes under Barriers and Facilitator's topics separately. Empowerment is a multilevel and dynamic process of gaining power (32), that involves the individual and its interactions within the household to the societal structures. Given these characteristics, the results of this work were interpreted within the socio-ecological model (31). Table 10 summarizes the themes found under barriers and facilitators and respective levels from the socio-ecological model. A detailed description of the sub-themes is provided below, illustrated with participants' quotes.

Table 10: Barriers and facilitators themes for women's empowerment regarding fertility intentions and family planning (paper 3).

Themes	Socio-ecological model levels
Barriers	
Lack of critical consciousness	Individual
- No existence of choice	
- Support of current system	
- Negative perception of gender power changes	

Themes	Socio-ecological model levels
Barriers	
- Limited aspirations	
Oppressive relationships <ul style="list-style-type: none"> - Controlling behavior of husband - Controlling behavior of family members - Fear of consequences 	Relationship
Role of traditions, culture, and gender expectations <ul style="list-style-type: none"> - Early marriage and motherhood - Gender roles/activities division in the household 	Societal
Limited access to family planning and misinformation <ul style="list-style-type: none"> - Lack or delay in receiving information - Myths and misinformation 	Societal
Facilitators	
Access to economic resources <ul style="list-style-type: none"> - Employment (paid) - Access to loans and credit - "Xitique"¹ 	Individual
Building critical consciousness <ul style="list-style-type: none"> - Opening the mind - Change in self-perception (self-value) - Aspirations - Voicing their choices 	Individual
Negative experiences as triggers of empowerment <ul style="list-style-type: none"> - Adverse events that lead women to take control 	Relationship
Building collective power <ul style="list-style-type: none"> - Social networks of support (e.g., associations, women's groups) - Role models 	Societal
Access to information <ul style="list-style-type: none"> - Access to education - Access to family planning services and information 	Societal

¹ Xitique is an informal saving and credit mechanism at the community level, organized among several people who know each other.

Although similar results were found across Maputo and Nampula regions, some nuances were captured. Overall, the barriers women faced or perceived seemed to be influenced by the setting women live in (urban or rural). Women's education and marital status seemed to shape what participants considered as a facilitator. These differences were highlighted in the results below where appropriate.

Barriers

Lack of critical consciousness

Women's critical consciousness can be described as the process of questioning how power inequalities operate in their lives and having a sense of self-value and entitlement (9,32). Regionally, most women from Nampula and some from Maputo, more often living in rural areas, did not question if their decision-making ability regarding their reproductive lives was being shaped by power imbalances or oppressive systems. Overall, these women were supportive of the current social organization and tended to live within the social expectations where marriage, motherhood, and gender roles were highly valued, and where the freedom and power gained by women were negatively perceived. The perception of choices in life was also limited or non-existent among these women.

This young woman from Nampula illustrates the prevailing perceived benefit of being married and the perceived value of motherhood:

"It is not good for a woman to live alone. It is important to have a husband. (...) I have never done family planning and I don't want to. I want to get pregnant again, but I haven't been able to. If God allows, I will have at least 4 children." (Nampula, rural area, 21, single, 1 child)

Similarly, the following women show discontent towards the possible choice of other women to decide or take control over their own lives:

"Women nowadays, they want to do things first for themselves and then they think if they get married, they can go back to their houses. They don't need to stay (married). Being married is not the same as it was before. I don't know what is happening." (Maputo, rural area, 43, 4 children)

"We women, don't respect men nowadays. If I don't respect my husband, he will also not respect me. If I do the things he doesn't want me to do, I am not respecting him." (Nampula, rural area, 28, married, 2 children)

Oppressive relationships

In their relationship with male partners or other family members, women often reported oppressive behaviors which were key in how women framed their fertility intentions and use of family planning as well as framed other areas of their lives. While in Nampula, urbanized and educated women reported more often the hindering effect of oppressive relationships, that was not observed in participants from Maputo. A woman from Maputo city described her husband's behavior in the face of an unwanted pregnancy.

"When he found out I was pregnant, he (the husband) was very angry with me. I remember him saying "I spoke to my godmother, and she says you should terminate the pregnancy." But he was lying. He would say: "We just got married and you are already pregnant, how can you be pregnant?" Those were very difficult times for me. He had no time for me and he started seeing other people from our neighbourhood. That was so difficult. I was very sad." (Maputo city, 42, married, 1 child)

Out of fear of consequences including threats of abandonment, loss of social value, verbal or physical violence or name shaming, women did not feel capable of challenging such oppressive environments or behaviors. Experiences of threat and abandonment were described by these participants.

"At home, my husband makes the decisions. I am afraid of making decisions although he has never bitten me." (Nampula, rural area, 22, married, 3 children)

"For example, in this question about having children. If a woman doesn't want to have children now, what should she do? She goes to family planning and chooses a contraception method. And the husband only finds out later. The first consequence is that the husband no longer sees the woman as obedient. He would say: "You made the decision of not having children by yourself and you did not ask me if I want children or not. I am going to have children with someone else." Because she decided not to have children for 5 years without his authorization, he is punishing her." (Maputo city, 34, married, 2 children)

Role of tradition, culture, and gender expectations

Traditions and cultural rituals strongly embedded early marriage and childbearing in girls and young women, further promoted by the cultural belief that this is the natural and only pathway for them. The influence of traditions and rituals is explored concerning women's sexual and reproductive choices.

"From my experience within my ethnicity, if a girl reaches maturity, that is when she has her first menstruation, she is considered a grown-up and capable of having sexual intercourse with someone. She feels that she can have these sexual encounters because she has grown. It is because of the teaching in the initiation rituals that she feels she can have sexual intercourse with any person, it does not matter the age. (Maputo city, 34, married, 2 children)

In their roles as wives and mothers, women were often limited to household chores and disempowered from reproductive choices while men's power positions were prioritized. Male power positions were related role as provider and income generator:

"The man is the one who provides to you while you stay home. He gives you money to buy diapers... So, if he tells you "I want a child", he is the one who knows because a child is his responsibility. For example, if the child is ill, he must give you money for the hospital, for the diapers, for the food, for the groceries. If he wants a child, you must give him, there is no other way." (Maputo city, 24, single, 1 child)

However, for some women, even when the man was given the decision-maker role, it was acceptable to conceal family planning practices from their husbands. As a woman from Maputo described, different rules can be applied to family planning practices.

"A woman must obey her husband but that (family planning) is different. There are things we can do and things we cannot do" (Maputo, rural area, 25, married, 3 children).

Families' control over women's lives was also enabled by traditions and norms in both provinces. In Nampula, parents were involved in arranging a marriage or approving marriage for their daughters, as this woman recalls.

"I had a boyfriend of my age but then I got married to a friend of my uncle. He came to the house to ask my parents (for marrying her) and they accepted it." (Nampula, rural area, 22, married, 3 children)

Limited access to family planning and misinformation

In Maputo, most women heard about or were offered modern contraceptives after having their first child. In Nampula, women's reported experiences seem to indicate a longer delay. A study participant explained how only after three pregnancies she obtained information about family planning.

"With my first three children I didn't use any contraceptives but after that, I got information about family planning at the hospital and some other projects in the community, so I decided to start doing contraception. I decided and just told my husband." (Nampula, rural area, 44, married, 7 children)

Women living in urban areas of Nampula and Maputo reported other factors that also played an important role in discouraging women from practicing family planning, which were misinformation and myths about modern contraception. A woman described what she has

heard men saying about contraceptives including perceived infertility due to injectable contraceptives.

"Men say that when a woman gets an injection (contraceptive) she will "burn" her tummy, "burn" future children as she won't be able to get pregnant again. So, they don't want women to "burn" their tummies, they want women to have children, all the children that God has given to them. All." (Nampula, urban area, 32, married, 4 children)

Facilitators

Access to economic resources

For most women paid employment was one of the most important steps towards achieving financial independence. Employment was associated with increased power for negotiation and having a voice about childbearing and family planning.

"To have a job as well as to farm the land can help a woman. If a woman works, she can make decisions. If a woman brings money, she can make decisions." (Nampula, rural area, 23, married, 2 children)

"From my experience most women these days do not want to have children early due to the socioeconomic contexts they live in. The living conditions. Nowadays we value living conditions. If I have a child today and I am not working, what will I be able to provide to my child?" (Maputo city, 34, divorced, no children)

A resourceful and widely used practice was the "xitique", an informal saving and credit mechanism at the community level, organized among several people (usually women) who know each other. Although this practice was very important for women's financial autonomy and building their small businesses, this was not enough to ensure financial independence. The participants from Nampula highlighted the need for institutional or government programs and funding that could support women in the development of their own businesses, give access to and create job opportunities, and facilitate access to bank loans.

"In my neighborhood, most women are street vendors, but they cannot expand their businesses because they don't have access to credit from the banks. They don't have a way to get it. They live with the "xitique", so I would like to have that opportunity for women (to have access to bank loans)." (Nampula, urban area, 23, divorced, 1 child)

Building critical consciousness

In both regions, women mentioned the need for women to open their minds or gain consciousness of their potential, their capabilities, and self-value. This was related to changing their self-perception, questioning the status quo that perpetuates gender roles and norms, and building confidence to communicate and voice their choices openly within their relationships and in the community. These views were often shared among single and more educated women presented below.

"A woman must have self-esteem; she needs to feel that she is capable of doing the things she wants. Things that men do. She needs opportunities and then she will end up liking herself more. Once a woman gets a little something, she starts feeling stronger." (Nampula, urban area, 20, single, no children)

"It would be great if we could speak, if we could speak with our husbands, with the people from the neighborhood... If we could have a voice." (Maputo, rural area, 25, married, 3 children)

Negative experiences as triggers of empowerment

Within the household, in the relationship with their partners and family members, adverse events seem to be a triggering factor for the empowerment of women in relation to their fertility and family planning. In the face of such negative or adverse situations, like abusive or controlling behaviors, it was acceptable for a woman to take control of her life, particularly with reproductive matters, as explained by these participants.

"There are many men who are aggressive. What they want, you must give them (sexually). So having family planning (available) helps us a lot." (Maputo, rural area, 21, married, 2 children)

"A woman can make decisions if there are conflicts or problems at home, when there is violence, when there is no understanding between the woman and the husband.... so a woman should leave that and take care of her own life. I agree that a woman must make their own decisions when it is to avoid the worsening of the situation (between her and her husband)."(Nampula, urban area, 36, married, 5 children)

Building collective power

Only women from Maputo region, mostly single, identified social support and role models from peers as a key resource in the empowerment process. This included safe spaces, like women's associations or groups where women can come together to share experiences, find

support, and debate. When engaging with each other, women can have an influencing role among themselves. It is not only those in power positions, such as the ones in the government, that serve as role models but also women from the community whose different pathways become inspirational and an example to follow by others at a local level. A study participant described her experience attending sessions at a women's association in Maputo.

"I attend a group once a week, where women get together to discuss women's issues. From maternity to society, all sorts of things. And for me, it is important to know that I am not alone, that there are other women that also don't comply with the social expectations, that are living their lives the way they want to. But within that association, there are many women who think very differently from me, and they are there and there is debate. So, I think it is important for a person, for a woman to listen to both, different sides and make their choices in life." (Maputo city, 29, single, no children)

Access to information

Access to information was especially highlighted by women living in urban areas in both regions. Education was amongst the most emphasized aspects mentioned by women as a prerequisite required for their progression towards empowerment concerning fertility and family planning practices. Creating conditions for girls and young women to access schools and ensuring these are close to their communities and safe for them to attend was linked to preventing early marriage and motherhood, and to future opportunities, as this participant from Nampula highlighted.

"We need schools in the neighborhood so women's lives can improve. I believe it is mostly schools that we need. Advise our daughters to go to school and to not get married early" (Nampula, urban area, 30, married, 6 children)

For women in Maputo, schools are the place where thinking processes and thought are stimulated, and this was key for women's empowerment in the future.

"I think school. The more schooling, the more education, the more the capacity we must make ourselves be heard and stand for something we want. I cannot defend something that I don't know or can't understand. I need the knowledge to be able to do it... I need information." (Maputo, urban area, 33, married, 3 children)

Access to family planning services was also considered crucial for women's empowerment for fertility and family planning in both regions. At the health facilities and in the interactions

with health providers women learned about the advantages and disadvantages of the different contraceptive methods, which they found useful for their decision-making regarding family planning practices. A woman from Nampula explained how counseling from health providers provided her with confidence in choosing a contraceptive method.

"The health providers first explain the advantages and disadvantages of family planning. They give you confidence... so I trust that health provider and choose a contraceptive method." (Nampula, urban area, 20, single, no children)

Notwithstanding, women highlighted the need to make information about family planning and contraceptive methods more available in various places, namely talks at the health center and sensitization campaigns at the community level. Furthermore, some women from Maputo mentioned the importance of personalized counselling, in a private environment, as stated by this participant.

"Yes (they give us information) but not the way it should be. When you are alone you can feel comfortable talk if you have a problem. Usually, there are other people (patients) there (consultation room) at the same time and that does not make it easy." (Maputo, urban area, 20, married, 1 child)

Discussion

This study explored women's perceptions and experiences of empowerment in relation to their fertility intentions and family planning practices, identifying important barriers and facilitators for the empowerment process in Mozambique. Overall, these findings reinforce the importance of the multilevel nature of empowerment by showing how the different barriers and facilitators operate at different levels of a woman's life. Understanding such dynamics can support the development of comprehensive and more effective interventions for women's reproductive empowerment.

The findings of this work represent the perspectives of women from different sociodemographic, and geographical backgrounds, and most importantly it reports on the views of single women, largely absent in the empowerment literature (11,14,24). Women who took part in the study were at different points in their empowerment journeys, therefore their experiences and perceptions of barriers and facilitators were not always shared among them. The link between levels of empowerment and how women perceive and experience barriers and facilitators to empowerment deserve further analysis in future research so mechanisms of empowerment can be better understood. Furthermore, it would be interesting to compare our results with those from other studies in the African context about women's

perceptions of barriers and facilitators of reproductive empowerment, however, to our knowledge, there is a lack of studies on this topic. Notwithstanding, our study could support the interpretation of quantitative indicators widely used to measure reproductive empowerment such as those included in the monitoring of the SDG 5.6.1, by providing contextual aspects and identifying structural issues (20).

At the regional level, this study captured important differences in how women perceive and experience barriers and facilitators to empowerment in relation to reproduction (25). Women from the Nampula region were, in general, more submissive to male power and gender expectations, where childbearing and marriage are highly valued, and men are responsible for fertility decisions. Women in Nampula were less willing to use modern contraceptives, also observed in other studies (6,26). Distinct and prevailing social and gender norms, as well as strong embedded traditions in Nampula region, could in part explain the differences between regions. In addition, the limited access to information and health services with a good supply of contraceptives in the region could also play an important role in the low uptake of contraception (33). Our findings also seem to suggest that women's perception and experience of the barriers and facilitators to empowerment are shaped by other factors such as living in a rural or an urban setting, women's educational level, and marital status. This is aligned with the literature about social determinants of women's reproductive empowerment (18,20). Similarly to what has been described in other studies, the barriers to women's empowerment regarding fertility and family planning, are embedded in traditions, culture and gender roles as well as accepted oppressive behaviors towards women and limited access to services and information (24,32,33).

Contrary to the findings from a study involving other African countries (24), this study showed that family members were associated with greater pressure for women's marriage and childbearing in Mozambique, often not supporting women's family planning practices (34). These barriers work towards keeping control over women's reproduction and at the same time, imposing social expectations related to women's role associated with their childbearing and marriage capacity. Often the fear of consequences from challenging these norms prevents women from embarking on empowerment journeys, contributing to the exposure to harmful situations or the use of contraceptives covertly (24,34,35).

An important barrier identified in this study was the lack of critical consciousness of women. The results showed that in some cases women themselves perpetuate oppressive and gender bias traditions as this is also where women can find their voice and exercise some form of power over other women (6). The development of critical consciousness is an essential resource or precondition to trigger empowerment processes (9,11,36), also identified in this study.

Beyond education, access to information, financial independence, empowerment resources amply described in the literature, this study identified other facilitators that deserve further attention in research and interventions. Taking part in social networks allows women to come together and share experiences which contributes to breaking oppressive beliefs and expectations among women themselves and simultaneously promoting collective power (32,36). For example, evidence from Mozambique suggests that living in contexts where open discussion and conversations about family planning take place has a positive influence on the use of contraceptives among women (37).

