Understanding the role of pharmacies as contraceptive outlets for young people (ages 18-24) in Coastal Kenya

INAUGURALDISSERTATION

zur

Erlangung der Würde eines Doktors der Philosophie

vorgelegt der

Philosophisch-Naturwissenschaftlichen Fakultät

der Universität Basel

von

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Basel, 2020

Genehmigt von der Philosophisch-Naturwissenschaftlichen Fakultät auf Antrag von

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Basel, 23 June 2020

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Acknowledgements

It takes a village raise a PhD candidate and I'm extremely grateful to colleagues, friends, and family around the world who have made this possible.

The idea for this thesis came while I was working on WHO's adolescent sexual and reproductive health research portfolio in Geneva. My study was funded in part by my Department and professional home of seven years, WHO's Department of Sexual and Reproductive Health and Research, which includes the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP). I'm grateful to my colleagues and friends in HRP and within WHO more broadly for sharing their technical inputs (sometimes as co-authors, sometimes as informal sounding boards), encouragement, and commiseration as I navigated coursework, study, and data analysis. A special thank you to my supervisor and mentor for six years, Dr Lale Say, who encouraged me to pursue this and whose flexibility made working full-time while studying possible.

Data collection would not have been possible without the creativity, tireless work ethic, and resourcefulness of the entire team at the International Centre for Reproductive Health Kenya. My special thanks to the project PI, Professor Peter Gichangi, Study Coordinator Jefferson Mwaisaka, and Research Officer Winnie Wangari. Their ability to find participants, schedule a high-level interview, track permissions, coordinate logistics, or identify data collectors with a single phone call was impressive to behold. This study would not have happened without them.

The study and the dissertation were developed in close collaboration with my two PhD supervisors, Professor Kaspar Wyss, and Dr Adriane Martin Hilber. Their patient review of innumerable drafts got me from my proposal, through my manuscripts, and finally to this dissertation. Between the two of them, I discovered new corners of the adolescent health and health systems literature. Your instruction has made me a better writer and a better researcher – thank you both so much. Thanks also to Dr Sarah Neal and Professor Jürg Utzinger for serving on my committee (particularly while the

health community and world also grapple with the COVID-19 pandemic). Also at Swiss TPH, my appreciation goes to Dr Sonja Meerten and Dr Constanze Pfeiffer for their thorough feedback on my PhD proposal, and Christine Mensch for helping me to navigate administrative matters in Basel as a Geneva-based student.

I am grateful to my friends, scattered in Geneva and around the world, for their support these last four years. Thanks to the Saints who stood by me bouncing between Basel and Geneva. Thanks also to friends of mine in the research world, many of whom are passing through/have previously passed through PhD gauntlet themselves, for their encouragement and tough love when needed. Finally, my love and thanks to my family, including my parents, sister, and partner. This would not have been possible without your unconditional support.

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List of Abbreviations

ADDO	Accredited Drug Dispensing Outlet
ARMADILLO	Adolescent/Youth Reproductive Mobile Access and Delivery Initiative for Love and Life Outcomes
ASRH	Adolescent Sexual and Reproductive Health
CPD	Continuing Professional Development
DHIS 2	District Health Information Software 2
DHS	Demographic and Health Survey
DMPA	Depot Medroxyprogesterone Acetate
DMPA-SC	Subcutaneous Depot Medroxyprogesterone Acetate
ECP	Emergency Contraception
EKNZ	Ethikkommission Nordwest- und Zentralschweiz
FGD	Focus Group Discussion
FIP	International Pharmaceutical Federation
HMIS	Health Management Information Systems
HRP	UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction
ICRHK	International Centre for Reproductive Health - Kenya
IDI	In-Depth Interview
IUD	Intrauterine Device
KI	Key Informant Interview
KNDP	Kenya National Drug Policy
KNPP	Kenya National Pharmaceutical Policy
KPA	Kenya Pharmaceutical Association
MoH	Ministry of Health
NGO	Non-Governmental Organization
LARC	Long-Acting Reversible Contraception
LMIC	Low- and Middle-Income Countries
PPB	Pharmacy and Poisons Board
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSK	Pharmaceutical Society of Kenya
RCT	Randomized Controlled Trial
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infection
Swiss TPH	Swiss Tropical and Public Health Institute
WHO	World Health Organization
WHO/SRH	WHO's Department of Sexual and Reproductive Health and Research

Executive Summary

Introduction

Young people comprise 1.8 billion people, globally. As adolescents (ages 10-19) and youth (ages 15-24), this population will undergo puberty and may also become sexually active, married, and/or bear children, thus requiring access to sexual and reproductive health (SRH) services, including contraception. Policy, financial, cultural, social, or privacy barriers often prevent young people from using available SRH services in many settings. As a result, young people face special health vulnerabilities: in many regions of the world, young women wanting to avoid pregnancy can be up to twice as likely as adult women to have an unmet need for modern contraception.

To eliminate this unmet need, there has been strong emphasis in developing SRH services for youth that are both available as well as 'adolescent/youth-friendly', as defined by their acceptability, accessibility, appropriateness, effectiveness, and efficiency. Public health facilities have traditionally been the focus of efforts to implement youth-friendly services; however, for contraceptive services, private pharmacies may also be worth exploring.

By virtue of being outside of the public health system, pharmacies have traditionally been overlooked in youth-targeted programming. That said, international guidelines on contraception provision indicate that certain contraceptive services (including condoms, daily and emergency hormonal contraceptive pills, and injectable contraception) can be provided by trained pharmacy personnel. Additionally, in sub-Saharan Africa and Kenya, where this study took place, evidence suggests that pharmacies are already a popular contraceptive outlet. Pharmacies would therefore appear to be a promising strategy for a new generation of interventions promoting contraception access for young people. However, there is a lack of documentation describing young people's experiences obtaining contraception from pharmacies. Additionally, Kenya like many countries struggles with pharmacy service quality and illegal activity.

Therefore, this dissertation sought to develop an understanding of how pharmacies were currently serving as sources of contraception for young people. This would provide a foundation from which programmers and health policymakers could effectively strengthen or even expand the role of pharmacy outlets in contraceptive service provision. The dissertation had three specific objectives:

- Objective 1: Develop a comprehensive understanding of the experiences of young people worldwide who access contraception through pharmacies
- Objective 2: Understand the characteristics of young people (age 18-24) in a peri-urban area of a Kenyan coastal county who access contraception from pharmacies, and identify specifically what qualities make these establishments appealing or unappealing for young users
- Objective 3: Assess the contraception-dispensing practices of pharmacies for young clients (age 18-24) in a peri-urban area of a Kenyan coastal county.

Methods

This research consists of a systematic literature review (to address Objective 1), which informed a mixed methods study (addressing Objectives 2 and 3). The systematic literature review described the experiences of young people (aged 25 and below) accessing contraception and other sexual and reproductive health commodities (including abortifacients and STI tests) in pharmacies. The subsequent mixed methods study took place in Kwale County, Kenya between November 2017 and March 2018. Young people aged 18-24 years, pharmacy personnel, and broader pharmacy practice stakeholders were included as participants.

Youth perspectives were captured through six focus group discussions with young community members, 18 in-depth interviews with young people who recently purchased contraception from a pharmacy, and a cross-sectional survey of 740 randomly-selected young people from the study area. Nineteen key informant interviews with pharmacy personnel and six interviews with local, county and national level pharmacy stakeholders captured the perspectives of dispensing pharmacy personnel and provided broader context on pharmacy practice in Kenya. Finally, four mystery

shoppers each visited 50 pharmacies and attempted to purchase a specific contraception (male condom, emergency contraception, or injectable contraception). Details of these interactions were recorded.

Qualitative analysis used the Framework Method. Quantitative analysis of survey data consisted of descriptive statistics, followed by bivariate log binomial regressions, and a multivariable Poisson regression model, with source of contraception (pharmacy or elsewhere) as the dependent variable.

Results and Discussion

Objective 1: Experience of young people accessing contraception through pharmacies, worldwide

Much of the available literature came from high-income settings and focused on the provision of emergency contraception (ECP). The review found that pharmacies' contraception services were appreciated by young people for their longer operating hours, accessibility, and speed. Making ECP available through pharmacies without prescription did not result in poor health-related behavioural outcomes. Additionally, young people were found to be able to appropriately self-screen and use contraceptive products. The systematic review also found that young people and pharmacy personnel had some reservations about increased access to contraception leading to adverse health and behavioural outcomes. These reservations led pharmacy personnel to deny access to young people in some cases.

Objective 2: In Kwale County, who uses pharmacies and why?

Nearly 60% (154 out of 263) of young people who reported using modern contraception at last sex had obtained it from a pharmacy. Male condoms accounted for 72% of contraception used, ECP was another 12%. Use of either condoms or ECP at last sex was the strongest predictor of having gone to a pharmacy versus any other source, along with living alone. Young people in Kwale County appreciated pharmacies for their: convenience, privacy, non-judgmental personnel, speed, and low cost.

Objective 3: In Kwale County, how are the contraceptive-dispensing practices in pharmacies?