Conversely, being exposed to negative events, either abusive, controlling behaviors or general neglect of the household by their partners, was also identified as a trigger for women taking control over their reproductive lives (18). Although this could be connected to other facilitators of empowerment such as being conscious of one's rights, having a sense of injustice, or having different options in life (38), further research should be conducted to understand how these negative events influence women's empowerment in relation to their fertilities and family planning practices.

Health providers were one of the main sources of information regarding family planning and modern contraception methods for women in Mozambique. Women showed general satisfaction with the family planning services and the interactions with the health providers. More private and personalized family planning counseling, as well as more information, were perceived as a need by women, which could represent an opportunity to include topics namely women's right to bodily autonomy, choosing and decision-making processes, and having other options in life that are beyond childbearing which can contribute to reproductive empowerment (3).

Strengths and limitations

To our knowledge, this study is the first to explore women's perceptions and lived experiences of empowerment in relation to fertility and family planning practices in Mozambique. It also places women at the center of empowerment, including single women, often overlooked, giving them a voice and expands on recent conceptual frameworks of empowerment for sexual and reproductive health. Notwithstanding, this study has some limitations. First, convenience sampling was used to recruit participants, both at the health facility and at the community level and this could have introduced bias in the selection of participants. Women who attended the health center or were known to traditional leaders could be more familiar with contraception methods and more aware of their choices than those not captured by the recruitment process. However, the in-depth interviews captured both personal experiences and more broad views of women and their experiences in

Mozambican society, which could have minimized the potential selection bias. Secondly, this study failed to include male perspectives who are often the gatekeepers of decisions related to women's reproduction in Mozambique, and the views of community stakeholders whose influence on social and gender norms is still relevant. Moreover, it did not explore in-depth men's roles and responsibilities in reproductive matters. However, whilst men's roles and responsibilities were not included in the paper, this work explored empowerment for fertility intentions and family planning practices in relation to gender power dynamics. Notwithstanding, this should be further analyzed in future research.

Conclusions

This study identified various factors at individual, societal and structural levels that positively or negatively influence women's empowerment journeys in Mozambique. These factors seemed to be influenced by women's region and place of living, urban vs. rural, as well as women's education and marital status. The role of tradition, culture, and gender expectations, as well as oppressive behaviors from partners or other family members, were important barriers for women from both provinces. Women from rural areas, particularly from Nampula, would benefit from building of consciousness about their rights, capacity, and power to decide on their reproductive lives. Interactions with the health providers offer an opportunity to do this by favoring controlling behaviors concerning their reproductive lives, promoting social networking and leveraging collective power and action.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Authors' contributions

SCL, DC, SF and JH conceptualise the study. SCL designed the study, analysed the data, and prepared the initial draft of the paper. SF supported data analysis and provided inputs. JH, SF, DC and NBO reviewed and substantially edited the manuscript. All authors read and approved the final manuscript.

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References

1. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICFI. Moçambique inquérito demográfico e de saúde 2011. Calverton, Maryland, USA: MISAU, INE e ICFI. 2011.
2. Family Planning 2020. FP2020 Data Dashboard: East Africa countries [Internet]. 2019 [cited 2020 Apr 20]. Available from: <http://www.familyplanning2020.org/data-dashboard>
3. United Nations Population Fund (UNFPA). My body is my own - Claiming the right to autonomy and self-determination. State of the world population 2021 [Internet]. 2021 [cited 2021 Apr 15]. Available from: <https://www.unfpa.org/publications/state-world-population-2021>
4. United Nations Population Fund (UNFPA). Tracking women's decision-making for sexual and reproductive health and reproductive rights. New York; 2020.
5. Capurchande R, Coene G, Roelens K, Meulemans H. "If I have only two children and they die... who will take care of me?" – A qualitative study exploring knowledge, attitudes and practices about family planning among Mozambican female and male adults. BMC Womens Health [Internet]. 2017 Aug 22;17:66. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568310/>
6. Arnaldo C, Cau BM, Chilundo B, Picardo J, Griffin S. Planeamento familiar e políticas de saúde sexual e reprodutiva em Moçambique. Cepsa. Langa DS, editor. Maputo, Moçambique; 2019.
7. United Nations Population Fund (UNFPA). Por escolha, Não por acaso. Planeamento familiar, direitos humanos e desenvolvimento. In: Relatório sobre a Situação da População Mundial. Maputo, Mozambique; 2012.
8. United Nations Department of Economic and Social Affairs - Statistics Division. Sustainable Development Goal indicators [Internet]. United Nations; 2017. Available from: <https://unstats.un.org/sdgs/>
9. Eerdewijk A van, Wong F, Vaast C, Newton J, Tyszler M, Pennington A, et al. White paper: A conceptual model on women and girls' empowerment. Amsterdam; 2017.

10. Family Planning 2020. FP2020 Initiative [Internet]. 2019 [cited 2019 May 20]. Available from: <https://www.familyplanning2020.org/>
11. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. 2017 Sep 26;5(9):e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>
12. Upadhyay UD, Hindin MJ. Do higher status and more autonomous women have longer birth intervals?: Results from Cebu, Philippines. *Soc Sci Med* [Internet]. 2005;60(11):2641–55. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953604005908>
13. Upadhyay UD, Gipson JD, Withers M, Lewis S, Fraser CS, Huchko MJ, et al. Women's empowerment and fertility: A review of the literature. *Soc Sci Med*. 2014;31(9):1713–23.
14. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017/01/10. 2017 Nov;49(6):713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>
15. Shimamoto K, Gipson JD. The relationship of women's status and empowerment with skilled birth attendant use in Senegal and Tanzania. *BMC Pregnancy Childbirth* [Internet]. 2015;15(1):154. Available from: <https://doi.org/10.1186/s12884-015-0591-3>
16. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017 Nov; Available from: <https://doi.org/10.1007/s11205-017-1811-1>
17. Hinson L, Edmeades J, Murithi L, Puri M. Developing and testing measures of reproductive decision-making agency in Nepal. *SSM - Popul Heal* [Internet]. 2019;9(August):100473. Available from: <https://doi.org/10.1016/j.ssmph.2019.100473>
18. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique. *PLoS One* [Internet]. 2021;16(5):1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>
19. Shimamoto K, Gipson JD. Investigating pathways linking women's status and empowerment to skilled attendance at birth in Tanzania: A structural equation modeling approach. *PLoS One* [Internet]. 2019;14(2):1–16. Available from: <https://doi.org/10.1371/journal.pone.0212038>
20. United Nations Population Fund (UNFPA). Global goals indicators 5.6.1. Research on factors that determine women's ability to make decisions about sexual and reproductive health and rights. Vol. I. 2019.
21. United Nations Population Fund (UNFPA). Women's ability to decide. 2020.
22. Generations and Gender Programme [Internet]. 2022 [cited 2022 Jan 6]. Available from: <https://www.ggp-i.org/>
23. Inner City Fund (ICF). The Demographic and health survey program. [Internet]. 2020.

- United States Agency for International Development; 2020 [cited 2021 Dec 7]. Available from: <https://dhsprogram.com/What-We-Do/index.cfm>
24. Karp C, Wood SN, Galadanci H, Sebina Kibira SP, Makumbi F, Omoluabi E, et al. 'I am the master key that opens and locks': Presentation and application of a conceptual framework for women's and girls' empowerment in reproductive health. *Soc Sci Med* [Internet]. 2020;258:113086. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953620303051>
 25. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>
 26. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
 27. Cornwall A. Addressing the preconditions: Women's rights and development. 2002; Available from: http://www.pathwaysofempowerment.org/archive_resources/addressing-the-preconditions-women-s-rights-and-development-in-financing-gender-equality-commonwealth-perspectives
 28. Bagnoli A. Beyond the standard interview: the use of graphic elicitation and arts-based methods. *Qual Res* [Internet]. 2009;9(5):547–70. Available from: <https://doi.org/10.1177/1468794109343625>
 29. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* [Internet]. 2006;3(2):77–101. Available from: <https://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa>
 30. NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12. QSR International Pty Ltd.; 2020.
 31. National Centre for Injury Prevention and Control Division of Violence Prevention. The Social-ecological model: A framework for prevention [Internet]. 2021 [cited 2021 Apr 17]. Available from: <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html>
 32. Edmeades J, Mejia C, Parsons J, Sebany M. Conceptual framework for reproductive empowerment: Empowering individuals and couples to improve their health (Background Paper). 2018.
 33. Cau BM. Community influences on contraceptive use in Mozambique. *Health Place* [Internet]. 2015;31(Supplement C):10–6. Available from: <http://www.sciencedirect.com/science/article/pii/S135382921400152X>
 34. Macia M, Maharaj P, Capurchande R. O que se sabe e o que se faz: Conhecimento, atitudes e práticas sobre o planeamento familiar na área urbana e rural, sul de Moçambique. In: *Planeamento Familiar e Políticas de Saúde Sexual e Reprodutiva em Moçambique*. Maputo, Moçambique: CEPISA - Centro de Pesquisa em População e Saúde; 2019. p. 279.
 35. Capurchande R, Coene G, Schockaert I, Macia M, Meulemans H. "It is challenging...

- oh, nobody likes it!": A qualitative study exploring Mozambican adolescents and young adults' experiences with contraception. *BMC Womens Health* [Internet]. 2016 Jul 30;16:48. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4967333/>
36. Cornwall A. Women's empowerment: What works? *J Int Dev* [Internet]. 2016 Apr 1;28(3):342–59. Available from: <https://doi.org/10.1002/jid.3210>
 37. Cau BM. Female migration, local context and contraception use in urban Mozambique. *Afr J Reprod Health* [Internet]. 2016 Mar 30;20(1):52–61. Available from: <https://www.ajrh.info/index.php/ajrh/article/view/74>
 38. Schuler SR, Nazneen S. Does intimate partner violence decline as women's empowerment becomes normative? Perspectives of Bangladeshi women. *World Dev* [Internet]. 2017/10/10. 2018 Jan;101:284–92. Available from: <https://pubmed.ncbi.nlm.nih.gov/29371749>

Supplementary material for paper 3

Table 5.3S1: Sociodemographic characteristics of the participants from urban and rural areas of Maputo (including Maputo city) and Nampula provinces.

#	Region	Local	Site	Age (years)	Civil status	Education (years)	Employed	Age of 1st pregnancy	Number of pregnancies	Type of contraception currently used	Ever use of contraception	Type of contraception previously used
1	M	Urban	HC	32	Married	15	yes	26	2	OC	yes	OC
2	M	Urban	HC	34	Married	16	no	24	3	OC	yes	OC and condom
3	M	Urban	HC	24	single	10	yes	20	1	OC	yes	Implant
4	M	Urban	HC	25	Married	7	no	17	2	Injection	yes	Injection
5	M	Urban	HC	34	Married	17	yes	27	2	OC	yes	OC
6	M	Urban	HC	25	Single	16	yes	na	0	OC and condom	yes	Condom
7	M	Urban	HC	42	Married	9	no	23	1	Injection	yes	OC
8	M	Urban	C	29	Single	16	yes	na	0	Condom	yes	OC
9	M	Urban	C	37	Single	12	yes	*	1	Condom	yes	OC
10	M	Urban	C	25	Single	12	yes	na	0	Condom	yes	Vaginal ring
11	M	Urban	C	39	Single	18	yes	19	1	No use	yes	OC
12	M	Urban	C	42	Union	8	yes	19	5	Implant and condom	yes	Injection
13	M	Urban	C	40	Union	10	yes	15	4	Condom (sometimes)	yes	Injection
14	M	Urban	C	34	Divorced	12	yes	24	2	IUD	yes	OC
15	M	Rural	HC	33	Divorced	10	no	21	3	Condom	yes	Injection and OC
16	M	Rural	HC	21	Union	6	no	15	2	Injection	yes	Injection and OC
17	M	Rural	HC	43	Married	5	no	15	6	Condom	yes	Injection and OC
18	M	Rural	HC	26	Union	7	no	17	1	No use	yes	Condom
19	M	Rural	HC	31	Union	0	yes	16	3	Implant	yes	OC and condom
20	M	Rural	HC	18	Single	10	no	17	1	Injection and condom	yes	Condom
21	M	Rural	HC	23	Married	11	no	15	5	OC	yes	OC
22	M	Urban	HC	20	Union	10	yes	18	1	Injection	yes	Injection and condom
23	M	Urban	HC	44	Married	8	no	16	4	Implant	yes	OC

#	Region	Local	Site	Age (years)	Civil status	Education (years)	Employed	Age of 1st pregnancy	Number of pregnancies	Type of contraception currently used	Ever use of contraception	Type of contraception previously used
24	M	Urban	HC	32	Union	12	yes	25	3	OC	yes	OC
25	M	Urban	HC	32	Divorced	0	no	15	4	OC	yes	Injection and condom
26	M	Urban	HC	33	Married	12	yes	18	4	IUD	yes	Implant and OC
27	M	Urban	HC	30	Union	10	yes	17	3	OC	yes	Injection
28	M	Urban	HC	22	Single	9	no	18	1	Injection	yes	Implant
29	M	Urban	C	42	Divorced	12	yes	17	4	Condom	no	Na
30	M	Urban	C	39	Married	6	yes	17	4	Injection	yes	OC
31	M	Urban	C	47	Married	5	no	18	5	No use	yes	Injection
32	M	Urban	C	37	Single	7	no	21	5	Injection and condom	yes	IUD
33	M	Urban	C	48	Widow	7	no	20	6	No use	yes	Injection and condoms
34	M	Urban	C	20	Single	10	no	16	1	No use	yes	Injection and condoms
35	M	Rural	C	39	Union	0	no	17	7	No use	yes	Injection
36	M	Rural	C	33	Divorced	4	no	19	7	No use	yes	OC and implant
37	M	Rural	C	25	Union	6	no	16	3	Condom	yes	Injection and OC
38	M	Rural	C	31	Union	6	no	16	3	Sterilization	yes	Injection
39	M	Rural	C	36	Union	8	no	14	5	Injection	yes	OC and implant
40	N	Urban	HC	30	Union	4	no	16	6	Injection	no	
41	N	Urban	HC	36	Union	10	no	18	5	Injection	yes	Injection
42	N	Urban	HC	19	Union	11	no	19	1	Injection	no	
43	N	Urban	HC	21	Union	12	no	18	1	Injection	yes	Condom
44	N	Urban	HC	23	Divorced	12	yes	20	3	Injection	no	
45	N	Urban	HC	20	Single	12	yes	na	0	Implant	no	
46	N	Urban	HC	40	Union	12	yes	19	6	Injection	yes	Condom
47	N	Urban	HC	18	Union	7	no	18	1	No use	yes	Condom
48	N	Urban	HC	25	Union	10	no	20	3	Injection	Yes	Implant
49	N	Urban	HC	21	Union	12	no	17	2	OC	yes	Injection

#	Region	Local	Site	Age (years)	Civil status	Education (years)	Employed	Age of 1st pregnancy	Number of pregnancies	Type of contraception currently used	Ever use of contraception	Type of contraception previously used
50	N	Urban	C	32	Union	10	no	17	4	Injection	yes	Condom
51	N	Urban	C	46	Widow	10	no	*	15	No use	Yes	Injection and OC
52	N	Urban	C	47	Union	10	no	20	8	No use	no	
53	N	Urban	C	35	Union	9	no	19	5	Injection	yes	Injection
54	N	Rural	HC	21	Single	9	no	*	3	No use	no	
55	N	Rural	HC	23	Union	8	no	20	2	No use	yes	Injection
56	N	Rural	HC	36	Union	0	no	18	7	Injection	no	
57	N	Rural	HC	27	Union	8	no	21	5	OC	yes	OC
58	N	Rural	HC	18	Union	8	no	17	1	No use	no	
59	N	Rural	HC	22	Union	5	no	20	2	Injection	yes	Injection
60	N	Rural	HC	19	Union	4	no	18	1	No use	no	
61	N	Rural	HC	22	Union	4	no	18	4	No use	no	
62	N	Rural	HC	20	Single	0	no	19	1	Injection	no	
63	N	Rural	C	44	Union	8	no	19	9	Injection	yes	Injection
64	N	Rural	C	30	Union	4	no	18	12	No use	yes	Injection, OC and condom

- interview number; Region: M – Maputo, N-Nampula; Site: HC – Health center, C- Community; OC- Oral contraceptive; *missing

5.4 Paper 4: Women's voices and meanings of empowerment for reproductive decisions: A qualitative study in Mozambique (submitted)

Abstract

Background: Women in Mozambique are often disempowered when it comes to making decisions concerning their lives, including their bodies and reproductive options. This study aimed to explore the views of women in Mozambique about key elements of empowerment for reproductive decisions and the meanings they attach to these elements.