In pharmacies, contraception (ECP and condoms, especially) was widely and easily available to young people without gatekeeping. However, contraception was rarely dispensed with screening or counselling from pharmacy personnel. Injectable contraception could be purchased by young people as well and even injected on site in some pharmacies. Though initially reticent or embarrassed to approach pharmacies, young people appreciated the non-intrusive nature of interactions. That said, they were aware of and concerned by reports of illegal activity and inconsistent quality of pharmacy services.

Looking across the findings, this study found that a young person would choose a pharmacy over another source when they had a clear idea of a short-acting contraceptive method they wished to obtain. Young pharmacy clients might also have a time-sensitive desire for contraception - recent sex (for ECP shoppers) or the potential for sex in the near future (condom shoppers). Pharmacy purchasers did not desire counselling.

Pharmacies were an important option for young people for whom sexual activity was not socially acceptable. However, the ability to reliably obtain their desired method via a quick, non-judgmental, affordable, and private interaction at a location close by made pharmacies appealing for young users, generally. Contraception services in pharmacies, therefore, were perceived to be highly acceptable and accessible. These service characteristics carried disproportionate appeal for individuals choosing their outlet, outweighing variability in other quality measures (appropriateness, effectiveness, and equity).

Conclusions

This study was initiated to contribute to a limited evidence base surrounding the use of, appeal of, and quality of pharmacies as contraceptive outlets to young people in an East-African setting. Contraception services have seen important shifts towards bringing services closer to users, through task sharing to pharmacy personnel and other providers, promotion of self-care, and international

commitments to ensure universal access to SRH services, including family planning. This study provides several short- and long-term recommendations, should Kenya wish to improve on private pharmacies as contraception outlets. All of these must be implemented alongside broader, multi-sectoral efforts to normalize, destigmatize, and empower contraception use among young people. Recommendations include:

- In-service training for registered pharmacy personnel (through short-courses and Continuing Professional Development requirements) can dispel concerns around the safety and appropriateness of contraception for young people.
- Enforcement of existing guidelines around pharmacy premises, including requirements to display registration certificates, can provide young people with the clean and professional environment desired and as well as a way to identify registered providers.
- Low-cost, contraception-related health education campaigns in pharmacies can provide key information to young people and pharmacy personnel alike, while leaflets in a bag and digital health campaigns can discreetly offer specific instructions and referrals to young purchasers.
- Sharing responsibility for regulating certain aspects of pharmacy practice to professional associations (self-regulation) can improve monitoring and provide needed support to under-resourced government regulators.
- Developing a social franchise or accreditation system can provide an opportunity for professional associations, government, and even the private sector to play to their strengths, and introduce additional self-regulation into an underregulated sector.
- Incorporating data from private pharmacies into Kenya's health management information system can provide needed insight into what contraception products and services are used.

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1 Introduction

1.1 Adolescent/Youth Sexual and Reproductive Health

There are more than 1.8 billion young people around the world between the ages of 10 and 24 (UNFPA, 2014). The United Nations categorizes young people between the ages of 10-19 as 'adolescents', while those 15-24 are 'youth' (UNFPA, 2012). Adolescence captures a period of significant physical, emotional, and mental evolution, the biological transition of a person from a child to an adult (World Health Organization, 2014). 'Youth', on the other hand, encapsulates the period societal transition of a person from the roles and responsibilities of a child to those of an adult. In this period, young people may transition from being dependents in a household to leading a household themselves, leaving school, beginning work, and/or starting a family. The period of the life course covered by the term 'youth' is largely culturally-determined; as such, many countries have their own interpretations of 'youth', continuing into the mid-30s in some cases (World Health Organization, 2014).

These periods also have important, lifelong implications for health. In addition to the physical and mental changes an adolescent undergoes during and after puberty, adolescents can experiment with risky health-related behaviours, or develop lifelong positive health habits (World Health Organization, 2014). Many people also first explore sex and sexuality as adolescents/youth (Bearinger et al., 2007). These are central parts of being human which can be an enhancing part of life, and as with all health-related behaviours, initial sexual experiences can shape sexual health and wellbeing in the future (International Planned Parenthood Federation, 2011). Being sexually healthy requires a positive and respectful approach to sexuality and sexual relationships and includes the ability to have pleasurable and safe sexual experiences (World Health Organization, 2006a). Access to comprehensive information about sex and sexuality, access to relevant health services, and living in an environment that affirms and promotes sexual health for young people are all key factors to being sexually healthy (World Health Organization, 2019b).

Unfortunately, millions of young people around the world are not provided with the information, services, enabling environment, and agency, to be sexually healthy. Globally, deaths related to maternal causes (abortion, maternal haemorrhage, maternal sepsis) is the number two killer of young women aged 15-19 and number one killer of young women aged 20-24, while HIV/AIDS is a top five killer of young men and women aged 20-24 (Patton et al., 2009). An estimated 8.7 million young women aged 15 to 24 undergo unsafe abortions each year (Shah and Åhman, 2012). SRH challenges impact morbidity as well: unsafe sex and lack of contraception were the top two contributors to DALYs for young women aged 15-24 (Gore et al., 2011).

Ensuring that adolescents/youth have access to key sexual and reproductive health interventions, including contraception services, will help to improve these health statistics and provide young people with autonomy over their sexual health and wellbeing. Unfortunately, in many settings, it is a challenge for them to obtain and use contraception. Data from 61 LMICs have estimated that 33 million women aged 15-24 have an unmet need for contraception (MacQuarrie, 2014). An additional analysis of Demographic and Health Survey (DHS) data from 52 low- and middle-income countries (LMICs), found that married and sexually active young women aged 15-24 have a higher unmet need for family planning (31%) as compared to women aged 25-49 (23%) (Sedgh et al., 2016).

For young women aged 15-24 who do use contraception, an analysis of national survey data from 123 LMICs found that their 'method mix' (the distribution of contraceptive users by method (MEASURE Evaluation)) is less diverse than that of older women (Ross et al., 2015). Use of 'traditional methods' of contraception (rhythm and withdrawal) remains more or less constant among women of a reproductive age (aged 15-49). However use of modern contraception among women aged 15-24 is dominated by short-acting forms of contraception (injectables, pills – daily oral contraceptive pills, and emergency contraceptive pills – and condoms) (Ross et al., 2015). Highly effective, long-acting reversible contraception (LARCs), which include implants and intrauterine devices (IUDs), as well as permanent forms of contraception (male or female sterilization) become

more common among women age 25+. Permanent contraception is usually not an appropriate option for young women. However, LARC – which is an appropriate option and is less subject to contraceptive failure than other short-acting contraceptive methods – are often not presented as options for adolescent/youth users (High-Impact Practices in Family Planning (HIPs), 2015).

1.2 Youth challenges to obtaining contraception

For the young people who don't use contraception, what stops them? Not being married and infrequent sex (particularly among sexually active unmarried women) are cited as common reasons for non-use among young women (Sedgh et al., 2016). User concerns about side effects or long-term health implications also dissuade young users. So, too, might cultural norms stigmatizing premarital sex and sexual activity in general or societal or family pressure to produce a child quickly after marriage (Reproductive Health Supplies Coalition, 2017, UNFPA, 2014).

Additional barriers emerge if a young person decides to try to obtain contraception from a health care facility. Unaccompanied, underage, married or unmarried young people can be denied service based on actual or perceived laws and policies around who can access services without parental or spousal consent (High-Impact Practices in Family Planning (HIPs), 2015). Societal or cultural taboos often make it untenable for a young person to be observed in a health facility requesting contraception, even when laws and policies support their right to services (World Health Organization, 2012b, Mazur et al., 2018). Finally, if a young person makes it into a facility, they may encounter mistreatment, bias or be denied services altogether by healthcare providers inside (Chandra-Mouli et al., 2014). Any combination of these factors dissuade young people from accessing needed contraception services from facilities.

In recognition that health facilities are not meeting the needs of young people, there has been strong emphasis in developing SRH services for youth that are not only *available*, but also 'adolescent/youth-friendly', as defined by their acceptability, accessibility, appropriateness, effectiveness, and equity (World Health Organization, 2012a). Generic characteristics for each of

these elements were proposed by WHO (World Health Organization, 2012a) and are reproduced in the table below.