Methods: Qualitative in-depth interviews were undertaken with 64 women of reproductive age (18-49 years) in two provinces in Mozambique. Participants were recruited through convenience sampling. Data collection took place between February and March 2020 in Maputo city and Province, and during August 2020 in Nampula Province. A thematic analysis was performed.

Results: Women described crucial elements of how power is exerted for reproductive choices. These choices include the ability to plan the number and timing of pregnancies and the ability either to negotiate with sexual partners by voicing choice and influencing decisions, or to exercise their right to make decisions independently. They considered that women with empowerment had characteristics such as independence, active participation and being free. These characteristics are recognised key enablers for the process of women's empowerment.

Conclusions: The elements identified by women in Mozambique align with existing evidence in the literature, and contribute to an expanded conceptualization and operationalization of women's sexual and reproductive empowerment.

Key words

Women's empowerment; Reproductive empowerment; Mozambique; Conceptualization

Background

Women's empowerment is a specific target of the Sustainable Development Goals (SDGs), making it a development priority in countries and in the international community's agenda [1]. While evidence suggests that women's empowerment is generally linked to better health outcomes, findings are inconsistent concerning its contribution to sexual and reproductive outcomes such as fertility and family planning practices [2–5]. These diverse results stem partly from the variety of ways in which empowerment is conceptualized, operationalized and measured in research studies, and partly from the lack of appropriate contextualization of such concepts and measures to the settings in which the studies are conducted [6,7].

Although Kabeer's definition of women's empowerment as *"a process where women gain power or control to make strategic life choices where this was previously denied"* is widely used [4,8], there is still no consensus about what empowerment represents and how it should be operationalized and measured. This is demonstrated by the considerable diversity in the terminology used to describe empowerment, and the extent to which terms are used interchangeably. For example, the terms "autonomy", "agency", "women's status", have been used interchangeably to describe and measure women's empowerment [4]. Further, many empirical studies do not use theoretically grounded models to guide and refine their conceptualization and definitions of empowerment. These problems have slowed the development of evidence on the association between women's empowerment and health and reproductive outcomes [4,6].

In Mozambique, gender inequality and unbalanced gender power relations are considered important determinants of women's health [9,10]. Often, women in Mozambique are not empowered to make decisions concerning their lives, including their bodies and reproductive options [10]. Therefore, promoting women's empowerment in Mozambique could accelerate advancements in women's health while also tackling gender inequality.

Women's empowerment is intrinsically linked to the specificities of the context in which it is measured [11]. While the core ideas of women's empowerment are universal, evidence suggests that beliefs, attitudes and behaviours that reflect empowerment in one context might not indicate empowerment in another [12]. An example is the use of empowerment measures primarily developed for Asian countries, such as women's social mobility. Some of these turned out to be irrelevant to the African context due to social and cultural differences between the two regions [4,13]. Although standardized measures theoretically allow for comparison between countries, the validity and interpretations of findings should be questioned if no cultural and social understanding exists to support interpretation [4,6], context-specific indicators might thus be required and of value. In addition, women's

perception and understanding of empowerment, shaped by their values and cultural background, most likely varies across settings [4]. However, this is seldom considered when deciding how to measure or conceptualize empowerment [14].

Incorporating women's views and meanings - i.e. how they understand and describe empowerment - is key to uncovering underlying aspects of decision-making, access to choice and freedom to choose the options they perceive as best, power structures, and gender dynamics [15]. Moreover, these can uncover important insights and contribute to the validation of the way that women's empowerment is currently conceptualized and operationalized, particularly within the fertility and family planning field. The primary goal of this study was to explore the views of women in Mozambique about key elements of empowerment, the intricate meanings they attach to these elements, and which elements they identify as the most relevant to their lives. By exploring their voices, the research aimed to ultimately contribute to inform women-centred programmatic strategies for Mozambique. This study was part of a larger mixed methods research study that aimed to describe how women's empowerment influences the reproductive choices of women of reproductive age in Mozambique [16–18].

Methods

Study design and setting

A qualitative study was conducted through interviews of Mozambican women to explore their experiences, views and meanings of empowerment in relation to fertility and family planning practices. The methods of this study was previously described elsewhere [18]. Briefly, in-depth interviews were conducted with women of reproductive age (18-49 years) living in the provinces of Nampula in the north, Maputo in the south, and in Maputo city in Mozambique. The selection of these locations was guided by disparities in contraceptive utilization and levels of women's empowerment highlighted in the 2015 Demographic and Health Survey [19].

With support from the Provincial Health Directorates (DPS – Direcção Provincial de Saúde) and the Health Directorate of the City of Maputo, the research team sampled five health centres, three urban and two rural. This selection was based on the availability of varied contraceptive methods, the diversity of the served population, and logistical accessibility.

The data collection team comprised a lead researcher (SCL) and a research assistant who provided translation from local languages to Portuguese.

Study participants and recruitment process

The study sought participation from women of reproductive age (18 to 49 years), not pregnant (confirmed verbally), who attended one of the selected health facilities or lived in the communities served by these facilities.

At health centres, the lead researcher approached potential participants individually and in groups. A succinct explanation of the study's purpose and the nature of involvement was provided. Interested women were then taken to a private room within the healthcare facility for a detailed overview of the research. Their eligibility was confirmed, and informed consent was obtained. For participants in the community settings of both provinces, a convenience sampling approach was employed, aided by local community leaders. These leaders identified women of reproductive age who rarely accessed healthcare facilities, who were less likely to use contraceptives and were available for in-depth interviews on predetermined dates. Due to the reduced influence of community leaders in Maputo city, a snowball sampling technique was applied in this setting. Upon agreement, the interviews took place either in the participant's home or a public space.

In total, 64 women participated in the study: 39 from Maputo city and province (21 from health centres and 18 from the community) and 25 from Nampula (19 from health centres and 6 from the community). Of these, 41 women lived in urban areas, and 23 in rural areas. Participants' characteristics are described in detail in the supplementary material (Table 9 and Table 5.3S1, paper 3). Overall, women from Maputo were slightly older, more educated, and more likely to be single when compared to women from Nampula. In Maputo, 46% of the participants reported being employed, compared with only 12% of women in Nampula. Most of the employed women lived in urban areas in both provinces. All participants from Maputo had used modern contraceptive methods at some point in their lives. In both settings, urban women were more likely than rural women to use contraception. Injectables and oral contraceptives were the preferred methods by participants in Maputo, while in Nampula injections were the most used method. In Maputo, four participants, three of which single, combined the use of hormonal contraceptives (injectable, oral contraceptive and implant) with the use of condoms. On average, participants living in urban areas of Maputo had their first pregnancy three years later than women in the Maputo rural areas, and they also had fewer children. Such differences were not found between rural and urban areas in Nampula.

Data collection

The research question '*What views and meanings of empowerment do women of reproductive age identify in their lives?*', together with evidence from published literature, guided the development of a semi-structured interview guide [4,20,21]. The interviews

employed a life timeline technique [22] to elicit participants' empowerment experiences within their reproductive journeys. This approach looked at significant life events, decisions, power dynamics within households, and interactions with healthcare services as they pertained to fertility intentions and family planning. The latter part of the interviews focused on participants' views on gender roles and power dynamics within their communities and Mozambican society.

Prior to the commencement of data collection, the research assistant underwent training on conducting the interview and obtaining informed consent. The interview guide was tested through pilot interviews conducted in selected urban and rural settings in both provinces. Feedback from these sessions led to improvements in language and terminology to enhance clarity.

Data collection took place between February and March 2020 in Maputo city and province. Due to the COVID-19 pandemic, data collection in Nampula province had to be postponed to August 2020 when all safety measures could be put in place. Interviews were conducted in Portuguese, the official language of Mozambique. Translation support to local languages was provided when necessary. The interviews had an average duration of 45 minutes and were audio-recorded.

Data analysis

The qualitative software package NVivo 12 was used to sort and manage the data [23]. A thematic analysis was conducted using both inductive and deductive approaches [24]. The lead researcher (SCL), a native Portuguese speaker, coded all transcripts sentence by sentence, identifying themes related to reproductive empowerment as perceived by the women. A coding framework was developed to support the organization of the codes that emerged from the analysis under each topic. To ensure rigor and data quality, a triangulation strategy was employed, with the first and last authors collaborating in the coding framework validation.

To prevent loss of meaning and increase the accuracy of the interpretation of the findings, all interviews were transcribed verbatim and analysed in Portuguese. The translation of illustrative quotes and passages from Portuguese into English was done later in the analysis process.

Results

From the thematic analysis, two major themes reflecting women's views and meanings around empowerment were identified: Women's characteristics associated with empowerment; and women's actions/manifestations of power.

Women's characteristics for empowerment

Under women's characteristics for empowerment, three sub themes emerged expressing women's perceptions of what a woman is or looks like when she is generally empowered within the household. The characteristics included being *independent*, an *active participant in decision-making*, and being *free*.

Independent

Overall, women with empowerment were perceived as being independent, particularly in relation to decision-making within the household. These women were characterized as having some level of financial and social autonomy from their husbands, partners, or other family members.

"I am not very dependent on him. I am also independent financially, so some of the things I just decide on my own - "I am going to do this"(...)." (Maputo city, 32, married, 2 children)

"There have been some changes. Women before were dependent on their husbands. Nowadays, women are independent to work and have their own businesses." (Nampula, urban area, 23, single, 1 child)

The participants also identified key features of women they perceived as financially and socially independent and with power for decision-making within the household. These included having a job outside the house, and earning an income, as illustrated by these quotes.

"If a woman has a job, she can make decisions. If a woman brings money to the household, she can make decisions." (Nampula, rural area, 23, married, 2 children)

"(Work) has a very big impact because here the idea is for women to be submissive and wait for the men to support her and all the expenses, so that is why finding a job was so important for me, I felt autonomous." (Maputo city, 37, single, no children)

Active participant in decision-making

Women with empowerment were also described as active participants in different spheres of their lives. Women's participation was related to having a voice and being heard by their families and communities:

"We don't accept that men step on us anymore, we don't accept that. Now we are able to speak." (Maputo, urban area, 44, married, 3 children)

"Women must do family planning. It is very good for them. And they must demand what they want and don't let themselves just die having children. We must set up and demand the life we want." (Maputo, rural area, 33, divorced, 3 children)

Free

Being or feeling free was another characteristic identified and valued by women in relation to decision-making processes which in turn was related to the experience of wellbeing and satisfaction in freely choosing their own pathways. Such pathways were often different from societal gender expectations around marriage and motherhood as described by these study participants from Maputo city:

"A woman can decide not to have a husband and be very clear about the life she wants to live. What does that mean? It means that she can decide not to have a husband and have a different focus in her life, either studies or a job, and she feels satisfied about it. (...) Today the society we live in gives us the freedom to choose." (Maputo city, 34, married, 2 children)

"I believe she is living in a way that is very good for her. (...) I think she is exercising her freedom. She is doing so well. I never seen anyone being so clear about not wanting to have children, just wanting to work and travel." (Maputo city, 29, single, no children)

Women's actions and manifestations of power

Participants identified different ways in which women could manifest power directly or indirectly in relation to their reproductive lives, namely through *planning childbearing and family size*, *negotiation with partner* and *sole decision-making* regarding family planning.

Planning childbearing and family size

Despite the value given to motherhood and children being considered by some women as the family's "wealth", many also valued the ability to plan the number and the timing of

pregnancies. Women viewed planning as having options or alternatives in life. The following participant explained how the concept of planning, and family planning in particular, changed her perspective of childbearing:

“(Family planning) helps you to be healthy and to make your own (life) plan while you are still free. If you have a baby, you cannot plan anymore, life gets complicated. You would like to attend school, but you cannot because you have to look after that baby. So that baby must be planned. If I had done that, I think I would have suffered less but it was before there was information...we did not know much then.” (Maputo city, 42, married, 3 children)

Different reasons lead women to plan their childbearing. While some women prioritised their own health, for many there was a concern with the children’s future, including their well-being, healthy growth and access to school. This participant explains her motives for not wanting more than 3 children:

“Your child must be well taken care of. He or she cannot just be uncared for. He needs clothes, he needs to be clean, the house must have good conditions. But if you cannot manage this then everything gets difficult. One can support 3 children, but 4 or 5 is too much. It is hard! It is difficult to have children. Even these three I have, give me stress. They go to school, and they need this, and they need that... So, it is not worth to have more.” (Maputo, rural area, 31, married, 3 children)

For some participants, planning when to have children and how many to have, was also shaped by their own aspirations and goals:

“I don't want to have more children now because I am studying. My husband is the one taking care (paying) for my school things. I want to finish high school and then apply for the nursing school. (...) When I have a job, I want to have a bank account to keep my money. I will buy myself hair every month, I will buy things for my daughter, and we will go out for ice-cream.” (Maputo, urban area, 20, married, 1 child)

Partner negotiation

Negotiation involved the ability to voice or communicate one’s own wishes or opinions. These processes were often described as “sitting down” or “having a conversation” with their partners. A woman from Maputo described her experience:

“It is a conversation. It has to be over conversation. And I thank God that there is openness for that, for conversation. So, it is a talk. As soon as I left the hospital and I

went home, he asked: "Are you well? When are you going to start family planning?"." (Maputo city, 34, married, 2 children)

Women's experiences shed light on some nuances of the negotiation process. Certain aspects of communication were valued, such as the ability to voice and present one's ideas and the importance of listening to one another. An important element of this is to know what one wants – to have made an 'internal' decision – and to be able to present it. A woman from Maputo describes how she experienced this process in relation to family planning:

"We have a conversation, right, and each of us presents their points of view. So, if I want him to understand my views and my thinking, I need to be able to speak about my reasoning...it is hard to convince a man. It is hard but I need to be able to make him understand my reasons and my decisions. For example, I am going to tell you about my decision about family planning. There are several methods and for him (husband) I should take the injection. I said no. I know my body. Contraceptives react differently in each body, so I had to convince him." (Maputo city, 34, married, 2 children)

A woman from rural Maputo describes the importance of listening in terms of reaching consensus, and balancing power in decision-making, which to a certain extent denotes understanding of an entitlement to express and defend one's own ideas and decisions:

"Well, I think one has no more power than the other (husband and wife). They must find consensus. And for that they must listen to each other. One cannot just decide without listening to the other." (Maputo, rural area, 32, divorced, 3 children)

However, for some women, even if they are able to engage in negotiation and voice their reproductive desires, in the event of a disagreement men have the last word, as described by this participant from Maputo:

"We should try to reach agreement but if it's not possible then the woman must follow the man's indications." (Maputo, rural area, 25, married, 3 children)

Furthermore, for some women, especially those from Nampula, the use of words about negotiation was often connected to getting the partner's permission or acceptance. This is also suggestive that in case of conflicting opinions and desires, the will of the woman might be overpowered. This was noted in the following comment:

"If you are married you must ask for permission from your husband. But if you are single you can decide about your life. But if I have a partner, every step that I take I must communicate with him. "Look, I want to do family planning"... Family planning is

a matter of two people. When I am doing it, he is also doing it. So it is about two people.” (Maputo, urban area, 33, married, 3 children)

On the other hand, some women stated that their decision about reproductive matters prevails when agreement is not reached in the negotiation process with their partner, even if that necessitates covert action.

Sole reproductive decisions

Participants reporting sole decision-making for fertility and family planning believed that such matters only concerned women, because it is related to their own bodies and their own health, they had other aspirations in life, they wanted to provide to their children, or they wanted to find the right partner:

“I don’t want to have children to leave them to be raised with my parents or with my grandmother. I want to have them at the right moment, with the right person, so I can raise them and I am able to provide for them.” (Maputo city, 29, single, no children)

For some married women, this was also related to the partner’s lack of interest in family planning, as this woman from Maputo described:

“Many times, we women, need to decide for ourselves because men don’t even care. If you prevent it or not (pregnancy) it is your problem. I think most women take care of themselves (without asking the husband).” (Maputo, urban area, 44, married, 3 children)

A participant from Nampula highlighted the importance of having access to information about family planning and how that seems to result in feelings of entitlement to make her own decision without the need for her partner’s involvement:

“I used to listen to some talks here at the health centre. After one of those talks, I started thinking... “my partner is aggressive and when he wants (sex) he wants it.” So I decided that I should protect myself. On that day I asked for the pill.” (Nampula, urban area, 25, married, 3 children)

Discussion

This study described views of empowerment, highlighting elements (and their meanings) that Mozambican women perceived as the most relevant in their context. These findings align with and complement the qualitative results from the larger research study, describing the facilitators and barriers to women’s empowerment for reproductive decisions in Mozambique

[18]. Women with empowerment were perceived as financially and socially independent; as active participants in life by expressing their opinions; and free to choose their own pathways. Manifestations of power for reproductive decision-making included women's ability to plan their family size; negotiation with sexual partners and reaching consensus or obtaining permission and/or covert action; and sole decision-making. These were fuelled by an understanding of their rights and entitlement to decide over their own bodies (bodily autonomy), access to information, or a lack of male engagement.

Some of the identified elements such as negotiation or sole decision-making for reproductive issues have been considered in the literature and incorporated in conceptual models of women's empowerment [14,25]. However, the nuances captured in women's perceptions add layers of understanding to each of these elements which can contribute to refining the conceptualization and measurement of empowerment. Other elements such as the ability to plan the number and timing of pregnancies or the ability to voice choices and wishes, add new dimensions and specificity to women's reproductive decision-making processes that can help further unpack and understand empowerment, especially in relation to sexual and reproductive health.

The findings of this study emphasize the relevance of a woman's ability to voice choice and negotiate in her sexual and reproductive decision-making processes [18,26,27]. These findings align with a recent conceptual framework for *Women's and girls' empowerment in sexual and reproductive health* [14]. In this framework, negotiation skills, decision-making abilities and self-efficacy are key elements of the exercise of choice. The exercise of choice expresses women's ability to act on their sexual and reproductive preferences, i.e. women's agency [14]. Although voicing a choice and participating in negotiation are intrinsically connected, the ability to voice a choice does not necessarily equate to the ability to negotiate or influence the decision-making process. The two concepts should therefore be considered independently. The insights provided by this study into key elements of the process of decision-making for reproductive choices can support the refinement of the measurement of agency. Agency is one of the most challenging components - and perhaps the most poorly assessed component - of empowerment in the literature, because direct measures (of action) are generally difficult to operationalize [4].

While many women perceive negotiation as a fundamental process for women's sexual and reproductive decision-making, it was in some instances connected to the need for a partner's 'agreement' or 'permission' and, in case of disagreement, the partner's opinion often prevailed. This finding highlights the importance of comprehending the negotiation process related to reproductive issues - and the resulting empowerment - by disentangling whether it means a truly mutual decision or rather a partner's decision, and if the negotiation was

driven by conflict or threat, as opposed to cooperation and consensus. In instances of disagreement, it is important to identify who holds the ultimate decision-making authority. A study by Peterman et al. (2015) found a small correlation between indices that include sole decision-making only and indices that include sole or joint decision-making in relation to women's agency, highlighting the need for a better understanding of the process of joint decision-making, and whether it allows the woman to act on her choice [28]. For example, assessing if women desire sole control over decision-making or would rather decide jointly with a partner can provide clarity to quantitative findings [27].

Some women consider themselves to be the ultimate decision-makers for reproductive decisions. While some women expressed their entitlement to decide about their reproductive lives because it was a matter that concerned them and their bodies, other women opted for covert sole decision-making, such as the use of contraception without the knowledge of their partner. However, it is crucial to differentiate between individual decision-making regarding reproduction and concealed decision-making, a phenomenon prevalent in Mozambique and other sub-Saharan African countries [29]. While covert decision-making might be seen as a form of empowerment, it might not completely align with empowerment's comprehensive definition and prerequisites. One potential approach could involve investigating whether decisions are made without any influence of coercion, alongside examining women's perceptions of their entitlement, i.e. the focus would be on whether women believe they have autonomy to make their own choices if they so desire [26,30].

Many women recognised the ability to plan the number and timing of pregnancies as a manifestation of power or a way of empowerment. This not only gave women a sense of control, but also created a sense of alternatives or options in their lives that could apply beyond childbearing. In the Karp et al. (2020) framework, planning ability could be considered within the dimension of understanding the existence of choice, a necessary step for the agency to follow and the overall process of empowerment [14]. In the Mozambican context - where women tend to want fewer children than men [19] - it would be important to further explore how the planning process takes place, how and which goals are set, and what steps are required to achieve those goals. The role of family planning should be examined, as some Mozambican women reported that learning about and accessing family planning was the turning point for starting to envision their lives differently, because they could plan and control their reproductive lives.

Other elements identified by women - such as independence, being free and having an active participation in life - have been accounted for in the literature about women's empowerment [11,25]. Although these elements do not directly confer empowerment, they have an enabling role as essential pre-conditions or resources for empowerment and the

exercise of agency [8]. As women in this study described, financial independence increases their negotiation capacity within the household but this may not lead to agency, i.e. to enact their reproductive decisions [5]. This is aligned with studies reporting on the limited impact of programmes that aim to improve sexual and reproductive outcomes for women and girls by improving access to financial assets in low- and middle-income countries such as Mozambique [31]. The chances of success of such programmes are increased when approaches that support women to act on their decisions are also in place, such as building consciousness and knowledge about sexual and reproductive health and rights, and self-efficacy practices [31].

Conclusions

Through women's views, meanings and lived experiences, this study identified key elements of the empowerment process in the Mozambican context. Women with empowerment were perceived by participants as independent, active participants in decision-making, and free. These characteristics have been recognised in the literature as key enablers for women's empowerment process. Crucial elements of *how* women exert power for reproductive choices were also identified, namely: the ability to plan the number and timing of pregnancies (facilitated by accessing family planning services and information), negotiation capacity with the partner (by voicing choices and influencing decision), or sole decision-making based on a sense of entitlement. These elements provide insights into expanding current methods of conceptualizing, operationalizing and measuring women's sexual and reproductive empowerment.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the Human Research Ethics Committee of the Faculty of Health Sciences, University of Cape Town (Ref: HREC 579/2019) and from the Institutional Committee of Bioethics for Health from the Faculty of Medicine/Central Hospital of Maputo, Mozambique (Ref: CIBS FM&HCM/98/2019). The DPS and the Directorate of Health of the City of Maputo approved the implementation of the study before its commencement.

All participants provided written informed consent and verbal permission for audio recording prior to the interview. Confidentiality and anonymity were ensured, and data were stored securely with access limited to the research team only.

Consent for publication

Not applicable.

Availability of data and materials

Data supporting results in this article is filed and safely locked away. The corresponding author is ready to avail the said data on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

SCL, DC, SF and JH conceptualise the study. SCL designed the study, analysed the data, and prepared the initial draft of the paper. SF supported data analysis and provided inputs. JH, SF, DC reviewed and substantially edited the manuscript.

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References

1. United Nations (UN). SDG indicator metadata (SDG 5) [Internet]. Department of Economic and Social Affairs Statistics; 2022. Available from: <https://unstats.un.org/sdgs/metadata/files/Metadata-05-06-01.pdf>
2. Upadhyay UD, Gipson JD, Withers M, Lewis S, Fraser CS, Huchko MJ, et al. Women's empowerment and fertility: A review of the literature. *Soc Sci Med.* 2014;31:1713–23.
3. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's

empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017;01/10. 2017;49:713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>

4. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017;137:539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>

5. Edmeades J, Mejia C, Parsons J, Sebany M. Conceptual framework for reproductive empowerment: Empowering individuals and couples to improve their health (Background Paper). 2018.

6. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017; Available from: <https://doi.org/10.1007/s11205-017-1811-1>

7. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: Development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. Elsevier Ltd; 2017;5:e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>

8. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30:435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>

9. Capurchande R, Coene G, Roelens K, Meulemans H. "If I have only two children and they die... who will take care of me?" – A qualitative study exploring knowledge, attitudes and practices about family planning among Mozambican female and male adults. *BMC Womens Health* [Internet]. London: BioMed Central; 2017;17:66. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568310/>

10. Ministério do Género Criança e Acção Social. Perfil de género de Moçambique. Maputo, Moçambique; 2016.

11. Kabeer N. Reflection on the measurement of women empowerment. *Discuss Women's Empower. SIDA*; 2001. p. 136.

12. Malhotra A, Schuler SR, Boender C. Conceptualizing and measuring women's empowerment as a variable in international development. *Pap. Prep. World Bank Work. Poverty Gend. New Perspect.* 2003. p. 59.

13. Do M, Kurimoto N. Women's empowerment and choice of contraceptive methods in selected African countries. *Int Perspect Sex Reprod Health.* United States; 2012;38:23–33.

14. Karp C, Wood SN, Galadanci H, Sebina Kibira SP, Makumbi F, Omoluabi E, et al. 'I am the master key that opens and locks': Presentation and application of a conceptual framework for women's and girls' empowerment in reproductive health. *Soc Sci Med* [Internet]. 2020;258:113086. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953620303051>

15. Family Planning 2020. *Family Planning 2020: Rights and empowerment principles for family planning.* 2019.

16. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-

economic, demographic, and behavioural determinants of women's empowerment in Mozambique. PLoS One [Internet]. Public Library of Science; 2021;16:1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>

17. Castro Lopes S, Constant D, Fraga S, Harries J. How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique. PLOS Glob Public Heal. 2022;2:e0000670.

18. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. Front Glob Women's Heal. 2022;3:1–11.

19. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>

20. Cornwall A. Addressing the preconditions: Women's rights and development. 2002; Available from: http://www.pathwaysofempowerment.org/archive_resources/addressing-the-preconditions-women-s-rights-and-development-in-financing-gender-equality-commonwealth-perspectives

21. Hinson L, Edmeades J, Murithi L, Puri M. Developing and testing measures of reproductive decision-making agency in Nepal. SSM - Popul Heal [Internet]. Elsevier Ltd; 2019;9:100473. Available from: <https://doi.org/10.1016/j.ssmph.2019.100473>

22. Bagnoli A. Beyond the standard interview: the use of graphic elicitation and arts-based methods. Qual Res [Internet]. 2009;9:547–70. Available from: <https://doi.org/10.1177/1468794109343625>

23. NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12. QSR International Pty Ltd.; 2020.

24. Braun V, Clarke V. Thematic analysis. APA Handb Res methods Psychol. 2012. p. 57–71.

25. Eerdewijk A van, Wong F, Vaast C, Newton J, Tyszler M, Pennington A, et al. White paper: A conceptual model on women and girls' empowerment. Amsterdam; 2017.

26. Donald A, Koolwal G, Annan J, Falb K, Goldstein M. Measuring women's agency. Policy Res. Work. Pap. 2017.

27. The Bill and Melinda Gates Foundation (BMGF). Gender equality toolbox. What gets measured matters. A methods note for measuring women and girls empowerment. 2019.

28. Peterman A, Schwab B, Roy S, Hidrobo M, Gilligan DO. Measuring women's decisionmaking: Indicator choice and survey design experiments from cash and food transfer evaluations in Ecuador, Uganda and Yemen. 2015. Report No.: 01453.

29. Kibira SPS, Karp C, Wood SN, Desta S, Galadanci H, Makumbi FE, et al. Covert use of contraception in three sub-Saharan African countries: A qualitative exploration of motivations and challenges. BMC Public Health [Internet]. 2020;20:865. Available from: <https://doi.org/10.1186/s12889-020-08977-y>

30. International Food Policy Research Institute (IFPRI). Women's Empowerment in

Agriculture Index. Guides and instruments [Internet]. 2023. 2023 [cited 2023 Jun 16]. Available from: <https://weai.ifpri.info/weai-resource-center/guides-and-instruments/>

31. Zelalem D, Worku A, Alemayehu T, Dessie Y. Association of effective spousal family planning communication with couples' modern contraceptive use in Harar, Eastern Ethiopia. *Open access J Contracept. New Zealand*; 2021;12:45–62.

6. DISCUSSION, IMPLICATIONS AND CONCLUSIONS

6.1 Summary of findings

This work aimed to answer the research question of how women's empowerment influences the reproductive choices of women of reproductive age in Mozambique, by using a mixed-methods approach to explore the relationship between different domains of empowerment and fertility intentions and family planning practices. The study started with a quantitative analysis using DHS data and was followed by a qualitative approach which included in-depth interviews with women of reproductive age in Mozambique.

In the first quantitative study, three domains of empowerment were identified, namely "Beliefs about violence against women", "Decision-making in the household" and "Control over sexuality and sex". The same study showed that various socio-economic, demographic and behavioural determinants shaped each empowerment domain differently (1). Overall, contextual and community factors had a stronger association with the "Beliefs about violence against women" domain. The "Decision-making in the household" and "Control over sexuality and sex" domains were also associated with women's individual characteristics such as educational level, age, and wealth. The second quantitative study found that each of these three empowerment domains was associated with fertility intentions and family planning practices in a unique way (2). In the Mozambique context, "Control over sexuality and sex" and "Decision-making" power were more systematically associated with smaller families or wanting to space or limit pregnancy, met need for contraception and current use of contraceptives, than the domain "Beliefs about violence against women".

Based on these findings, a qualitative study was carried out to explore women's experiences, views and meanings of empowerment for decisions about fertility and family planning practices, including barriers and facilitators. The interviews showed that different barriers and facilitators operate from individual to societal levels, adding to and unfolding meaning to the already identified socioeconomic, demographic and behavioural determinants of empowerment identified in the quantitative phase (3). Key findings include the importance of developing a critical consciousness where women understand the possibility of having different options and aspirations in life (i.e. existence of choice), and the role of collective power through networking or women's associations. In addition, the analysis of women's views and meanings of empowerment revealed that financial and social independence, active participation in life decisions and freedom were characteristics that women associated with being empowered while actions of planning family size, negotiation and/or sole decision-making with manifestations of power for reproductive choices.

Integrating the findings of the different studies sheds light on key features of the relationship between women's empowerment and reproductive decisions, unveiling possible pathways and consolidating and expanding on existing concepts and measurements of empowerment.

6.2 Connecting findings: Main insights from data integration

The main findings of this study are synthesised and illustrated in Figure 7. Overall, for each empowerment domain identified, a set of individual and structural factors (determinants) were found. Among these, some were later confirmed through the interviewed women lived experiences as essential resources for the empowerment process in the context of Mozambique (resources). The findings of this study also showed that each domain of empowerment has a different influence on the fertility and family planning outcomes. Another key finding was that women's views and meanings around sexual and reproductive empowerment relates to having a voice and the ability to negotiate. Such elements can be influenced or changed through women's economic independence and decision-making within the household as highlighted in Figure 7.

When connecting all the findings, this thesis shows that different domains of empowerment (paper 1) play an influential role in fertility decisions and family planning practices (paper 2). In particular, being empowered in aspects that directly relate to sex, sexuality, and own body integrity (controlling sex and sexuality) was strongly and consistently associated with positive reproductive decisions among Mozambican women (paper 2 and 3). Women's experiences confirm the existence of multiple pathways to empowerment, showing that access to information (including formal and informal education) focusing on women's sexual and reproductive health and rights leads to increased control over sex and sexuality (paper 2 and 3). Notwithstanding, economic resources and financial independence² were perceived as important assets for leveraging women's ability to have a voice and negotiate sexual and reproductive decisions (paper 2, 3 and 4). Economic resources and financial independence were also found to be key determinants for decision-making in the household, but appear to play more of an indirect role in reproductive empowerment (paper 1 and 4). However, these processes cannot be understood without considering the prevailing sociocultural structures of male dominance (paper 3).

² Although women used the term "independence", it is possible that they were referring in some cases to autonomy. According to Donald et al (2017), autonomy is defined as the ability to act on one's values and goals, while independence implies the absence of external influences. This was taken into consideration in the discussion of the findings.

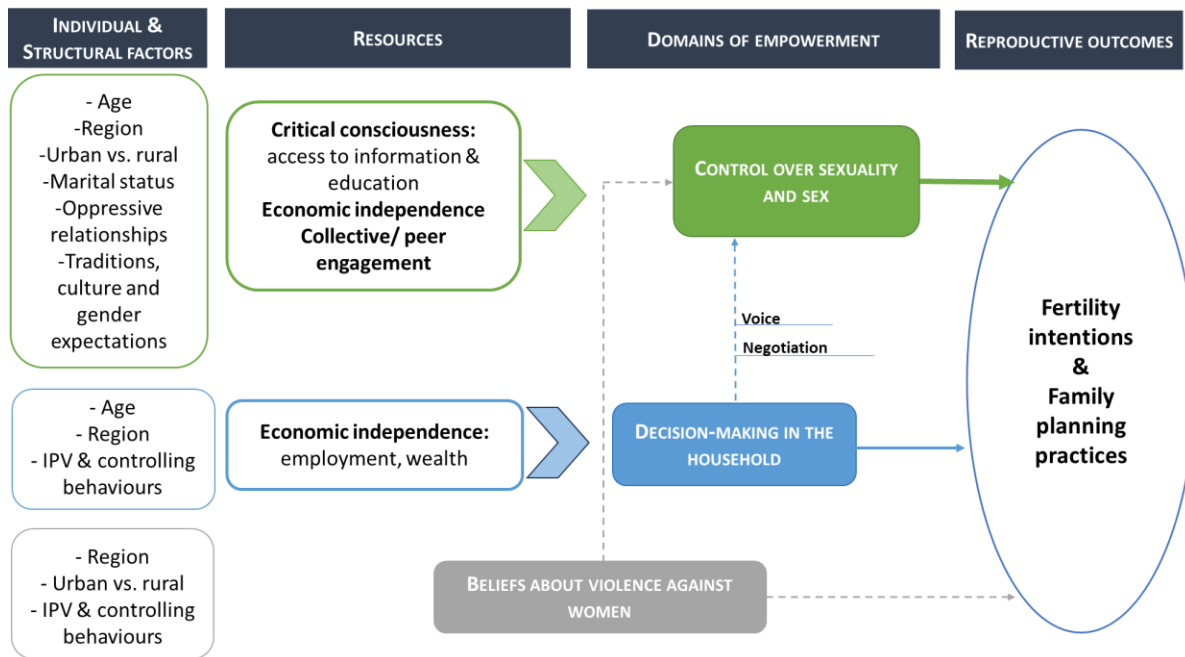


Figure 7: Summary of the findings.