Table 1.1 Generic characteristics of adolescent-friendly health services within WHO-defined dimensions of quality

Reproduced from WHO's Making health services adolescent friendly: developing national quality standards for adolescent friendly health services(World Health Organization, 2012a)
EQUITABLE: ***All adolescents, not just some groups of adolescents, are able to obtain the health services that are available***
Characteristics
Policies and procedures are in place that do not restrict the provision of health services.
Health care providers treat all adolescent clients with equal care and respect, regardless of status.
Support staff treat all adolescent clients with equal care and respect, regardless of status.
ACCESSIBLE: Adolescents are able to obtain the health services that are available
Characteristics
Policies and procedures are in place that ensure that health services are either free or affordable to adolescents.
Point of service delivery has convenient working hours.
Adolescents are well-informed about the range of reproductive health service available and how to obtain them.
Community members understand the benefits that adolescents will gain by obtaining the health services they need, and support their provision.
Some health services and health-related commodities are provided to adolescents in the community by selected community members, outreach workers, and adolescents themselves
ACCEPTABLE: Adolescents are willing to obtain the health services that are available
Characteristics
Policies and procedures are in place that guarantee client confidentiality.
Point of service delivery ensures privacy.
Health care providers are non-judgmental, considerate, and easy to relate to.
Point of service delivery ensures consultations occur in a short waiting time, with or without an appointment, and (where necessary) swift referral.
Point of service delivery has an appealing and clean environment.
Point of service delivery provides information and education through a variety of channels.
Adolescents are actively involved in designing, assessing, and providing health services.
APPROPRIATE: The right health services (i.e. the ones they need) are provided to them
Characteristics
The required package of health care is provided to fulfil the needs of all adolescents either at the point of service or through referral linkages
EFFECTIVE: The right health services are provided in the right way, and make a positive contribution to their health
Characteristics
Health care providers have the right competencies to work with adolescents and to provide them with the required health services.
Health care providers use evidence-based protocols and guidelines to provide health services.
Health care providers are able to dedicate sufficient time to effectively deal with their adolescent clients.

The point of health service delivery has the required equipment, supplies, and basic services necessary to deliver the required health services.

There have been many efforts to identify effective strategies for implementing and scaling up youth-friendly services, as well as efforts to reflect on what *hasn't* worked and why (Denno et al., 2015, Chandra-Mouli et al., 2015). Stand-alone 'youth centres' provide one example of the latter. Youth centres vary substantially in their scope of activities; however, many offer some combination of recreational, and vocational or developmental services, as well as health services (Zuurmond et al., 2012). Evaluations of these centres found that they struggled to reach their intended audience. Relatively few young people in the centre's catchment area used them, and those that did were often older male youth (or young adults) who used the centres for their recreational purposes rather than their health services (Zuurmond et al., 2012). Despite their persistent popularity among programmers, from the perspective of encouraging use of SRH services among their target population, they were neither effective nor cost effective (Zuurmond et al., 2012, Denno et al., 2015).

Additionally, efforts have been made to establish or incorporate 'youth-friendly' services into health facilities (hospital centres or community-based facilities, including those run by non-governmental organizations and private providers) (Tylee et al., 2007). Approaches have varied widely, for example creating adolescent-friendly areas (with games and recreational spaces), or training peer counsellors (Dick et al., 2006). Others have focused on making the services themselves and those who administer them friendlier to young clients: for example, provider trainings, reworking facilities to offer more private spaces, and reducing service cost (Dick et al., 2006).

Multi-component interventions which train providers, make the facilities more youth-friendly, and have community-outreach efforts to generate demand have shown promise (Chandra-Mouli et al., 2015). Generally, however, evaluations of 'adolescent/youth-friendly' interventions have found mixed results (Denno et al., 2015). One explanation for this (besides a need for additional, rigorous evaluations) may be that adolescent/youth-friendly services can continue to suffer from supply-side

constraints, for example variable service quality and availability, distance and opening hours, or poor provider performance (Hainsworth et al., 2014, UNFPA, 2016a, Pandey et al., 2019). The five youth-friendly characteristics were developed from WHO's broader quality of care standards (World Health Organization, 2006b), which is to say that services which are 'youth-friendly' are providing a standard of care which should be available to all clients (Baraitser et al., 2002). It also means that the same constraints which make establishing and maintaining quality general health services a challenge also apply to youth-friendly services.

However, as indicated by evaluations of youth-friendly services in Zambia, Nepal and Egypt, challenges to youth-friendly service uptake come from outside the health system too. Social and community taboos around premarital sex or reproductive health services for unmarried individuals continue to influence health-seeking behaviour (or lack thereof) (UNFPA, 2015, Pandey et al., 2019, UNFPA, 2016a, Mmari and Magnani, 2003). A young person choosing to go to youth-friendly facility still potentially risks being observed by peers and family members, explaining why young people consistently identify 'confidentiality' and 'privacy' as important traits of health services (Baraitser et al., 2002, World Health Organization, 2012a, Barden-O'Fallon et al., 2020). It also provides a compelling reason why many young people may not be willing to approach a health facility for services, even if it is deemed 'youth-friendly'.

1.3 Pharmacies as contraception service providers

In contexts where multilevel barriers (inside and outside facilities) make young people unwilling or unable to visit health facilities for contraception services, pharmacies become an appealing alternate option.

The role of the pharmacist within the broader health system is rapidly evolving as pharmacies provide needed access to medicine and care in low- and middle-income countries (LMICs) (Wafula et al., 2012). As early as 2000, the World Health Organization (WHO) and the International Pharmaceutical Federation (FIP) adopted the concept of a 'seven-star' pharmacist, whose

multifaceted roles within the health system and community included: caregiver, decision-maker, communicator, manager, life-long learner, teacher, and leader (Wiedenmayer K et al., 2006). Later, the concept of 'medication therapy management' integrated trained pharmacy personnel into direct health service provision, including them in medication therapy review; developing and reviewing a personal medication record and medication-related action plan; and providing consultative, referral, and follow-up services (Burns, 2008, National Association of Chain Drug Stores Foundation and American Pharmacists Association, 2008).

A Cochrane review in 2013 described the health impacts of pharmacist-provided services, finding that they could positively-impact certain clinical outcomes related to management of non-communicable diseases and reduce visits to healthcare providers (Pande et al., 2013). However, enthusiasm for using pharmacies to expand the reach of health services is tempered with concerns about the quality of services provided: two other systematic reviews of the service quality in LMIC pharmacies noted concerns around counselling and questioning of clients, inaccurate diagnoses, poor referrals, inappropriate medicine sales, and a lack of adherence to prescribing and advising protocols (Smith, 2009b, Miller and Goodman, 2016). In many countries, quality across private pharmacies is variable, with compliant and qualified pharmacies often indistinguishable from other noncompliant establishments offering substandard services. A global study of pharmacy workforce capacity, for example, found more pharmacies than pharmacists reported on average in the African region as a whole, calling into question whether there is adequate and appropriate supervision of these outlets (Bates et al., 2016).

The expanded scope of pharmacist-provided services extends also to contraception provision. Pharmacies have been identified as a frequent first stop for people requiring contraception information or services (World Health Organization, 2017a). An analysis of Demographic and Health Survey (DHS) data from 57 low- and middle-income countries found that, depending on the region, 37-41% of modern contraception users obtain their contraception from a private sector provider. In

sub-Saharan Africa, this was 38% - of this more than 45% reported having gone to a private specialized drug seller (a category inclusive of pharmacies) (Campbell et al., 2015a). For short-acting reversible methods (male and female condoms, diaphragm, foam/jelly, oral contraceptive pills, emergency contraception), in all countries private specialized drug sellers were the single most popular source, across all categories of public and private service outlets (Campbell et al., 2015a). A survey of public and private family planning service outlets in Nigeria, Ethiopia, and the Democratic Republic of Congo, found that pharmacies in all three countries had higher availability of oral contraception, condoms, and especially emergency contraception than public facilities (Riley et al., 2018). Injectable contraception was also found to be available in over 60% of pharmacies in both Nigeria and Ethiopia.

WHO has developed recommendations on task sharing to improve access to contraception, which specifically include both cadres of pharmacy-personnel: pharmacists (capturing national cadres including pharmacists, chemists, clinical pharmacists, community pharmacists) and pharmacy workers (capturing the lower national cadres which usually report to pharmacists, including pharmacy assistants, pharmacy technician dispensers, pharmacist aides) (World Health Organization, 2017c). In these recommendations, pharmacists and pharmacy workers were deemed eligible to offer a variety of modern contraception services including: contraception counselling, oral contraceptive pills (both combined oral contraceptives as well as progesterone-only oral contraceptives), emergency contraceptive pills, as well as condoms, barrier methods and spermicides. Additionally, pharmacists (and pharmacy workers in specific circumstances) were also deemed eligible to deliver injectable contraceptives, provided they received additional training (World Health Organization, 2017c).

The training requirements and competencies of pharmacists and pharmacy workers is country-specific. Pharmacists are generally university-educated and the International Pharmaceutical Federation's (FIP) definition indicates that pharmacists are *"scientifically trained graduate health*

care professional who is an expert in all aspects of the supply and use of medicines" (WHO Regional Office for Europe, 2019). There is more diversity between countries in the cadres which fall under the category of 'pharmacy workers'. A survey of FIP member organizations in 2015-2016 found that, generally, pharmacy workers required either a certificate or diploma level training, consisting of three or fewer years, and not constituting an academic degree (which pharmacists must have) (Koehler and Brown, 2017). In countries which had some form of pharmacy worker cadre, responsibilities fell into one of three categories: 1) pharmacy workers were supervised by pharmacists; 2) pharmacy workers perform certain activities unsupervised (but in an environment regulated by pharmacists); 3) pharmacy workers work independently from and are not supervised by pharmacists (Koehler and Brown, 2017). The last scenario was reportedly seen more in LMICs, where pharmacy workers providing services could partially offset the inadequate numbers of trained pharmacists and health workforce in general.