Conceptualization of empowerment

The findings of this research study challenge the assumption of a single, linear process and unifying description of empowerment, aligning with available evidence (4–6). This is clear from the specific relationships between each domain of empowerment with the reproductive outcomes found in the first part of the work. It is also clear in women’s recognition that “there are things women can do and that there are things they cannot”. This denotes experiences of disempowerment in some spheres of their life, while still feeling empowered to make decisions, particularly concerning their own bodies.

The different conceptualizations of empowerment recognise the multidimensionality proposed in the seminal theoretical framework by Malhotra et al. (2003) (4). Despite the wide acceptance of this theorization, there remains a lack of empirical work to support and describe how these dimensions work (6,7). The findings of this study affirm the multidimensional nature of women’s empowerment, further pointing to distinct processes taking place in different spheres of life. While the different processes and domains may influence and in some instances enhance each other (5), the relationship found between “Control over sexuality and sex” and reproductive outcomes suggests that processes and domains are better understood if framed in relation to what the empowerment process is attempting to achieve. This is aligned with, and supports, recent advancements in the study of women’s empowerment that consider reproductive empowerment as a distinct dimension of empowerment, both conceptually and operationally (8).

Conceptually, empowerment occurs as a result of the interplay between two essential components: resources and agency (4,9,10). However, empirical evidence often fails to distinguish between each of these components due to the interchangeable use of proxy indicators of resources and agency to measure the empowerment process (6). A key limitation of this approach is that it does not consider that access to resources, while an enabler of empowerment, does not in itself confer power or control (10). This study found that resources (or facilitators) and agency (decision and acting on that decision) play two different roles in women's reproductive empowerment. Women described reproductive empowerment in terms of planning, voicing, negotiation and sole decision making, while the resources were generally associated with internal and external conditions, including having access to information or financial independence. These findings add further insights to the availability and use of direct measures of women's degree of control and agency in their lives, and describe more accurately the relationship of empowerment with health outcomes (6,11,12).

These findings are aligned with the recent conceptual framework for *Women's and girls' empowerment in sexual and reproductive health* proposed by Karp et al. (2020) (7). In this framework, women's reproductive empowerment is defined as a process evolving from understanding the existence of choice, through exercise of choice (agency), to the achievement of the desired outcome (7), while recognising the influential role of resources, structural opportunities and contextual characteristics (Figure 8). Briefly, the existence of choice refers *inter alia* to women's understanding of options and the capacity to define goals such as wanting to be a mother, professional or educational aspirations. The exercise of choice relates to women's ability to act on her preferences (under the existence of choice). This phase is reflected in women's negotiation, decision-making and self-efficacy abilities. When women achieve the desired outcome (for example avoiding an unwanted pregnancy) by applying some of these skills and abilities, then agency is evident, and empowerment has occurred. The findings of this research support and expand on this conceptualization of reproductive empowerment. The elements of planning, voicing, negotiation and sole decision found in this research fit the components of the model, while highlighting further key features that could support refinement of the examination and measurement of the reproductive empowerment processes grounded in this framework. Such contributions include, among others, disentangling decisions and negotiations that are made freely and free of coercion or threat. This is explored in detail in the implications section below.

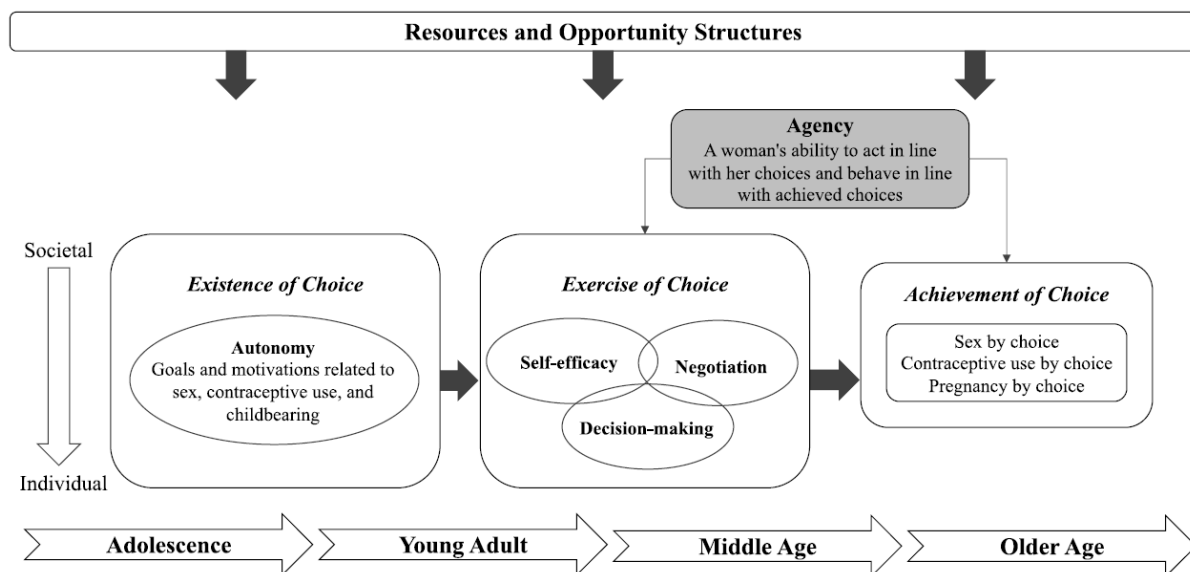


Figure 8: Women’s and girls’ empowerment in sexual and reproductive health framework
 (Source: Karp et al. (2020)).

Resources, agency and pathways towards reproductive empowerment

Although Karp et al.’s (2020) framework for reproductive empowerment recognises the role of both resources and structural opportunities, it neither examines how women access or use these resources and opportunities, nor they interact within the components of the proposed model (7). By broadening the scope to include the socioeconomic, demographic and behavioural determinants for different empowerment domains in addition to women’s lived experiences, this research explored their roles and relationships, expanding understanding of the resources and facilitators of reproductive empowerment.

The literature on resources for women’s empowerment often focuses on the role of education and financial/economic resources (11), although resources can also include intangible capital and sources of power that may lead to the exercise of agency (13). As observed in other studies, the importance of economic resources for reproductive empowerment outcomes is unclear or not as great as expected (11,14). Women’s empowerment has generally been measured as decision-making in the household (6) which seems to have a stronger association with access to economic resources, also supported by the findings of this study. The use of decision-making in the household to measure women’s empowerment in several areas of life has most likely reinforced the idea of economic resources as an essential precondition for the empowerment process. However, this work indicates that economic or financial resources may play a less important role for reproductive empowerment specifically.

Nevertheless, women in Mozambique associate economic independence with the ability to voice preferences and negotiate reproductive choices in the household. Similarly, a South African study reported that the relationship between economic resources and women's agency is expressed in women's improved bargaining and negotiation abilities (10). The findings of this research suggest the existence of direct and indirect pathways for the effect of economic independence on reproductive empowerment. Indirectly, it can enable women to voice their opinion and choice, empowering them with household decision-making and, through this, an opportunity for empowerment in reproductive matters. Directly, it can enable her voice for reproductive matters. It is however important to distinguish "voicing a preference" from "acting on it" (7,13). The empowerment process occurs when the agency takes place, i.e., purposefully taking action to pursue goals, based on decisions made freely (13).

The qualitative aspects of this study were instrumental in expanding on the interpretation of some of the quantitative findings from the analysis of socioeconomic, demographic and behavioural determinants. For example, the concept of 'building critical consciousness' emerged from women's experiences. It supports and further explains the strong association between access to information and/or education with "Control over sexuality and sex". Women also reported that negative events within the household or involving a partner may trigger reproductive empowerment, which can further explain the positive association found between IPV and/or controlling behaviours with high levels of empowerment in the first part of this research. Although many studies have considered this the backlash of the empowerment process in itself (15–17), our findings also suggest that it could be a psychological response to the perception or real threat, "fight or flight response", that leads women to act.

The integration of findings also pointed to the role of consciousness-raising as a key resource for women's reproductive empowerment in Mozambique. The vital role of consciousness-raising for the empowerment process has been recognised by some authors (13,18). For example, a study on the results of an economic empowerment programme in low- and middle-income settings showed the importance of women gaining of a sense of entitlement and their own rights in order to access and independently use income (19). However, a gap remains in its measurement and understanding of its contribution as a resource to the empowerment process in different domains. The *Women's and girls' empowerment in sexual and reproductive health framework* partly addresses this gap by including the component "existence of choice" before "the exercise of choice" (agency). In order to aspire and define different goals in life, women need to affirm their sense of self, rights and entitlement by recognising how inequality in power operates in their lives (13,19) –

understanding that she can do something and how she can do it, despite barriers and challenges (8). Access to information is likely the most effective way to build critical consciousness, as suggested by the findings of this study.

It is worth noting that while “Beliefs about violence against women” has been widely used in studies as a women’s empowerment domain, the findings of this research suggest that this concept should rather be considered a resource. Its characteristics do not entirely fit the definition of empowerment as a process and action, and neither does it seem to play a relevant role for fertility and family planning decisions. It could be argued that these beliefs rather reflect women’s critical consciousness and/or are a proxy for women’s understanding of the existence of choice, with an influential role on how women control and decide over their sexual and reproductive lives. This is depicted in Figure 7, the summary of findings.

Gender power relations: the role of context and expressions of power

Although reproductive empowerment occurs primarily at an individual level inside the household (10), the influence of power relations (imbalances) that operate at different levels, outside the household, need to be understood and considered (7,8). Using a social-ecological model (20), several contextual factors that limit or deny women’s control over their reproductive lives from the individual to the societal levels were identified in this study for the Mozambican context. Oppressive behaviours from partners and family members, traditions, and cultural and gender expectations emerged strongly from this analysis. Furthermore, these may be shaped by the region where women live, urbanity and rurality, and women’s education and marital status. These findings aligned with the available evidence reporting on barriers to family planning and reproductive choices in Mozambique (21,22).

In Mozambique, imbalanced gender power relations perpetuate men’s role as gatekeepers of key decisions about women’s sexual and reproductive lives (23,24). It was observed in this study that either by directly exerting power by deciding on woman’s behalf on the use (or not) of family planning; or indirectly, accepting or not the desire or decision of a woman to control her reproductive capacity, men remain on a privileged position of power to decide over women’s body. Evidence about male involvement in sexual and reproductive health services shows promising results in improving women’s health outcomes and emotional wellbeing, particularly related to sexual and reproductive health, including for family planning (25–27). However, the increased risk of perpetuating male power, needs to be anticipated and minimised in such approaches. In Mozambique, despite the government’s call to increase male involvement in women’s sexual and reproductive health, strong gender norms and inability for health services to deal with both the woman and male partner seem to be

hindering the implementation of this approach (27). Consistent evidence supports the promotion of healthy couples' communication as an efficient strategy to improve sexual and reproductive outcomes (28). Interestingly, such approaches are based on social behavioural changes methodologies, focussing not only on the individuals (couples) but on the communities where these couples live. It is mostly implemented at the community level addressing simultaneously sexual and reproductive choices including fertility and family planning, as well as gender and social norms, promoting women rights and women's ability to make decisions. Taking into account structural factors, as the ones at the community level, is crucial for supporting women's empowerment processes as showed in the findings of this study.

It is also important to note that empowerment, including in the reproductive sphere, can have different forms of expression. Agency can be exercised through collective action. This is defined as the ability of a group to take action collectively on their interests, to enhance their position and expand their opportunities and possibilities. This draws from the concept of *power-with*, which recognises that "more can be achieved by a group acting together than by individuals alone" (29). Although, this work did not intend to measure and explore collective forms of empowerment, the importance of collective power emerged in the qualitative findings. Mozambican women recognised the enabling role of coming together, spending time with other women, in a safe space that allows sharing and debating around common interests and areas that affect their lives (19), including motherhood and reproductive capacity, impacting their self-perception, entitlement and decision-making abilities. While no collective action was ascertained from the women interviewed, the potential role that offers women reproductive empowerment at an individual and collective level should not be dismissed.

6.3 Strengths and limitations

Strengths of this research include the study design, the analytical process and the novelty of some of the findings. This work used a mixed-method approach, combining quantitative and qualitative studies, providing a comprehensive description and understanding of the process of reproductive empowerment in Mozambique. The analytical approach used in the first part of this work was instrumental in identifying relevant empowerment domains within the Mozambican context. The inclusion of the voices and experiences of women with different socioeconomic and demographic backgrounds captured nuances and important insights in the second part of the research project. The combined findings allowed the researcher to explore and identify possible pathways of women's empowerment for reproductive choices

as well as women's exercise of agency. These results further the conceptualization of reproductive empowerment and make a contribution to the refinement and operationalization of the measurement of empowerment and agency. Particularly, these results expand on the resources that may enable empowerment as well as on the socioeconomic forces at multiple levels that can influence women's individual process of empowerment.

However, there are several limitations that need to be considered. The use of secondary data did not allow the inclusion of other potentially relevant variables. However, using a representative population-based database in the context of considerable difficulties in doing and funding research is an added value. Also, this work identified new variables that may be included in this kind of survey in the future.

Furthermore, the sample of participants was reduced from 7749 to 2072 women based on the criteria applied in this study. The selected sample included only married/in union women of reproductive age, as only women with this marital status responded to the DHS empowerment questionnaire. The used sample may no longer be representative of the population.

In the second part of the study, women were recruited in health facilities. This approach was used to increase the feasibility of the study however it might have introduced some selection bias leading to the recruitment of women with more empowerment. Women who attend health facilities or who decide to participate in a study might have already higher levels of empowerment than those who do not. To address this, additional recruitment took place at the community level, through community leaders, but it is unclear if this minimised the risk of selection bias. Further research should be undertaken where different recruitment mechanisms are applied for results comparison.

Another limitation of the in-depth interviews is the lack of systematic data collected on women's relationship status (besides marital status). This is relevant for better understanding and describe family planning practices. This aspect should be considered in future research.

The possible pathways for reproductive empowerment are identified based on the extrapolation of the combined findings of this work. More research, including quantitative studies, is required to operationalise these pathways into measurable indicators for statistical confirmation.

This study was limited to women's perceptions, attitudes and experiences and did not include men's views. Men can be gatekeepers of reproductive decisions and often a barrier to women's empowerment in Mozambique. Nonetheless, the in-depth interviews with women explored the male and female roles and interactions more broadly in the Mozambican

society, shedding light on important gender-based imbalances, social and cultural norms and traditions.

The sensitive nature of the topic, addressing reproduction and sexuality as well as the use of contraceptives (usually decisions that take place within the intimacy of the couple and of the household) might have led to information bias in the answers provided by the participants. Furthermore, the effect of the interviewer, an outsider to the community, might have led to socially desirable answers. The risk of such bias was minimised by applying measures that ensured privacy, confidentiality, comfort and familiarity to the participant, through the establishment of a safe environment and by integrating a local researcher in the team. Moreover, the researcher, a trained nurse, experienced in qualitative methods and aware of potential bias, used all means available to prevent as much as possible the arise of such biases. The presence of a local researcher was also important to make regular checks and assessments of the interviews and interview process, reducing the chances of the main interviewer to add her own personal views or misinterpretations. Although there was risk of interpretation biases, this was reduced by the inclusion of Mozambican researchers in the preparation of the papers for publication.

6.4 Implications and recommendations

This section sought to describe the possible implications of the findings of this study from both the research and the public health programmatic points of view. In the research field, the contributions were explored within the scope of existing conceptualizations, operationalizations and measurements of sexual and reproductive empowerment, and within the Mozambican context. From the public health programmatic perspective, attention is given to defining women-centred (valued by women) programmatic outcomes, the importance of understanding the context and the critical role of healthcare providers in women's journeys towards empowerment for sexual and reproductive health, particularly family planning.

Contributions to the conceptualization and measurement of sexual and reproductive empowerment

As discussed in the previous section, the findings of this study point to the importance of considering women's empowerment in distinct spheres of life. Although the scope of the "Control over sexuality and sex" domain is limited by the DHS indicators available for this analysis, it better describes women's empowerment in the sexual and reproductive sphere

when compared to the other identified domains. Focussing on this domain, it was possible to explore how the main findings of this study apply to and expand on the *Women's and girls' empowerment for sexual and reproductive health framework* (7). The framework was adapted to the Mozambican context (Figure 9).

Overall, the results of this study support the conceptualization proposed in Karp et al. (2020) framework (Figure 8). However, a note is required regarding the conceptualization of women's empowerment as depicted in the framework. While women's empowerment is widely accepted as a process that results from resources and agency in order to achieve a desired outcome, the framework's emphasis is very much on agency. According to Donald et. al (2017) individual agency has three key dimensions: 1) the definitions of goals that align with the individual's values; 2) the individual's perception or sense of control and ability; and 3) the individual's action towards the defined goals (30). Such dimensions are recognised and conceptualised under "existence of choice" and "exercise of choice" in the Karp et al. framework. Although agency is at the heart of empowerment as the process that binds resources and achievements, agency is not possible if resources are not available or accessible to women (13,30).

This study gives emphasis to both essential components of women's empowerment: resources as well as agency. Specifically, it identified resources as an enabler of sexual and reproductive empowerment, and it also identified additional elements of agency that fit within the "existence of choice" and "exercise of choice" dimensions proposed in Karp's framework. In addition, it identified specific determinants for sexual and reproductive empowerment or structural factors that play an influential role at different levels. The main contributions of this study are illustrated in the adapted framework for the Mozambique context (Figure 9) with a brief description included below.

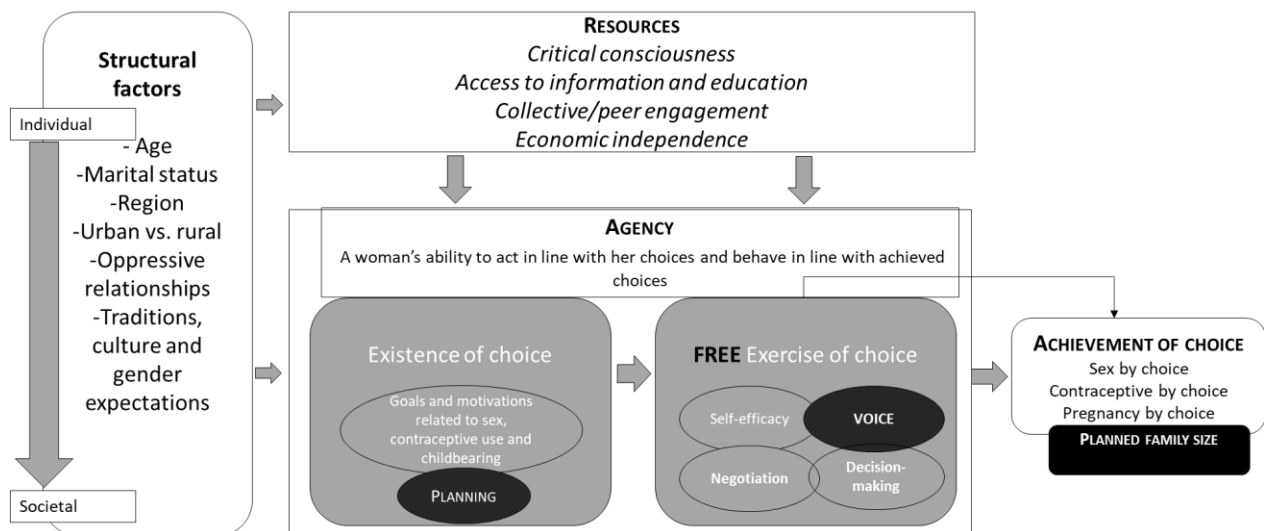


Figure 9: Women's sexual and reproductive empowerment framework for Mozambique

(adapted from: Karp et al. (2020)).

Resources: The resources identified appear to play a key role in fostering agency, and provide some insight about how women use such resources during the empowerment process. Building critical consciousness (or “opening the mind” as expressed by Mozambican women) appears to be an essential step in the process of sexual and reproductive empowerment. Access to information or education as well as collective/peer engagement among women seem to contribute to the raising of consciousness. They also expand the existence of choice for women, and support the definition of goals, a sense of agency or self-efficacy and ability to voice preferences. Economic independence seems to be particularly influential over women’s ability to negotiate and in their decision-making process.

Agency: Agency encompasses two progressive dimensions (“existence of choice” and “exercise of choice”), which in the adapted framework are both considered as agency, at the same time recognising that agency in its essence an action taken towards a goal. The findings of this study expand on both dimensions.

Existence of choice: The ability to plan emerged strongly from women’s experiences and views on sexual and reproductive empowerment in Mozambique. This sense of control through having access and information about family planning gave women the choice to plan their future. This is reflected in expansion of (the idea of) options in life and defining their own goals within and outside their reproductive life. It is important to capture whether these goals emerge from individual values and preferences and not from internalised social expectations and restrictive norms. The word ‘planning’ was added to the framework due to

its relevance for Mozambican women's own understanding of empowerment which can guide future operationalisations and measurements of empowerment in this context.

Exercise of choice: Although voicing, the ability to express one's interests and articulate opinions (7,13), can be expressed through negotiation, it might not necessarily translate to an ability to influence a decision-making process or a bargaining capacity. The ability to speak up and be heard is an important step in women's sexual and reproductive empowerment in Mozambique and therefore was highlighted separately from negotiation in the adapted framework. While the notion of freedom is included in different definitions of women's empowerment, it is seldom considered in its conceptualization and operationalization. In this work, through women's own experiences and views the importance of being/feeling free and making decisions in freedom (30,31) was recurrently recognised and therefore included in the framework. Distinguishing sexual and reproductive decision-making processes where women exercise choice freely, from those where women need to use contraceptives covertly or feel threatened, is a key step to fully understand and measure women's power and empowerment processes as well as pathways to gender equality.

Achievement of choice: It is vital that the achievements are aligned with women's defined goals (30) when measuring empowerment in the sexual and reproductive sphere. In many studies, achievements are set based on programmatic outcomes or on a development perspective and therefore do not always consider women's preferences, value systems and sociocultural contexts (7). The framework addresses this limitation by defining women-centred outcomes that are better aligned with women's own sexual and reproductive choices (7). For the Mozambican context, achieving the planned family size is an important addition. In a context where reproductive capacity and the role of motherhood are highly valued by women themselves, the ability to achieve the planned number of children, when to have them and being socioeconomically capable of raising them, needs to be encompassed in the notion and measurement of sexual and reproductive empowerment. Notwithstanding this, it is essential to distinguish actions that are based on women's own values and freedoms, from those that are driven by fear of coercion or harmful consequences, or conditioned by internalized social norms (30).

Structural factors: This study identified influential structural factors of women's sexual and reproductive empowerment, operating from the individual to the societal level. These are illustrated in the adapted framework. Contrary to the original framework, women's age is not highlighted as a key factor for sexual and reproductive empowerment. Rather, it is included in the list of influential structural factors. In the literature, age has been associated with changes in women's general empowerment levels (32,33). Although our findings showed a positive influence of age in the "Decision-making in the household" domain of empowerment,

this was not the case for the “Control over sexuality and sex” domain. Other studies also found a negative association between age and women’s perceived freedom of choice and control of choice, i.e. their sense of agency (30) as well as with family planning practices including the use of contraceptives (21). The understanding of such structural factors can support contextualising sexual and reproductive empowerment and refine its measurements. It can also anticipate possible pathways of empowerment and the emergence of barriers and backlashes in response to those, relevant for the design of interventions in the field of family planning.

These findings call for the development and refining of indicators that can better capture the different components of the process of sexual and reproductive empowerment identified above. Although the DHS, as the most commonly used source of women’s empowerment data, has an invaluable role in the comparison across countries, the available indicators are limited in scope and depth (1). Furthermore, they fail to capture context specificities that are highly relevant to understanding women’s sexual and reproductive empowerment, as observed in this study.

An example of some of the limitations of the DHS indicators which can be highlighted by the findings of this work, is the current measurement of the SDG target 5.6³: the *proportion of women aged 15–49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care*⁴ (34). First, study 1 of this research showed that decision-making on women’s health care does not cluster with other indicators related to “Control over sexuality and sex”, i.e. with indicators that were more closely related to sexual and reproductive health. Although the question “*Who usually makes the decisions on whether or not you should use contraception*” was not included in our analysis (because it was not available in the 2015Mozambique DHS) (1,35), it would be worth confirming that decision-making on health care is in fact measuring women’s reproductive empowerment. Second, the indicator for target 5.6 combines both women who decide alone and who decide jointly with their husbands (36). Evidence has shown that sole decision-making and joint decision-making reflect distinct processes of agency (30). A more accurate picture of women’s ability to decide could be obtained with indicators that capture how women voice and negotiate their choices, if they want to, if these are free of coercion or harm, and who has the final say. Third, this indicator does not consider resources and how women access and use them, a key component of women’s empowerment. Except for economic resources and education, other empowerment resources are not covered in the DHS.

³ SDG 5: To achieve gender equality and empower all women and girls.

⁴ The DHS data is used to measure progress on this target. The actual question included in the DHS is “Who usually makes decisions about health care for yourself?” and is not specific to women’s reproductive health care.

The *Women's and girls' sexual and reproductive health framework* is a good point of departure for a comprehensive operationalization of empowerment in this domain. It identifies and unfolds on the key elements of the process of empowerment using a women-centre approach where achievements are aligned with women's values. However, this study shows that its accuracy and relevance would be improved by incorporating context specificities.

Recommendations for public health programmes

The successful implementation of programmes targeting family planning practices and fertility levels in Mozambique, requires investments in addressing and promoting women's ability to make decisions and control their sexual and reproductive lives. This aligns with the recent shift in international vision and recommendations for sexual and reproductive health, stemming from commitments such as the SDGs (36) and the Nairobi Summit on ICPD+ 25 (25 years review) (37), towards reproductive justice, rights, and people-centred approaches. New policies, strategies and programmes are required to put empowerment and agency at the centre, recognizing individuals' right to decide over their own health and bodies, and determine their own reproductive futures (38).

The most pressing issue in programming for sexual and reproductive health and women's empowerment seems to be the programming process itself (19). In recent decades, feminist movements, pioneers in women's empowerment work, have pointed out a concerning shift towards an idea that governments' or agencies' programmes can empower, i.e. that empowerment is something that gets done on behalf of someone else (19). Much of this is apparent in the increased prevalence of approaches that focus on ensuring women's access to resources, assets or services, to the detriment of approaches that enhance women's critical consciousness and capacity to influence and transform their worlds (19).

Along similar lines, concerns have been raised about the appropriation of women's sexual and reproductive empowerment as a means to achieve social and development goals rather than as an end in itself. Although women's empowerment is a vehicle for social and economic progress (39), recent literature has highlighted the need to refocus on the heart of the matter: women's lives and their fundamental rights. As Galavotti and Gullo (2022) pointed out “(...) *reproductive power is not about achieving the demographic dividend or adapting to climate change. Reproductive power is about a person's ability to make and act on their reproductive choices not just once, but repeatedly as they make their way through life (...)*” (38). This highlights the misuse of women's sexual and reproductive empowerment

in international and institutional agendas and calls for a shift towards women-centred approaches that are based on women's lives, realities, experiences, and processes.

In practice, this requires defining programmes and expected outcomes differently (7). Until recently, family planning programming was framed around supply and demand and in aggregated measures for outcomes such as modern contraceptive prevalence rate and contraceptive discontinuation, with the primary focus on development aims and progresses (38). Although unmet need for family planning has been used as proxy for autonomy or decision-making ability, it does not distinguish desirable from undesirable or coercive use of contraceptives (40). The current thinking is that these measures do not reflect a rights-based approach where women's preferences and choices are central, and thus fail to capture women's ability to decide (41,42). This has taken the international family planning community on a recent endeavour to identify innovative ways to improve policies and programmes that emphasise and support agency, rights and justice (42). Some of the most recent examples include measuring nuance in individual contraceptive need by exploring whether an individual wants or needs contraception, proposed by Bornstein et al (2023) (43); unwanted contraception/family planning as an agency measure explored by Canning and Kara (2023) (40); or the construct Preference-aligned fertility management (PFM) approach proposed by Holt et al (2023), which defines a positive outcome in relation to the woman's stated preference instead of considering only pregnancy prevention (41).

These advances need to be considered in future programming of family planning and more broadly in sexual and reproductive health strategies in Mozambique. But more important, as highlighted by our findings, is that Mozambican women's voices are heard. Women must have a central and participatory role across all stages of programming and policy-making concerning family planning and other sexual and reproductive health and rights areas. This means that women's preferences, choices, and value systems are taken into account, and the contexts where they live are considered from design to implementation of programmes and strategies. Promoting women to decision-making positions and leadership roles at various levels, from policy to community levels, can support the inclusion of women's voices as well as transformative actions towards gender equality (13,44).

Understanding and taking into account context specificities is vital for effective programming that can support women's sexual and reproductive empowerment. As observed in this study, women from the south and north regions of Mozambique have different ideas of empowerment and their experiences are deeply marked by their community, culture and social norms. While exposure to IPV was more often reported in the south region, lack of critical consciousness was more prevalent in the north region. Furthermore, women from the north used less contraception and were often deprived of timely access to relevant

information for reproductive decisions. Such context specificities need to be addressed within the overall strategy for women's sexual and reproductive health together with specific mechanisms that support and promote women's ability for decision-making.

In addition, women's sexual and reproductive empowerment programmes require comprehensive approaches, tackling simultaneously barriers and sources of gender power imbalances and disempowerment, while putting forward actions that enhance women's ability to decide. In Mozambique, barriers to women's reproductive empowerment include oppressive relationships based on male dominance and beliefs about women's low status as well as harmful traditions, cultural and social norms, and gender expectations strongly embedded and perpetuated by the community. While women's sexual and reproductive empowerment leads to women critically recognising these obstacles and acting on them (19), from a programmatic perspective, it is also important to create an enabling environment to support women in this process. The High Impact Practices for Family Planning⁵ have a number of documents that address interpersonal and community challenges from a social and behavioural perspective that could be of relevance for the Mozambican context. These include community group engagement for changing norms on sexual and reproductive health (45) and for increased support on family planning (46); and the promotion of couples communication for improving reproductive health outcomes (28). Furthermore, the active engagement of men could be beneficial in Mozambique, since they remain important gatekeepers of women's decisions and can positively or negatively influence women's empowerment processes. Social-ecological approaches are often used when engaging men (47), ensuring that the (em)power focus remains on the side of women so as not to inadvertently support male power.

Finally, the role of the health system and of health providers cannot be overlooked. In Mozambique, health providers are still key in women's access to information about sexuality and reproduction as well as contraception. Making a shift towards women's increased decision-making capacity requires that health providers are trained and capacitated to support women throughout this process. Their skills need to go beyond having the right information about different contraceptive methods, and include aspects of quality of the services, their attitudes towards women (48) and how they can play a role in promoting women's sexual and reproductive power. Furthermore, they could foster actions that promote collective power by creating safe spaces for women to share experiences and debate ideas, that eventually can result in collective action. It is worth noting the role of

⁵ High Impact Practices (HIPs) encompasses a group of evidence-based family planning practices reviewed and approved by experts in the field. These practices are documented in a format that sought to facilitate and promote its use with the intend to help programs focus resources for greatest impact.

technologies and widespread internet connectivity in shaping the access to information and products around sexual and reproductive health (49). The advent and increased interest in promoting self-care practices (49,50), resulting in part from the constraints in accessing and using health care services experienced during the COVID-19 pandemic, has influenced how girls and young women access sexual and reproductive services. Further attention should be given to how these can support and accelerate girls' and women's empowerment processes in Mozambique, particularly in urbanised populations.

6.5 Overall conclusions

Women's empowerment is a critical step towards advancing gender equality, one of the 17 SDGs, and in particular for improving universal access to sexual and reproductive health and rights and a pathway to women's full realization in life. Although its importance has been widely recognised, evidence remains inconclusive about how it works, what are its pathways and how it should be measured.