1.4 Pharmacies to improve youth access to contraception – a special appeal?

For the many youth unwilling or unable to access SRH information and contraception from a health facility, pharmacy provision - that is, making commodities available either over-the-counter (openly accessible at a pharmacy), or behind-the-counter (dispensing contingent on evaluation from a pharmacist) - is one strategy that can help to overcome barriers to access. Removing prescription-only access and allowing contraception dispensing in pharmacies creates more direct access to SRH commodities and a new resource for youth.

National surveys in high-income countries suggest that the results of this expanded access are promising: studies from France, Australia, Canada, and the United Kingdom provide clear evidence that improving this access results in high utilization among youth (Hobbs et al., 2011a, Marston et al., 2005, Moreau et al., 2006a, Moreau et al., 2006b, Soon et al., 2005, Hobbs et al., 2011b). In France, for example, increase in ECP use following deregulation was highest for women under 25,

though this increase did not come at the expense of the diffusion of other forms of modern contraception (Moreau et al., 2006a).

1.5 Kenya

1.5.1 Youth SRH in Kenya

In Kenya, young people between the ages of 15 and 24 constituted one-fifth of the total population, according to the 2009 national census (Kenya National Bureau of Statistics, 2010). The most recent Kenya Demographic and Health Survey (KDHS) found that only 37% of 15-19 year old women and 49% of 20-24 year-old young women who are currently married, and 49% of 15-19 year old women and 64% of 20-24 year old young women who are sexually active but not married, are currently using any form of modern contraception (Kenya National Bureau of Statistics et al., 2015). Short-acting modern contraceptive methods – condoms, pills and injectables, especially – are popular among both married and unmarried sexually active young women in this age group (Kenya National Bureau of Statistics et al., 2015). However, the KDHS notes that, among currently married young women, 23.0% of 15-19 year olds and 18.9% of 20-24 year olds still have an unmet need for family planning – both of which are higher than the national estimate of unmet need among all women of a reproductive age (15-49), 17.5% (Kenya National Bureau of Statistics et al., 2015).

In the last twenty years, the Government of Kenya has increasingly emphasized programming among young women, starting with the Kenya Adolescent Reproductive Health Policy (2003). This policy aimed to double the use of modern contraceptives among four youth aged 15-24 by 2015 (Kenya Ministry of Planning and National Development and Kenya Ministry of Health, 2003). Kenya's 2009 national guidelines for family planning (FP) also expressly supported provision of FP services for adolescents and youth, and recognized pharmacies as a source of counselling and point of sale for certain modern methods of contraception (oral contraception, emergency contraception, condoms) (Kenya Ministry of Health, 2010). In 2018, while this study was under way, these guidelines were updated (Kenya Ministry of Health, 2018). The update included a specific section on the provision of

adolescent/youth-friendly contraceptive services. Also in the update, pharmacists and pharmaceutical technologists' roles were expanded in line with recent WHO recommendations and included provision of injectable contraception, with a stipulation that they needed to be specifically trained to do so (Kenya Ministry of Health, 2018).

Given the popularity of short-acting modern contraceptive methods with young women and the higher unmet need (as compared with other women of a reproductive age) among this age group, pharmacy access is an especially interesting strategy for Kenya. There is sporadic evidence indicating pharmacies are already popular with young people in Kenya (Oindo, 2002) and used by certain groups of young people in particular (an analysis of Kenya's most recent DHS found that 21.8% of sexually active, unmarried adolescents age 15-19 had obtained their modern contraception from a pharmacy(World Health Organization, 2016a)).

1.5.2 Pharmacies in Kenya

Pharmacies are the only legally-recognized retail drug outlet in Kenya (unlike other countries which may also recognize lower-level 'drug shops') (Riley et al., 2017). Under Kenyan regulations, public and private pharmacies are legislated under the Pharmacies and Poisons Act, originally published in 1957 (with subsequent amendments, most recently in 2012) (National Council for Law Reporting, 1957 (revised 2012), Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2009). The Act covers the development and dispensing of medicines and regulates the pharmaceutical practice. It also establishes the Pharmacy and Poisons Board (PPB), the regulatory agency for pharmaceutical practice(Kenya Ministry of Health, 2017, National Council for Law Reporting, 1957 (revised 2012), United Nations Industrial Development Organization, 2010).

Accompanying national policies which 'operationalize' pharmaceutical practice include Kenya's 1994 National Drug Policy (KNDP), succeeded by the National Pharmaceutical Policy of 2008 and most recently, a 2012 Sessional Paper No4 on National Pharmaceutical Policy (KNPP) (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2012). This revised KNPP is

meant to govern pharmaceutical practice through 2030. It recognizes the expanding role of the pharmacist as a health care provider as well as the rapid growth in the private pharmacy sector, acknowledging for the latter, the need for policy and legal frameworks to grow in tandem, to keep the sector regulated.

The Pharmacy and Poisons Board, therefore, has a large mandate. In collaboration with its supporting technical arms (for example, the National Quality Control Laboratory), the PPB is tasked with registering drugs, conducting pharmacovigilance (allowing for the reporting of substandard products, and monitoring adverse reactions), and monitoring local pharmaceutical manufacturers as well as importers (United Nations Industrial Development Organization, 2010). Additionally, the PPB maintains a Pharmaceutical Inspectorate tasked with not only inspecting incoming drugs at key 'Points of Entry' but also inspecting individual public and private pharmacies. These inspections are meant to confirm that pharmacies are in compliance with rules governing everything from the size of the physical premises to drug storage, to counterfeit control (Riley et al., 2017).

Pharmacists and pharmaceutical technologists are the cadre of health workers officially associated with pharmaceutical practice in Kenya. Pharmacist training consists of a minimum Bachelor of Pharmacy (a four-year degree program); pharmaceutical technologists go through a two-year, diploma-level training. Both cadres undergo compulsory internship and registration exam requirements prior to entering service (Kenya Ministry of Health, 2017). While practicing, both groups are required to renew their license annually, which can be done online. Additionally, both groups have Continuing Professional Development requirements – in recent years, the professional associations for each group (the Pharmaceutical Society of Kenya (PSK) for pharmacists, and the Kenya Pharmaceutical Association (KPA) for pharmaceutical technologists) have coordinated CPD programs for their professionals (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2013).

In 2013, there were 2532 registered pharmacists and 5236 registered pharmaceutical technologists, nationwide(Kenya Ministry of Health, 2014). 2014 numbers estimated that there were .512 pharmacists per 10,000 persons in Kenya (World Health Organization, 2019a). Pharmacy personnel and private pharmacies are predominantly based in urban areas and can be few and far between in rural or remote parts of Kenya (International Finance Corporation, 2019, Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2012). Nairobi has the highest ratios of any county in the country, with 1.9 non-government sector pharmacists per 10,000 people, and 3.6 pharmaceutical technologists per 10,000 (Kenya Ministry of Health, 2017). By comparison, 15 counties have zero pharmacists working outside the government sector.

Pharmacists and pharmaceutical technologists are the only health workers who can open retail pharmacies in Kenya. Additionally, all medicines must be dispensed either by or in the presence of a pharmacist or pharmaceutical technologist (other health professionals and non-professionals can provide support) (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2009). That said, in practice, there is a proliferation of unregulated activity in both public and private pharmacies. One 2008 study of 110 public, faith-based, and private retail pharmacies found that in only 38% of public pharmacies and 31% of faith-based health services was the dispensing professional in compliance with regulations (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2009). This jumped to 81% for private retail pharmacies; however, the authors of the report attributed this to the fact that only registered private pharmacies were included in the sample (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2009).

Private pharmacies are not without their own challenges. Illegal pharmacies (not legally registered, or opened with purchased licenses or with physical premises that are not regulation-compliant) are widespread (Langat, 2019). Additionally, private pharmacies source their medicines independent of the public sector's centralized supply system and so purchase from a variety of private sector

wholesalers and distributors (Riley et al., 2017, Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2012). Private drug importers, wholesalers, and distributors also fall under the regulatory purview (and limited capacity) of the Pharmacy and Poisons Board: counterfeit and substandard commodities from these sources is a challenge (International Finance Corporation, 2019).

Various forms of contraception (including injectables, oral contraceptives, emergency contraception, male and female condoms) are found in private pharmacies (Ostola et al., 2015). While contraception can be accessed for free in public facilities (Keesara et al., 2015a), it must be purchased in pharmacies, also known as 'chemists' locally.

1.6 Research Gap

As described above, young people's ability and willingness to access SRH services can be influenced by their community, provider, and peers in addition to the availability of services. Increases in use of SRH services can happen when these levels are addressed simultaneously (Napierala Mavedzenge et al., 2011), with 'youth-friendly' efforts which (Chandra-Mouli et al., 2015):

1. Train and support providers to be non-judgmental and friendly to young clients
2. Make health facilities welcoming and appealing
3. Include communication and outreach activities (alerting young people to available services and encouraging to use them)
4. Ensure the community is supportive and recognizes the importance of young people being able to access services.