This thesis showed that the multidimensionality of women's empowerment is better understood if examined and analysed within specific spheres such as women's sexual and reproductive lives. This was observed in the strong associations between the domain "Control over sexuality and sex" and fertility intentions and family planning practices. These findings support the most recent theoretical conceptualization of women's sexual and reproductive empowerment as a specific domain of empowerment and expand on elements that can further support its operationalization and measurement.

In Mozambique, women's sexual and reproductive empowerment pathways are particularly shaped by the raising of women's critical consciousness and/or through access to information and education. Such approaches require improved preparedness of the health system that goes beyond accessibility and availability of services and contraceptives. They also require action to address pervasive structural barriers to women's sexual and reproductive empowerment including gender power imbalances, oppressive relationships, and harmful cultural and social norms.

The findings of this thesis call for a shift in how women's sexual and reproductive empowerment outcomes are defined and measured, from both a research and a programmatic perspective. In both fields, shifting towards a women-centred approach where women's voices are heard, women's preferences and goals are incorporated, women's experiences inform decisions and shape strategies and women's active participation is fostered, is a critical step in future research and programming.

Finally, the findings of this thesis offer a link between theoretical and conceptual work and programmatic approaches that can provide interesting insights for strategic decision-making and planning for women's sexual and reproductive health and rights in Mozambique.

6.6 References

1. Castro Lopes S, Constant D, Fraga S, Bique Osman N, Correia D, Harries J. Socio-economic, demographic, and behavioural determinants of women's empowerment in Mozambique. *PLoS One* [Internet]. 2021;16(5):1–15. Available from: <https://doi.org/10.1371/journal.pone.0252294>
2. Castro Lopes S, Constant D, Fraga S, Harries J. How women's empowerment influences fertility-related outcomes and contraceptive practices: A cross-sectional study in Mozambique. *PLOS Glob Public Heal*. 2022;2(9):e0000670.
3. Castro Lopes S, Constant D, Fraga S, Osman NB, Harries J. "There are things we can do and there are things we cannot do." A qualitative study about women's perceptions on empowerment in relation to fertility intentions and family planning practices in Mozambique. *Front Glob Women's Heal*. 2022;3(March):1–11.
4. Malhotra A, Schuler SR, Boender C. Conceptualizing and measuring women's empowerment as a variable in international development. Paper Prepared for the World Bank Workshop on Poverty and Gender: New Perspectives. 2003. p. 59.
5. Pratley P, Sandberg JF. Refining the conceptualization and measurement of women's empowerment in sub-saharan Africa using data from the 2013 Nigerian demographic and health survey. *Soc Indic Res* [Internet]. 2017 Nov; Available from: <https://doi.org/10.1007/s11205-017-1811-1>
6. Richardson RA. Measuring women's empowerment: A critical review of current practices and recommendations for researchers. *Soc Indic Res* [Internet]. 2017 Jun;137(2):539–57. Available from: <https://doi.org/10.1007/s11205-017-1622-4>
7. Karp C, Wood SN, Galadanci H, Sebina Kibira SP, Makumbi F, Omoluabi E, et al. 'I am the master key that opens and locks': Presentation and application of a conceptual framework for women's and girls' empowerment in reproductive health. *Soc Sci Med* [Internet]. 2020;258:113086. Available from: <https://www.sciencedirect.com/science/article/pii/S0277953620303051>
8. Edmeades J, Mejia C, Parsons J, Sebany M. Conceptual framework for reproductive empowerment: Empowering individuals and couples to improve their health (Background Paper). 2018.
9. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Dev Change* [Internet]. 1999;30(3):435–64. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-7660.00125>
10. Sharaunga S, Mudhara M, Bogale A. Conceptualisation and measurement of women's empowerment revisited. *J Hum Dev Capab* [Internet]. 2019 Jan 2;20(1):1–25. Available from: <https://doi.org/10.1080/19452829.2018.1546280>
11. Mabsout R. Capability and health functioning in Ethiopian households. *Soc Indic Res* [Internet]. 2011 May 6;101(3):359–89. Available from: <http://link.springer.com/10.1007/s11205-010-9661-0>

12. Bloom SS, Wypij D, Gupta M das. Dimensions of women's autonomy and the influence on maternal health care utilization in a North Indian city. *Demography* [Internet]. 2001 May 24;38(1):67–78. Available from: <http://www.jstor.org/stable/3088289>
13. Eerdewijk A van, Wong F, Vaast C, Newton J, Tyszler M, Pennington A, et al. White paper: A conceptual model on women and girls' empowerment. Amsterdam; 2017.
14. Prata N, Fraser A, Huchko MJ, Gipson JD, Withers M, Lewis S, et al. Women's empowerment and family planning: A review of the literature. *J Biosoc Sci* [Internet]. 2017/01/10. 2017 Nov;49(6):713–43. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28069078>
15. Ahinkorah BO, Dickson KS, Seidu A-A. Women decision-making capacity and intimate partner violence among women in sub-Saharan Africa. *Arch Public Health* [Internet]. 2018 Jan 29;76:5. Available from: <https://pubmed.ncbi.nlm.nih.gov/29423218>
16. Cools S, Kotsadam A. Resources and intimate partner violence in sub-Saharan Africa. *World Dev.* 2017;95(C):211–30.
17. Vyas S, Watts C. How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? A systematic review of published evidence. *J Int Dev.* 2009;21(5):577–602.
18. Ewerling F, Lynch JW, Victora CG, van Eerdewijk A, Tyszler M, Barros AJD. The SWPER index for women's empowerment in Africa: development and validation of an index based on survey data. *Lancet Glob Heal* [Internet]. 2017 Sep 26;5(9):e916–23. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554795/>
19. Cornwall A. Women's empowerment: What works? *J Int Dev* [Internet]. 2016 Apr 1;28(3):342–59. Available from: <https://doi.org/10.1002/jid.3210>
20. National Centre for Injury Prevention and Control Division of Violence Prevention. The Social-ecological model: A framework for prevention [Internet]. 2021 [cited 2021 Apr 17]. Available from: <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html>
21. Cau BM. Community influences on contraceptive use in Mozambique. *Health Place* [Internet]. 2015;31(Supplement C):10–6. Available from: <http://www.sciencedirect.com/science/article/pii/S135382921400152X>
22. Arnaldo C, Cau BM, Chilundo B, Picardo J, Griffin S. Planeamento familiar e políticas de saúde sexual e reprodutiva em Moçambique. Cepsa. Langa DS, editor. Maputo, Moçambique; 2019.
23. Capurchande R, Coene G, Roelens K, Meulemans H. "If I have only two children and they die... who will take care of me?" – A qualitative study exploring knowledge, attitudes and practices about family planning among Mozambican female and male adults. *BMC Womens Health* [Internet]. 2017 Aug 22;17:66. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5568310/>
24. Capurchande R, Coene G, Roelens K, Meulemans H. Between compliance and resistance: Exploring discourses on family planning in community health committees in Mozambique. *BMJ Open.* 2015;5:1–7.
25. Osuafor GN, Akokuwebe ME, Idemudia ES. Male Involvement in Family Planning Decisions in Malawi and Tanzania: What Are the Determinants? *Int J Environ Res Public Health.* 2023 Mar;20(6).

26. Comrie-Thomson L, Mavhu W, Makungu C, Nahar Q, Khan R, Davis J, et al. Male involvement interventions and improved couples' emotional relationships in Tanzania and Zimbabwe: "When we are walking together, I feel happy". *Cult Health Sex*. 2020 Jun;22(6):722–39.
27. Galle A, Cossa H, Griffin S, Osman N, Roelens K, Degomme O. Policymaker, health provider and community perspectives on male involvement during pregnancy in southern Mozambique: a qualitative study. *BMC Pregnancy Childbirth* [Internet]. 2019;19(1):384. Available from: <https://doi.org/10.1186/s12884-019-2530-1>
28. High Impact Practices for Family Planning. Promote healthy couples' communication to improve reproductive health outcomes [Internet]. Washington D.C: USAID; 2022 [cited 2023 Jun 29]. Available from: <https://www.fphighimpactpractices.org/>
29. Mosedale S. Assessing women's empowerment: towards a conceptual framework. *J Int Dev* [Internet]. 2005 Mar 1;17(2):243–57. Available from: <https://doi.org/10.1002/jid.1212>
30. Donald A, Koolwal G, Annan J, Falb K, Goldstein M. Measuring women's agency. Policy Research Working Paper. 2017.
31. Sen A. *Inequality reexamined*. New York: Russell Sage Foundation; 1992.
32. United Nations Population Fund (UNFPA). Global goals indicators 5.6.1. Research on factors that determine women's ability to make decisions about sexual and reproductive health and rights. Vol. I. 2019.
33. Vizheh M, Zurynski Y, Braithwaite J, Rapport F. Determinants of women's agency in accessing and utilising reproductive healthcare services: a systematic review. *Cult Health Sex* [Internet]. 2023 Apr 20;1–17. Available from: <https://www.tandfonline.com/doi/full/10.1080/13691058.2023.2200814>
34. United Nations Population Fund (UNFPA). Tracking women's decision-making for sexual and reproductive health and reproductive rights. New York; 2020.
35. Ministério da Saúde (MISAU), Instituto Nacional de Estatística (INE), ICF. Inquérito de indicadores de imunização, malária e HIV/SIDA em Moçambique 2015 [Internet]. Maputo, Moçambique. Rockville, Maryland, EUA; 2015. Available from: <https://dhsprogram.com/pubs/pdf/AIS12/AIS12.pdf>
36. United Nations (UN). SDG indicator metadata (SDG 5) [Internet]. Department of Economic and Social Affairs Statistics; 2022. Available from: <https://unstats.un.org/sdgs/metadata/files/Metadata-05-06-01.pdf>
37. McGovern T, Harriet J, Heilbrunn RH. Sexual and reproductive justice as a vehicle to deliver the Nairobi Summit commitments. 2022.
38. Galavotti C, Gullo S. Reproductive power matters: Aligning actions with values in global family planning. *Sex Reprod Heal Matters* [Internet]. 2022;30(1):2082353. Available from: <https://doi.org/10.1080/26410397.2022.2082353>
39. Kim JY, Evans T. Promoting women's health for sustainable development. *Lancet* [Internet]. 2015;386(9999):e9–10. Available from: <https://www.sciencedirect.com/science/article/pii/S0140673615609424>
40. Canning D, Karra M. Unwanted family planning: Prevalence estimates for 56 countries. *Stud Fam Plann* [Internet]. 2023;54(1):75–93. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/sifp.12230>
41. Holt K, Galavotti C, Omoluabi E, Challa S, Waiswa P, Liu J. Preference-Aligned

- Fertility Management as a person-centered alternative to contraceptive use-focused measures. *Stud Fam Plann* [Internet]. 2023;54(1):301–8. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/sifp.12228>
42. Fabic MS, McDougal L, Raj A, Jadhav A. Is the decision not to use contraception an indicator of reproductive agency? *Stud Fam Plann* [Internet]. 2023;54(1):95–117. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/sifp.12235>
 43. Bornstein M, Huber-Krum S, Gipson JD, Norris AH. Measuring nuance in individual contraceptive need: A case study from a cohort in Malawi. *Stud Fam Plann* [Internet]. 2023;54(1):63–74. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/sifp.12223>
 44. Betron M, Bourgeault I, Manzoor M, Paulino E, Steege R, Thompson K, et al. Time for gender-transformative change in the health workforce. *Lancet* [Internet]. 2019;393(10171):e25–6. Available from: <https://www.sciencedirect.com/science/article/pii/S0140673619302089>
 45. High Impact Practices for Family Planning. Community group engagement: Changing norms to improve sexual and reproductive health. Washington D.C; 2016.
 46. High Impact Practices for Family Planning. Social Norms: Promote community support for family planning [Internet]. Washington D.C; 2022. Available from: <https://www.fphighimpactpractices.org/briefs/social-norms/>
 47. The Bill and Melinda Gates Foundation (BMGF). Gender equality toolbox. What gets measured matters. A methods note for measuring women and girls empowerment. 2019.
 48. Chavane L, Dgedge M, Bailey P, Loquiha O, Aerts M, Temmerman M. Assessing women’s satisfaction with family planning services in Mozambique. *J Fam Plan Reprod Heal Care* [Internet]. 2017 Jul 8;43(3):222–8. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5537550/>
 49. Remme M, Narasimhan M, Wilson D, Ali M, Vijayasingham L, Ghani F, et al. Self-care interventions for sexual and reproductive health and rights: Costs, benefits, and financing. *BMJ* [Internet]. 2019;365. Available from: <https://www.bmj.com/content/365/bmj.l1228>
 50. Narasimhan M, Kapila M. Implications of self-care for health service provision. *Bull World Health Organ* [Internet]. 2019 Feb 1;97(2):76-76A. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6357575/pdf/BLT.18.228890.pdf/>

ANNEXES

Annex A. Domains of women's empowerment and respective indicators used to measure them across the literature

Domain	Variable/indicator
Most frequently used	
Household decision-making	<ul style="list-style-type: none"> • Overall weight of opinions/who usually gets their way/final say • Decision to seek health care or use medicines for self or family • Decisions regarding children's marriage/health care/clothes/education/travel • When and number of children to have or whether to foster • Domestic and children related • Household chores/cooking • House repairs • Management of finances/income • Whether woman works outside home • Who mainly decides spending money earned • Major/minor household purchases or sales • Purchases of clothes/shoes/jewellery for self • Decision to lease or buy land • Decisions about leisure activities • Socio-cultural and family relations • Supporting/lending to/borrowing from family members (Decisions regarding) visits to friends/relatives
Mobility and social life	<ul style="list-style-type: none"> • Travel alone or accompanied • Community centre or club • Fields • Hospital/health centre • Inside/outside village • Market/shopping • Neighbours • Political/social meetings • Watch a film • Sports ground • Talk to unknown men • Unaccompanied travel • Visit relatives or friends • With/without permission • Work outside home
Financial autonomy	<ul style="list-style-type: none"> • Authority to spend money • Decide how to spend money (household items; for herself) • Freedom to purchase • Personal savings/bank account • Proportion of financial contribution to household expenses

Domain	Variable/indicator
	<ul style="list-style-type: none"> • Can survive without the husband • Perceived control over family income • Manages family budget • Has a say in the household decision-making • Has own income • Worked for income in the past year • Works for cash • Type of work
Gender attitudes/beliefs of woman or partner	<ul style="list-style-type: none"> • Who should or makes decisions about the number of children and use of family planning • Son preferences • Education level desired for daughters and sons • Labour/gender roles • Who should make decisions • Who should control the household budget • Whether husband should participate in the household chores • Whether husband is justified in beating wife (e.g. refusing sex) • Belief or practising <i>Parda</i> (veil) • Approval of practicing dowry • Freedom of violence • Freedom of movement • Freedom to establish relationships • Whether women should be involved in the decision of whom to marry
Less frequently used	
Relationship characteristics	<ul style="list-style-type: none"> • Age at marriage • Ability to choose partner • Whether spouse is a blood relative • Age/education/income/expenditures relative to spouse • Length of marriage • Type of marriage (monogamous or polygamous) • Knew the husband before marriage • Interspousal communication (discussion about family planning, about how to spend money, about what is happening in the community) • Relationship power • Gender roles
Sexual and reproductive decision-making	<ul style="list-style-type: none"> • Reproductive/family planning decisions • Main decision-maker in how many children to have (or agreement on family size) • Who gets the final say • Can refuse to have sex • Justified wife beating for refusing sex • Justifies wife beating for requesting the use of condom
General/contraceptive efficacy and family	<ul style="list-style-type: none"> • Ability to meet/ get well-planned family planning needs/information

Domain	Variable/indicator
planning knowledge	<ul style="list-style-type: none"> • Discussion of family planning with friends, neighbours or anyone • Ability to obtain desired options even when opposed • Can and should control sexual and contraceptive situations • Felt prepared for first sex • Heard about STIs before marriage • Not fatalistic about fertility • Whether house, woman, child are “well kept”

Source: adapted from Prata et al (2017), Upadhyay et al (2014) and Ewerling et al (2017).

Annex B. Permission from Health authorities in Mozambique

Annex B1. Permission from the Provincial Directorate of Health of Maputo Province



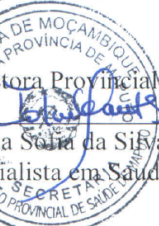
República de Moçambique
Governo da Província de Maputo
Direcção Provincial de Saúde

Credencial

Está devidamente credenciada a Sra **Sofia Castro Lopes**, Estudante de Doutoramento em Saúde Pública na Unidade de Investigação de Saúde da Mulher da Escola Pública e Medicina Familiar-Faculdade de Ciências de Saúde- na Universidade de Cape Town, a apresentar-se no SDSMAS Matola, na Província de Maputo, a fim de recolher dados no âmbito do estudo intitulado **“Empoderamento da mulher: intenções de fecundidade e práticas de planeamento familiar em Moçambique”**, no período de Outubro a Novembro de 2019

Matola, 22 de Outubro de 2019

A Directora Provincial de Saúde


Iolanda Sofia da Silva Santos
(Médica Especialista em Saúde Pública, MPH)

Direcção Provincial de Saúde de Maputo
Matola “A” Nº 11. 129, Praça Município Telef. 21 724549/50 Fax: 21 724548 C. P. 1031 Nº 47

Annex B2. Permission from the Directorate of Health of the City of Maputo



REPÚBLICA DE MOÇAMBIQUE
GOVERNO DA CIDADE DE MAPUTO
DIRECÇÃO DE SAÚDE DA CIDADE DE MAPUTO

A Sra.
Sofia Castro Lopes

MAPUTO

N/Ref. n. ⁶¹²⁷ /DSCM-DFPS/⁰⁵⁰¹ /2019

Data: 28 de Outubro de 2019

ASSUNTO: Resposta a solicitação de carta de cobertura para realizar trabalho de pesquisa intitulado “Empoderamento da Mulher: intenções de fecundidade e práticas de planeamento familiar em Moçambique”

A Direcção de Saúde da Cidade de Maputo apresenta os seus melhores cumprimentos e aproveita a ocasião para acusar a recepção do requerimento da Sra. Sofia Castro Lopes, estudante de Doutoramento na Faculdade de Ciências Humanas na Universidade do Cabo na RSA.

Sobre a matéria, comunica-se que a Direcção de Saúde da Cidade de Maputo é favorável ao pedido supramencionado, devendo apresentar os resultados da pesquisa igualmente na DSCM.

Sem mais de momento, queiram aceitar as nossas calorosas saudações.



A Directora
Dr.^a Sheila Márcia Tajú Lobo de Castro
(Médica de Clínica Geral de 1^a)

Annex B3. Permission from the Provincial Directorate of Health of Nampula Province



REPÚBLICA DE MOÇAMBIQUE
GOVERNO DA PROVÍNCIA DE NAMPULA
DIRECÇÃO PROVINCIAL DE SAÚDE

Para:

Sofia Castro Lopes
University Of Cape Town,

África do Sul

N/Ref.nº 4971 / 08.15 /DPS-DPPC/2019

Data 12 /11/2019

ASSUNTO: Carta de Cobertura Institucional

Em resposta ao pedido de carta de cobertura do estudo titulado “**Empoderamento da Mulher Intenções de Fecundidade e Práticas de Planeamento Familiar em Moçambique**”, o estudo têm como objectivo Explorar a relação entre o empoderamento, intenções de Fecundidade e práticas de planeamento Familiar entre mulheres em idade Reprodutiva em Moçambique através de uma abordagem metodológica mista. A Direcção Provincial de Saúde, não encontra inconveniência para a realização do estudo, desde que sejam respeitados os procedimentos éticos e partilhados os resultados da pesquisa.

Sem mais, de momentos nos subscrevemos com elevada consideração.

A Directora Provincial

Munira Abubakar Bin Abudou
(Medica de Clínica Geral Principal)



Annex C. Women's interview guide

INTERVIEW GUIDE

INTRODUCTION

Thank you for agreeing to participate in this study. As explained before, we are going to have a conversation about family planning and becoming a mother, specifically we want to hear your opinions about these issues. Please remember that there are no right or wrong answers and I just want to hear your opinions. I will audio-record our conversation so I can remember everything you said later. However, this recording will be deleted after transcribing our conversation. Do you have any questions? Do you give your permission for us to proceed?

Let us start then! I am going to put the recorder on now.

SOCIO-DEMOGRAPHIC INFORMATION

Province: _____	Participants study ID: _____
------------------------	---------------------------------------

Name: _____	Age: __ __	
Marital status: single __ married or in union __ divorced/separated __ widow __		
If married, does your husband lives with you or if he working abroad: _____		
Current employment situation: employed __ unemployed __		
Profession/Occupation: _____		
Number of pregnancies: __ __	Parity: __ __	Number of live children: __ __
Ethnicity: _____	Size of the household: __ __	
Current use of contraception: Yes __ No __		
if yes, indicate which: _____		
Ever use of contraception: Yes No		

Health centre/community of recruitment: _____		
Place of residence (neighbourhood, district): _____		
Date of recruitment: __ __ / __ __ / __ __		
Date of interview: __ __ / __ __ / __ __	Start time: ____: ____	End time: ____: ____

QUESTIONS

Overarching question (guiding question): Exploring the decisions about fertility and family planning over a timeline

I would like us to focus in your life and in your experiences. Let's think about important moments that were part of your life, for example, the day of your first menstruation, your wedding, your first pregnancy, delivery, following pregnancies, use of contraception, your first paid job (choose examples adjusted to the participant), among other moment. Once we identified these important events in your life, I would like you to tell me about each of these moments.

Moments to consider:

➤ Menstruation

Try to remember when you had your menstruation for the first time. How old were you? What do you remember from that moment?

Explore other memories – what did you feel? What changed? Was she studying? What happened next (rituals?)

➤ Wedding

What do you think about marriage? How old were you when you got married? What made you decide to get married? What changed in your life?

Explore: forced vs. decision/choose to be married; need to be an official/traditional marriage – lobolo; Was it important for her status? What changed? What were the expectations of others and herself?

➤ Pregnancy/maternity/contraception

I. Decision-making about fertility/reproduction and family planning WITHIN the family

Now let us consider specifically the decisions about woman falling/not falling pregnant and becoming a mother:

1. Until when did you use contraception? And after getting married, until getting pregnant?
2. How was the moment when you decided having/not having a child (for those who do not have children)?

Prompts: what is important for you? Who was involved in that decision? What changed?

3. What are the plans for the future, would you like to have children? What are the reasons for wanting/not wanting to have children? (choose the right option)

Prompts: What influenced this decision/choice? Can you look for contraception by yourself?

4. In these moments of decision-making in your house, what is the role of the man/your partner?

Prompts: Do you have the option/can you discuss these issues with your husband or other person who makes or participates in the decision-making? Explore relational and negotiation aspects.

5. How women in your community/society make decisions about family planning, having children, etc? Think about what can hinder women of making decisions alone or on the other hand, can't help women make decisions alone.

II. Decision-making about fertility and family planning within the CONTEXT of the health services

1. What do you think about the health workers who did the follow up of your pregnancy/family planning? How were they important for the decisions we just spoke about? Can you please give some examples?
2. Overall, what is the role of the health providers in the decisions of women about the number of children to have or the use of contraception? Can you please give some examples?

Prompts: Inform women? Involve partners? In which ways this can help women having more power to choose freely or decide on what she think it is best?

Other moments:

- Employment

Depending on what her occupation is: Do you have access to income? How do you manage your money at home? (Income management? Decisions about spending?)

- Death of a close family member

Situation that could have increased the woman vulnerability and to decisions about of school dropping, early marriage, etc.

- Violence exposure (explore only if referred by the woman)

In relation to her decision making – if exists or existed, is it inside the household? Is it her partner? In which situations? How does she react or acts on it?

- Participation in a community group: association, credit group

Income that she can manage and keep her business? Access to resources? Land, information?

Looking at the women and men in the community/society:

DECISION-MAKING PROCESS/CHOICE AND MEANING OF POWER

1. **What do you think about the Mozambican woman? Do you think that the women of today are different from the women from before (some time ago)? Were there changes or everything is still the same? Tell me your thoughts about his.**
2. **What are the roles/responsibilities that are from men and what are the roles/responsibilities of women within the household and in the community/society in Mozambique?**

Prompts: tasks distribution/division based on sex, behaviours determined by the family relationships and hierarchies.

3. Within the roles you described, in which situations men and women can have the same roles/responsibilities or they can swop, for example? What does it mean?

Prompts: is there lose of powers? Of social status? Is there transfer of roles and powers? What are the barriers and consequences?

4. Why do you think there are these differences between men and woman? What does it mean?

Prompts: Different power – meaning and perceptions about the concept of power – being capable of decision-making, having control, having the capacity, the strength, strengthening, freedom, do what she considers the best.

5. What do you think about the Mozambican women who makes decisions alone about their lives? When does it happen?

Prompts: Is it possible for a woman to do it? Why or why not? What are the consequences and what levels? Is there discrimination or punishment in the community?

6. What do you think can contribute to the Mozambican woman to have more power (decision/choice) in your community/society?

7. In which ways the community/society organization can influence the power of a woman and men to decide or make choices?

Prompts: role of the traditional leaders? Rituals? Women's groups or associations?

This was our last question. Is there anything that you would like to add?

Thank you for your time.

Observações/comentários:

Annex D. Ethical approvals

Annex D1. Ethical approval from Human Research Ethics Committee of the Faculty of Health Sciences - University of Cape Town (UCT) (Ref.: HREC 579/2019)



UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee



Room E53-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6626
Email: pilyla.langenhoven@uct.ac.za

Website: www.health.uct.ac.za/fhs/research/humanethics/forms

12 September 2019

HREC REF: 579/2019

A/Prof J. Harries
Women's Health Research Unit
Room 3.47 Level 3
Entrance 5, Falmouth Building

Dear A/Prof Harries

PROJECT TITLE: WOMEN'S EMPOWERMENT: FERTILITY INTENTIONS AND FAMILY PLANNING PRACTICES (PHD DEGREE - MS S T C LOPES)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 September 2020.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that the student: Ms S.T.C. Lopes will also be involved in this study.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate Institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M. BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938
NHREC-registration number: REC 210208 007

Annex D2. Ethical approval from the Institutional Committee of Bioethics for Health from the Faculty of Medicine/Central Hospital of Maputo, Mozambique (Ref: CIBS FM&HCM/98/2019).



Comité Institucional de Bioética em Saúde da
Faculdade de Medicina/Hospital Central de
Maputo



(CIBS FM&HCM)

*Dr. Jahit Sacarlal, Presidente do Comité Institucional de Bioética em Saúde da Faculdade de
Medicina/Hospital Central de Maputo (CIBS FM&HCM)*

CERTIFICA

Que este Comité avaliou a proposta do (s) Investigador (es) Principal (is):

Nome (s): Sofia Castro Lopes

Protocolo de investigação: versão 3 de 11 de Dezembro de 2019

Consentimentos informados: Versão 2. 30 de Outubro de 2019

Questionários: versão 3 de 11 de Dezembro de 2019

Guião de entrevista: versão 3 de 11 de Dezembro de 2019

Guião de grupo de discussão focal: N/A

Do estudo:

TÍTULO: “Empoderamento da mulher: intenções de fecundidade e práticas de planeamento familiar em Moçambique.”

E faz constar que:

1º Após revisão pelos membros do Comité do protocolo durante a reunião do dia 21 de Janeiro de 2020, e que foram incluídas na acta nº 01/2020, o CIBS FM&HCM, emite este informe notando que não há nenhuma inconveniência de ordem ética que impeça o início do estudo.

2º A revisão se realizou de acordo com o Regulamento do Comité Institucional da FM&HCM – emenda 2 de 28 de Julho de 2014.

3º O protocolo está registado com o número CIBS FM&HCM/98/2019.

4º A composição actual do CIBS FM&HCM está disponível na secretária do Comité.

5º Não foi declarado nenhum conflito de interesse pelos membros do CIBS FM&HCM.

6º O CIBS FM&HCM faz notar que a aprovação ética não substitui a aprovação científica nem a autorização administrativa.

7º A aprovação tem validade de 1 ano e termina a 21 de Janeiro de 2021. Um mês antes dessa data o Investigador deve enviar um pedido de renovação se necessitar.

8º Recomenda aos investigadores que mantenham o CIBS informado do decurso do estudo no mínimo uma vez ao ano.

9º Solicitamos aos investigadores que enviem no final de estudo um relatório dos resultados obtidos.

E emite

RESULTADO: APROVADO

CIBS

Assinado em Maputo dos 22 de Janeiro de 2020

Annex E. Participant's Informed Consent Form



INFORMED CONSENT FORM

PART I

INFORMATION PAGE

University of Cape Town (UCT)

Title of this study: Women's Empowerment: Fertility Intentions and Family Planning Practices in Mozambique

Version: 2, 30 October 2019

Investigator(s): Associate Professor Jane Harries¹, Principal investigator; Sofia Castro Lopes¹, co-investigator; Dra. Deborah Constant¹, co-investigator; Dra. Sílvia Fraga, co-investigator²; Dra. Nafissa Bique Osman, co-investigator³

Affiliation: Women's Health Research Unit, School of Public Health & Family Medicine, UCT, South Africa; Institute of Public Health of the University of Porto, Portugal²; Faculty of Medicine, University Eduardo Mondlane, Mozambique³

Sponsor: Not applicable

Funder: 2019 Post Graduate Research Training Grant, UCT

Introduction

Good morning/afternoon. My name is Sofia Castro Lopes, I am a member of the research team of the study "Women's empowerment: Fertility intentions and family planning practices in Mozambique", led by the Women's Health Research Unit at the University of Cape Town with the collaboration of the Faculty of Medicine, University Eduardo Mondlane, Maputo. This study will look at women's choices and decision-making processes and experiences over their fertility and family planning practices. Therefore, I would like to invite you to take part of this study.

With this document I would like to provide you with more information about the study, and, if you agree to participate, ask you to confirm it by signing it at the end. While going through the document with you, there might be some words that you do not understand. If that happens, please ask me to clarify those words or content.

Study justification

In Mozambique the use of modern contraceptive methods is low, and on the other hand, the fertility levels are high, as well as the number of maternal deaths, despite of the progress attained in the last decade. The decisions related to fertility, for example, number of children or use of family planning, are influenced by some social and contextual factors where women live. Identifying and understanding these factors that influence the decision-making, can benefit the definition of health strategies that can support women in these decisions.

Objective

This study aims to understand in which ways the processes of decision-making and choice of women in Mozambique are related to fertility intentions, for example number of children or spacing pregnancies, and family planning practices, such as use of modern methods of contraception.

What will happen if you take part in this study?

If you take part of this study, you will be interviewed about how you make decisions about having or not having children and using family planning methods, what influences those decisions, specifically looking at your life experiences. This interview is expected to last between 50 to 70 minutes. If you agree I would like to audio record our conversation, so that I can listen to it afterwards to make sure I remember everything you say.

Taking part and withdrawing

It will be invited to participate in this study Mozambican women aged between 18 and 49 years. Your participation in this study is completely voluntary. That means that it is your choice to join the study or not. Not participating in the study or withdrawing from the study will not affect your present or future care in this or any health facility. If you join the study, you do not have to answer any questions that you are not comfortable with. Your name will not be used as part of any of the results from this study. Your answers to questions will be kept confidential. Even if you have signed and agreed to take part in the study, you have a right to say that you no longer want to take part in the study at any time.

Risks of taking part

There is a slight risk that you may feel uncomfortable answering some of the questions. I want to remind you that there are no right or wrong answers. You may refuse to answer any question or not take part in a portion of the interview if answering the question(s) makes you uncomfortable.

Benefits

You may not benefit directly from taking part in this study; but, by doing this study, I hope to have a better understanding of women's choices and decision-making processes regarding fertility and contraception use within the household and community context in Mozambique, and this way, contribute to the improvement of health services provided to them.

Keeping this private and with no names

If you to take part in this interview, I would like you to know that I will use a study number rather than your name in this research and you will not be identified by name at any point of the research process. Your personal information will be kept private in a safe place at all times.

Compensation for your time

For the additional time you spend in the health facility, I will provide you with food and drinks.

For additional information

If you have any questions or have any problems while taking part in this research study, you should contact:

Associate Professor Jane Harries

Women's Health Research Unit

School of Public Health and Family Medicine

Faculty of Health Sciences University of Cape Town

Tel.: + 27 21 406 6798

If you have any questions about your rights as a research participant you may contact the following member of the Ethics Committee, an independent committee, to help protect the rights of research participants.

Associate Professor Jahit Sacarlal

Faculty of Medicine

University of Eduardo Mondlane

Maputo, Mozambique

Tel: +258 825881101

Prof Marc Blockman

Chair Human Research Ethics Committee

Faculty of Health Sciences

University of Cape Town

Tel: +27 21 406 6338