Often, unfortunately, 'youth-friendly' interventions only address some of these items, setting them up for failure (Chandra-Mouli et al., 2015).

There is ample existing evidence in the literature documenting the reasons young people choose not to access SRH services in facilities, even those described as 'youth-friendly'. Despite their promise,

however, there is a paucity of documentation, especially from low- and middle-income countries, describing young people's experiences in alternate access points like pharmacies. Uptake figures and increased support of task-sharing to pharmacy personnel may make it tempting to view pharmacies as a panacea for addressing challenges to accessing SRH care for a young population that – in Kenya and around the world –struggles to obtain care in facilities. However, sudden attention to strengthening pharmacy services might also inadvertently drain them of their appeal to young clients. If, for example, pharmacies are appealing for their speed and anonymity, well-intentioned efforts to incorporate compulsory counselling, testing, or referrals might strip pharmacies of the qualities that draw in young clients in the first place.

Increased understanding of what kinds of young people choose to purchase contraception from pharmacies and why is needed (Denno et al., 2015). This includes developing a concrete understanding of what qualities make these sources appealing, and what (if any) additional support young people might desire from them.

1.7 Doctoral research aim and objectives

The aim of this doctoral research was to understand what drives young people aged 18-24 in need of contraception in Kwale County, Kenya to access it from pharmacies. The evidence would provide a baseline around which future programs might develop youth-targeted pharmacy-based interventions, which responsibly capitalize on the appeal of these establishments without sacrificing the qualities which make them so appealing to young people in the first place. Specifically, the objectives were to:

- Objective 1: Develop a comprehensive understanding of the experiences of young people worldwide who access contraception through pharmacies
- Objective 2: Understand the characteristics of young people in a peri-urban area of a Kenyan coastal county who access contraception from pharmacies, and identify specifically what qualities make these establishments appealing or unappealing for young users

- Objective 3: Assess the contraception-dispensing practices of pharmacies in a peri-urban area of a Kenyan coastal county for young clients.

2 Methods

This dissertation presents the results of a mixed-methods study, informed by a systematic review of the peer-reviewed literature.

2.1 Study site: Kwale County, Kenya

The study took place in Kwale County, Kenya. Kwale (location marked in map to right (County Government of Kwale, 2013)) is one of six counties in Kenya's former Coast province. The total population of Kwale County was projected to be 713,487 persons in 2012, with young people aged 15-29 comprising 26% of the County's total population (County Government of Kwale, 2013). Per 2012 estimates, about 18% of the County's population lives in an urban area (Kwale County Economic Planning Division, 2016). The County is predominantly Muslim (75%) and Christian (24%) (Mkutu et al., 2016). In 2015, contraceptive prevalence in the county was estimated to be noticeably lower than the rest of the country's at 38.2% versus the national level 53.2% (Kenya Ministry of Health, 2015a). Adolescent pregnancy in Kwale County is also higher than the national average, with 24.2% of women aged 15-19 having begun childbearing compared to the national level 18% (Kenya National Bureau of Statistics et al., 2015).

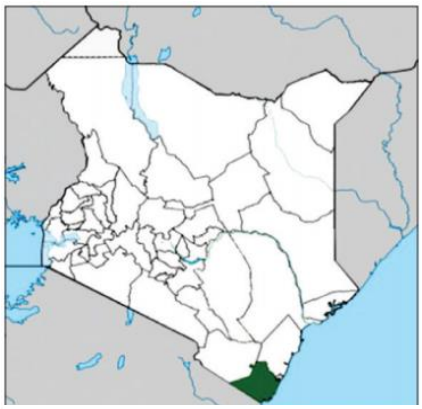

Figure 2.1 Kwale County, Kenya (County Government of Kwale, 2013)

Data collection took place in Matuga constituency and Ukunda (the most populated, urban area in the county). Eighty percent of Kwale County's population belongs to one of the region's *mijikenda* ('Nine Tribes') groups – in our study area, people were predominantly *Digo* (Mkutu et al., 2016, Adhoch, 2010).

2.1.1 ARMADILLO Study

The study was nested within a broader study led by the World Health Organization's Department of Sexual and Reproductive Health and Research (WHO/SRH) in collaboration with the International Centre for Reproductive Health – Kenya (ICRHK), with the author of this thesis as the global coordinator. This Adolescent/Youth Mobile Access and Delivery Initiative for Love and Life Outcomes (ARMADILLO) Study used a three-arm randomized controlled trial to assess the effect of a digital health platform that provided youth with SRH content via text messages in two sites in Kenya and Peru (Gonsalves et al., 2018).

The ARMADILLO RCT (which ran from February 2018-December 2018) focused on using mobile phones to improve SRH information for youth aged 18-24. ARMADILLO's primary outcome was the dispelling of myths and misconceptions around contraception among participants exposed to the digital health intervention versus control groups. ARMADILLO's secondary outcomes looked at any improvements in other SRH knowledge, attitudes and self-efficacy outcomes among participants exposed to the intervention versus control groups. Primary results from the trial are expected to be published in late 2020. Source of contraception access (either from a pharmacy or another source) *was not an outcome of interest for the ARMADILLO study.*

The pharmacy-oriented sub-study, by contrast, exclusively explored young peoples' source of contraception, focusing on use of pharmacies and informal market sources. As described below, the components of this sub-study that are nested within the ARMADILLO study took place prior to the start of the trial itself. As such, the ARMADILLO intervention did not influence the results of this sub-study. Rather, the ARMADILLO study provided a trusted research partner (ICRHK), an established field site, research infrastructure, and funding – in short, an opportunity for this sub-study to be implemented.

WHO/SRH was supportive of nesting this study within the larger ARMADILLO study already in place, as it added significant value to its youth sexual and reproductive health portfolio as well as its self-

care portfolio without requiring substantial additional resources. WHO/SRH recognized that both studies were complementary in that they contributed to building a broader understanding of how to better address youth SRH needs outside of a health facility setting.

2.2 Mixed-Methods Study

Mixed methods, broadly defined by Tashakkori and Cresswell, consists of *"research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry"* (Tashakkori and Creswell, 2007). There have been many attempts to describe and categorize the various conditions under which a researcher might undertake a mixed methods study. As summarized by Schoonenboom and Johnson, the qualitative and quantitative components of mixed methods studies can be conducted concurrently (in parallel) or sequentially, with regards to data collection (Schoonenboom and Johnson, 2017). With regards to data analysis, mixed methods studies can be independent or dependent – the latter implies that data analysis for one method needs to be completed and informs the subsequent method (Schoonenboom and Johnson, 2017). A mixed methods approach was appropriate for this descriptive study. This dissertation's Objectives 2 and 3 cover questions related to who used pharmacies, why they were appealing, and what a contraception purchase entailed. Study methods (including the initial systematic literature review which informed the study) are summarized in Table 2.1 and demonstrate how each method tied to one or more objectives. A mixed methods approach allowed for research objectives to be addressed with a complementary combination of quantitative and qualitative data from several sources.

Table 2.1 Dissertation Methods Summary

Dissertation Methods	Description	Objective Addressed	
Systematic Literature Review	Global overview of contraception access through pharmacies	(Objective 1)	
Mixed Methods Study	**Participant Description**	**Objective and Topics addressed**	**N**
Focus Group Discussion*	-18-24 years	(Objective 2 and 3) Normative profiles of pharmacy users	6 (58 ppts)
Cross-sectional survey*	-18-24 years -mobile phone owners	(Objective 2) Self-report contraception source	740
In-depth interviews	-18-24 years -Recent purchaser (of contraception from pharmacies)	(Objective 2 and 3) Personal purchasing experiences	18
Key informant interviews	-18+ years -pharmacy personnel, OR -contraception/pharmacy stakeholder	(Objective 2 and 3) Provider perspective on user profile, dispensing practices	19 (pharmacy personnel) 6 (stakeholders)
Mystery shoppers	*Trained youth data collectors*	(Objective 3) Actual dispensing practices	187 visits (4MSx 48 ph.)

Specific pharmacy study methods which were nested within ARMADILLO are so denoted with an asterisk (*)

Following the systematic literature review, primary data collection for this study was conducted from November 2017-March 2018. Focus group discussions took place in November 2017 and preliminary review of these transcripts informed the finalization of the cross-sectional survey and qualitative interview guides. The cross-sectional survey, in-depth interviews, and key informant interviews took place simultaneously (that is, in parallel) starting from February, while the mystery shopper exercise was conducted at the end of March and was informed by preliminary findings from the other methods. As such, this study can be imperfectly categorized as 'concurrent and dependent'. Individual methods are described in further detail below and in the relevant sections of Chapters 3-6.

2.2.1 Study Methods

Systematic Literature Review

The objective of the systematic literature review was to describe the experiences of young people (aged 25 and younger) accessing contraception and other sexual and reproductive health commodities (including abortifacients and STI tests) in pharmacies. The systematic review of the literature was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). PubMed, Embase, Popline, and Scopus databases were included in the review. For each database, search strategies were developed by mapping keywords related to the two areas of interest - SRH commodities and pharmacies –onto database-specific search terms (for example, MeSH for PubMed). The Cochrane database was also searched for existing or related systematic reviews. No geographic restrictions were placed, and articles in English, French, Spanish, or Portuguese were included. As a desk review of the literature revealed a global shift in policies to favour pharmacy access (with a majority of literature published earlier assessing youth access only in theory), only articles published after 1 January, 2000 were included.

Focus Group Discussions

Participants: young people aged 18-24

Six focus group discussions (three with young men, three with young women) were conducted with young people purposively recruited from the community. The purpose of these FGDs were to build an understanding around youth norms and expectations with regards to where young people of a similar age could access contraception, and what factors might influence the selection of one source of contraception over another. FGDs took place in a central location in the presence of three trained data collectors. One led the discussion (posing questions and probing). The second helped facilitate interactive activities (for example, writing on a flip chart the locations suggested by participants for where a young person might access contraception). The third person served as a silent observer and notetaker. FGD participants were also asked questions related to the ARMADILLO Study's objectives

(namely, identifying common concerns/myths related to contraception use). The study instrument is available in Appendix 1

Cross-sectional survey

Participants: young people aged 18-24, have their own mobile phone and report regular use, have a mobile phone with them at the time of recruitment, report current use of text messaging

This cross-sectional data was collected through the ARMADILLO baseline survey (completed prior to the start of the intervention period). The pharmacy-study relevant parts of the survey were a series of previously-validated questions from the Female Questionnaire of Performance Monitoring and Accountability 2020 (PMA2020) (Performance Monitoring and Accountability 2020, 2017), as well as the Guttmacher Fog Zone Survey of Young Adults (Guttmacher Institute, 2009). These questions asked about contraceptive use at last sex, and (if contraception was used): source of the method; whether potential side effects were discussed, other types of contraception was discussed; whether the contraceptive method initially desired was the one they left with (and if not, why not); whether they would return to that provider. Demographic variables to describe the population (and against which to run analyses) included: level of education, sex, relationship status, parity, age of sexual debut. A trained data collector administered baseline surveys to participants using a webform on a tablet. The questions relevant to this study were completed by participants themselves. Participants were randomly selected based on a household enumeration that took place in the study area (Gonsalves et al., 2018).

In-depth interviews

Participants: young people aged 18-24, recently purchased contraception from a pharmacy

In these in-depth interviews, participants shared their recent experience purchasing contraception in a pharmacy; the reasons for selecting a pharmacy over another source; and both positive and negative features of the experience. A trained data collector conducted the interview using an open-

ended, semi-structured question guide (see Appendix 1). Participants were recruited from a cross-section of private pharmacies after they made a purchase.

Key informant interviews

Participants: aged 18+, employed at one of the following:

- private pharmacy,
- a local, regional, national regulatory agency directly engaged with contraception access through pharmacies, OR
- a nongovernmental organization/civil society/professional association/advocacy group/academic/research organization involved with contraception commodity availability

Key informant interviews were conducted with pharmacy personnel in the study area to elicit stories from stakeholders and providers about previous commodity dispensing experiences (both positive and negative) with a young client; assess the acceptability of dispensing contraception to young people; as well as identify any additional SRH support or training a

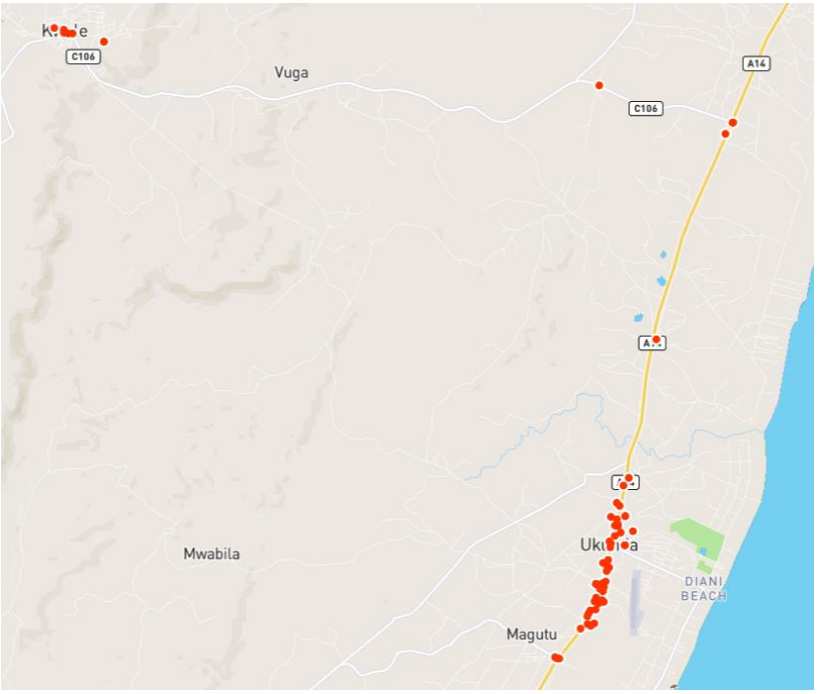

Figure 2.2 Results of pharmacy mapping exercise

provider may desire. Trained data collectors used a semi-structured interview guide to conduct these interviews.

Participants were selected from a random selection of pharmacies that were identified during a mapping exercise conducted in the study area. 60 pharmacies in total were identified.

Additional interviews were conducted in the study area, Mombasa, and Nairobi with members of the Pharmacy and Poisons Board, broader Ministry of Health, professional associations, and relevant non-governmental organizations to capture the broader context of how contraception commodities are delivered through private pharmacies (and associated opportunities as well as challenges). The dissertation author conducted all interviews with these stakeholders.

Mystery shopper exercise

Participants: trained youth data collectors, pharmacies in study area

Finally, four young data collectors were trained as mystery shoppers and each attempted to purchase contraception from 50 of the 60 private pharmacies identified during the mapping. In each instance, the mystery shopper requested contraception in a pharmacy, taking careful note of the interaction.

Immediately after the mystery client interaction, they completed a semi-structured check-list on a webform. The checklist was developed based on WHO's quality of care standards (World Health Organization, 2006b), national dispensing guidelines, and a previous study (Chin-Quee et al., 2006), and assessed interactions between staff at pharmacies and young clients seeking contraception. The checklist consisted of a combination of close-ended and open-ended questions including, for example: information on with whom the client spoke (gender, approximate age, role); where in the shop/pharmacy the interaction took place; whether the location provided privacy; how they were treated by the pharmacist; what information the pharmacist asked about them; what counselling (if

any) they received; length of interaction; whether they received their commodity of choice. This checklist is available in Appendix 1.

Two mystery shoppers were male: one attempted to purchase emergency contraception, the other condoms. The other two mystery shoppers were female: one attempted to purchase emergency contraception, the other inquired about the availability of injectable contraception and whether she could be injected on site (she did not actually purchase or get administered injectable contraception). Each mystery shopper had a 'persona' which was developed in a half-day workshop with input from young people from the community, the data collectors themselves, and preliminary findings from the FGDs, IDIs and KIs. These mystery shopper personas are described in full in Appendix 2.

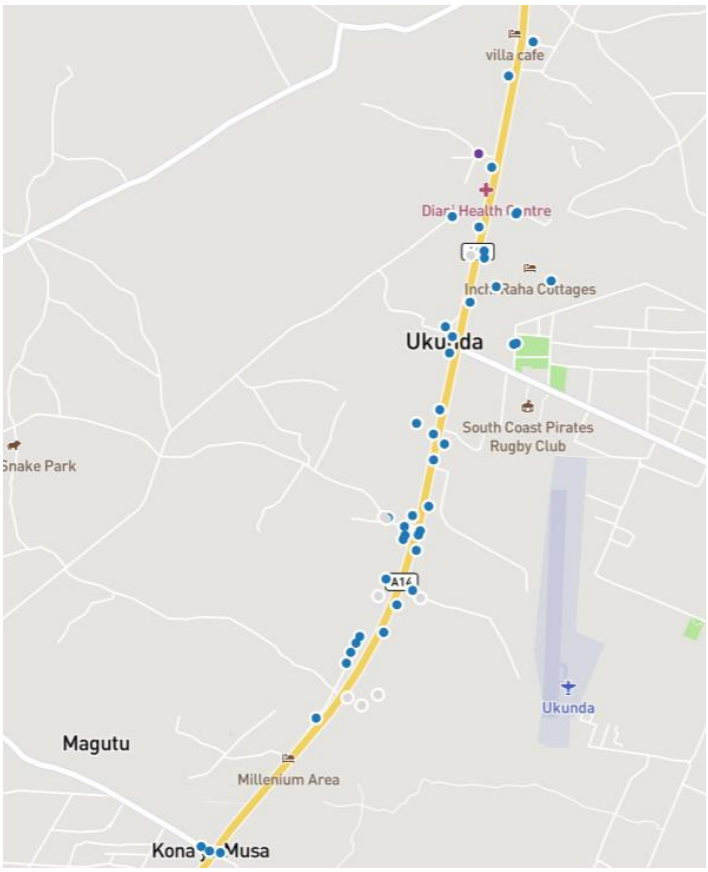

Figure 2.3 Pharmacies in Ukunda town who consented to be visited by mystery shoppers

2.2.2 Data management and analysis

Qualitative data collection and analysis was informed by grounded theory (Charmaz, 2006). The decision to use grounded theory meant there was no adoption of a specific framework or hypothesis at the outset to guide data collection and analysis. Instead question guides/checklists were iteratively adapted based on preliminary findings over the course of data collection. Prior knowledge of adolescent sexual and reproductive health (ASRH) and its health service challenges also informed the structure of the study guides and questions.

Data were analysed using the Framework Method (Gale et al., 2013). All data collected as part of the qualitative component of this study (FGDs, IDIs, KIs) was transcribed in the language in which it was conducted and then (if necessary) translated into English verbatim and transferred into an electronic file containing one transcript for each data collection event. Following an initial open coding of a cross-section of transcripts and review of the codes with the research team, axial coding (informed by the objectives of this research) was used to analyse all qualitative data. Qualitative analyses were conducted using Atlas.ti.

Mystery shopper data were analysed using descriptive statistics. Cross-sectional survey data were analysed using descriptive statistics, followed by bivariate log binomial regressions which assessed the association between the outcome (having purchased contraception at a pharmacy versus any other source) and each behavioural/sociodemographic variable of interest. Any analysis showing a $p<.2$ moved the variable into a multivariable Poisson regression model with robust 95% CIs. All quantitative analysis was conducted using Stata Version 14.

All qualitative data from FGDs, IDIs, and KIs were transcribed and translated (if necessary) verbatim.

2.2.3 Ethical considerations

This study obtained ethics approval from the Ethikkommission Nordwest- und Zentralschweiz (EKNZ) (Req-2017-00389) in Basel, Switzerland. The ARMADILLO study (in which this study's FGDs and cross-sectional survey were embedded) obtained ethics review and approval from the World Health Organization's Research Ethics Review Committee (A65892b). Finally, both studies in their entirety received ethics approval from the University of Nairobi/Kenyatta National Hospital (P274/05/2017).

All participants provided their written consent prior to participation. Consent to conduct the mystery shopper visits was obtained during the geographical mapping exercise. The mystery shopper visits did not start until two months following the consent visit, so as not to unduly bias pharmacy personnel's behaviour. Quantitative and qualitative data collection took place in private locations.

FGDs, IDIs, and KIs were all audio-recorded, with participants' permission. Data collection took place in English, Swahili, or a mix of the two languages, depending on participants' comfort.

2.3 Description of dissertation chapters

The next five chapters present the results of systematic literature review and mixed-methods study. They are ordered to respond to each of the three objectives of my doctoral research (Chapter 1.7) and are presented as follows:

Chapter 3 presents the results of the systematic literature review and provides a comprehensive understanding of the experiences of young people, worldwide, who access contraception (and other SRH commodities) through pharmacies (Objective 1). Chapter 3 was published as a review article in Contraception.

Chapter 4 uses quantitative and qualitative data from the mixed-methods study to describe who (among young people in Kwale County) uses pharmacies to get contraception and what makes pharmacies so appealing as contraception outlets. (Objective 2). Chapter 4 was published as a research article in BMJ Open.

Chapter 5 uses qualitative data from the mixed-methods study to describe Kwale County pharmacies' emergency contraception and condom dispensing practices (Objective 3), and questions whether these services qualify as 'youth-friendly enough' for young clients. Chapter 5 was published as a research article in the International Journal of Public Health. It was included as a part of an IJPH special issue entitled: Sexual and reproductive health of young people – Focus Africa.

Chapter 6 uses qualitative data from the mixed-method study to focus on Kwale County pharmacies' dispensing (and administering) of injectable contraception (Objective 3), as well as local perceptions

as to the quality of pharmacy services in general. Chapter 6 was published as a research article in PLOS ONE.

Finally, Chapter 7 provides a commentary around overarching concerns related to quality of contraception services in pharmacies as well as their equity (pertaining specifically to financing) (Objective 3). Chapter 7 was published as an editorial in BMJ Sexual and Reproductive Health.

Chapter 8 provides a general analysis of the findings from across the above five chapters and presents broader implications and policy and research recommendations.

3 Pharmacy provision of sexual and reproductive health commodities to young people: a systematic literature review and synthesis of the evidence

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Keywords: Adolescent, youth, contraception, pharmacy, systematic review

Published in *Contraception* on 23 December, 2016

https://www.contraceptionjournal.org/article/S0010-7824(16)30540-6/fulltext

3.1 Abstract

Background: We conducted a systematic review of peer-reviewed literature on youth access to, use of, and quality of care of sexual and reproductive health (SRH) commodities through pharmacies.

Methods: Following PRISMA protocol, we searched for publications from 2000-2016. To be eligible for inclusion, articles had to address the experiences of young people (aged 25 and below) accessing SRH commodities (e.g., contraception, abortifacients) via pharmacies. The heterogeneity of the studies precluded meta-analysis--instead we conducted thematic analysis.

Results: 2842 titles were screened and 49 met the inclusion criteria. Most (n= 43) were from high-income countries and 33 examined emergency hormonal contraception provision. Seventeen focused on experiences of pharmacy personnel in provision, while 28 assessed client experiences.

Pharmacy provision of SRH commodities was appealing to and utilized by youth. Increasing access to SRH commodities for youth did not correspond to increased risky sexual behaviour.

Both pharmacists and youth had reservations about the ease of access and its impact on sexual behaviours. In settings where regulations allowing pharmacy access were established, some pharmacy personnel created barriers to access or refused access entirely.

Discussion: With training and support, pharmacy personnel can serve as critical SRH resources to young people. Further research is needed to better understand how best to capitalize on the potential of pharmacy provision of SRH commodities to young people without sacrificing qualities which make pharmacies so appealing to young people in the first place.

3.2 Introduction

There are over 1.8 billion young people between the ages of 10-24 in the world today, 90% of whom live in developing countries (UNFPA, 2012). Comprising one quarter of the world's total population(UNFPA, 2013), youth are faced with a number of challenges to their sexual and reproductive health (SRH) and wellbeing. SRH challenges are not unique to this population and are faced by men and women of all ages. However, even when services are available in a given

community, added financial, cultural, or social barriers may prevent young users from utilizing them, especially if providers and communities are biased against youth access (Chandra-Mouli, 2014).

As a result, 16 million girls aged 15-19 and 1 million girls under age 15 give birth every year, and complications during pregnancy and childbirth are the second-leading cause of death for 15-19 year old girls, globally (World Health Organization, 2020). Additionally, an estimated 3 million girls aged 15 to 19 undergo unsafe abortions each year (World Health Organization, 2020). Millions of women worldwide have an unmet need for contraception. However in many regions of the world, adolescents wanting to avoid pregnancy can be up to twice as likely as adult women to have an unmet need for modern contraception (Guttmacher Institute, 2010). Data from 61 low- and middle-income countries (LMICs) estimates that 33 million young women aged 15-24 have an unmet need for contraception (MacQuarrie, 2014), demonstrating a need to improve access to and uptake of SRH commodities.

Pharmacy access - that is, making commodities available either over-the-counter (openly accessible at a pharmacy), or behind-the-counter (dispensing contingent on evaluation from a pharmacist) - is one strategy that might help to overcome barriers for young people unwilling or unable to access services from another healthcare provider. Pharmacy provision allows for more direct access to SRH commodities. To date, there has been very little documentation, for adults or youth, around pharmacy-based distribution of reproductive commodities. Encouragingly, however, the health and wellbeing of adolescents and young people is receiving increased attention and emphasis in a number of global-level collaborations and strategies developed in recent years, including Family Planning 2020 (FP2020) (Family Planning 2020); the UN Secretary-General's Global Strategy for Women's Children's and Adolescents' Health (Every Woman Every Child, 2015); and even some targets from the newly-minted Sustainable Development Goals (United Nations Department of Economic and Social Affairs, 2016). It seemed particularly timely, therefore, to identify strategies for best providing needed SRH commodities to a young population. As such, we conducted a systematic

review of the peer-reviewed literature to identify any evidence on young people's (aged 25 or younger) access to, use of, and quality of care of SRH commodities in pharmacies.

3.3 Methods

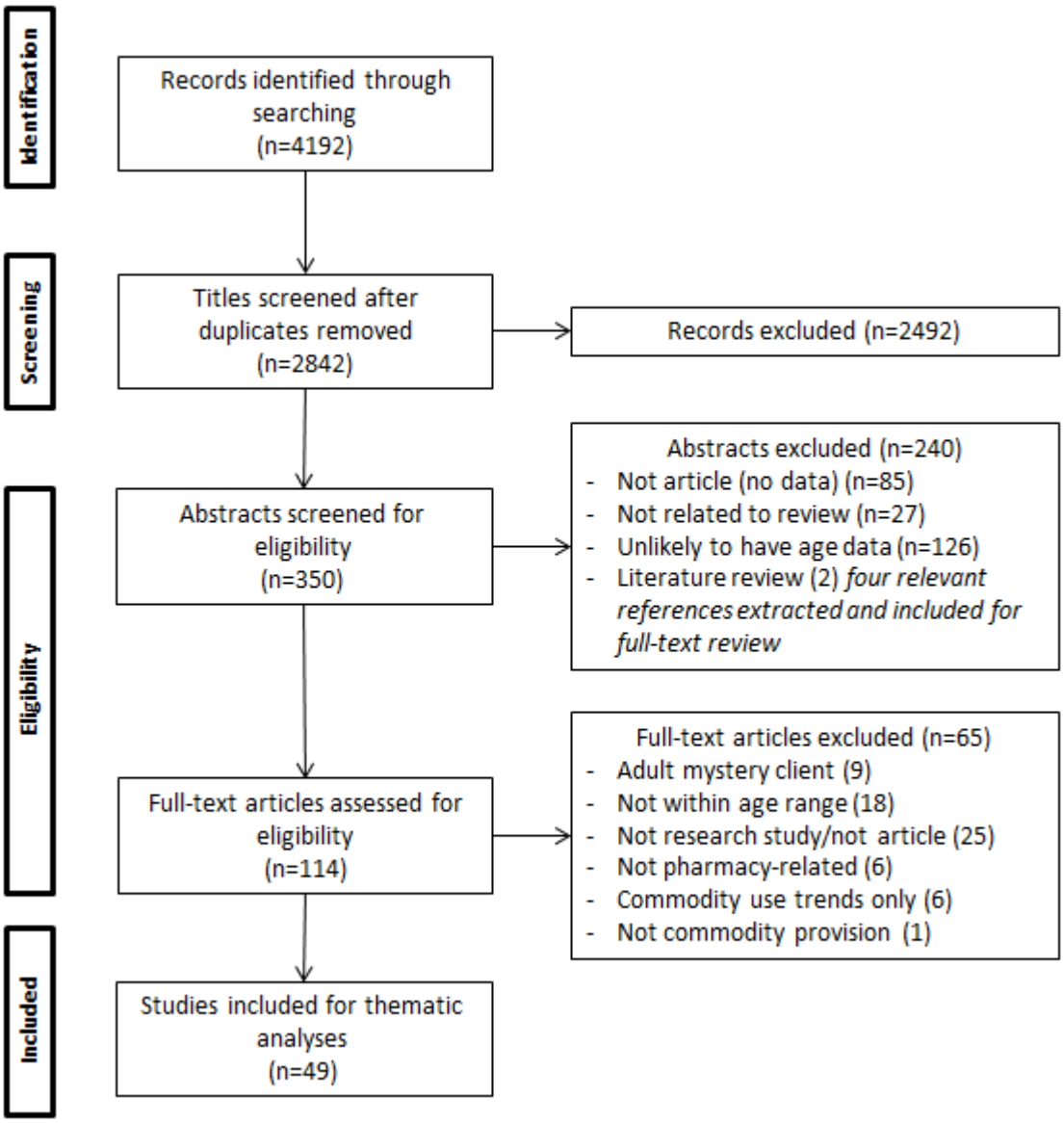
We conducted this systematic review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009). We searched for studies that addressed the following research question:

What is the experience of young people (25 and younger) who access SRH commodities through pharmacies?

3.3.1 Search Strategy

We searched PubMed, Embase, Popline, and Scopus databases for relevant publications without language restrictions limitations published between 1 Jan 2000 and 1 May 2016. We searched for articles published from the year 2000 onwards in light of a noticeable, turn-of-the-century shift in policies worldwide towards increasing SRH commodities availability through pharmacy provision. The search strategy for each database was developed by mapping keywords associated with the two major components of the research question ('SRH commodities, and 'pharmacies') onto established controlled vocabulary for the selected database (for example, MeSH for PubMed or Emtree for Embase). The search strategies developed for each database are available as Supplementary Material. We also searched the Cochrane database for existing or related systematic reviews. We screened the references of all articles identified for data extraction. Excluding duplicates, in total we identified 2842 records for potential inclusion. Figure 3.1 contains a flow diagram of the study selection process.

Figure 3.1 Study selection flow diagram



3.3.2 Screening

We first screened articles by title, yielding 350 potential articles. We then dual screened (LG and MJH) the abstracts for relevance, also eliminating articles that did not have an abstract in English, Spanish, Portuguese or French, non-research articles (e.g. commentaries, editorials), and posters/presentations from meetings. Where there was disagreement between the screeners as to whether an article should be included or excluded, we included the article. All articles that either screener was unsure about were discussed in person until an inclusion/exclusion decision was reached. We also screened references from two reviews of the literature (the first on community

pharmacy supply of emergency hormonal contraception (Kao, 2000), the second on emergency contraception in South Africa (Maharaj and Rogan, 2008)); this provided an additional 4 articles for full-text review. We were left with 114 articles which were read in full by LG.

3.3.3 Inclusion/Exclusion Criteria

We included all articles that considered the provision of SRH commodities to young people via pharmacies. All studies focused on or contained data on people aged 25 years or younger; this also meant including broader population-based studies that disaggregated data by age group.

SRH commodities included contraceptive methods, abortifacients, and STI self-test kits. We were interested in the overall experience of commodity provision to young people in pharmacies, either from the young person's or provider's perspectives. We excluded all studies that only reported on changes in prevalence of pharmacy provision (i.e. population-based trend data) or any other studies that did not provide information on young people's experiences acquiring the commodities.

Ultimately, LG abstracted 49 articles (presented in Table 3.1), using data extraction forms modified from a previous review (Hindin and Kalamar, 2016). The included studies employed qualitative and quantitative, experimental and observational designs, and were equally heterogeneous in the outcomes measured. As a result, meta-analysis was not possible -- instead we used thematic analysis to synthesize results across the diverse data available. Additionally, given the variety of study methods used, there was no one (or even two) scoring system that could be used to evaluate quality; instead, Table 3.1 also includes detailed notes on each study's strengths and weaknesses.

Table 3.1 Description of studies, ordered by publication year

Authors/ year/country	Study design and methods	Study population	Relevant outcomes	Regulations	Results	Strengths	Limitations
Barrett et al. 2000 United Kingdom (Barrett and Harper, 2000)	Qualitative (in-depth interviews)	PROVIDERS: n=18 community pharmacists n=6 general practitioners	Attitudes towards over-the-counter availability of ECPs Deregulation	ECPs available only through physician prescription	Providers expressed concerns about repeat use in terms of promiscuity	Reflexivity and first-hand accounts of providers' beliefs	Study takes place prior to deregulation, and centres on hypothetical deregulation
Wilson et al. 2000 United Kingdom (Wilson and Williams, 2000)	Observational (school- and mail-based survey)	CLIENTS: n=711 males and females aged 13-19	Current provision of SRH commodities in pharmacies	Hormonal contraception available only with a prescription	29% of males, 13% of females got contraception from pharmacist at last intercourse Embarrassment (55%), lack of information (25%), and confidentiality (27%)are key barriers to pharmacy access	Inclusion of males and females Assessed views on pharmacy access versus FP clinics and GPs	Low response rate for postal survey component
Seston et al. 2001 United Kingdom (Seston et al., 2001)	Qualitative (focus group discussions)	PROVIDERS: n=14 pharmacists	Concerns about deregulation of ECPs; Perceived support and training needs for deregulation	ECPs available in pharmacies under 'patient group direction' – a pharmacist protocol to determine eligibility for ECP use	Pharmacists' who never dispensed ECPs expected ECP users to be adolescents or sexually irresponsible women who use ECPs on a regular basis Pharmacists who did dispense found that most clients were women in their 20s who had	Includes providers who had and had not dispensed ECPs	ECP provision to *youth* is never explicitly explored; instead it arises from concerns about who might abuse ECP access

					experienced failure of contraceptive method		
Sucato et al. 2001 United States (Washington) (Sucato et al., 2001)	Observational (self-administered survey)	CLIENTS: n=126 females ages 15-21, received ECPs from a pharmacist	Reasons for going to a pharmacist; satisfaction with care provided by pharmacist		Reasons included 'easy to get to' and 'privacy protection'. If services didn't exist, 20% wouldn't know where else to go, 22% would wait and see if they became pregnant Clients felt counselling was clear (99%)and were satisfied with time to ask questions (95%)	Respondents were able to report on actual decision and experience in obtaining ECPs from a pharmacy	Low response rate (36%) 25% of sample never received the survey
Ratanajamit et al. 2002 Thailand (Ratanajamit et al., 2002)	Randomized controlled trial Intervention: course to increase ECP knowledge and improve dispensing skills. Mystery clients assess outcomes	PROVDIERS: n=60 pharmacy and drugstore personnel	Knowledge of and practice in dispensing ECPs	ECPs available over-the-counter	Significantly higher knowledge of ECPs (score of 22.1 vs 18.5), higher levels of provision of dosing information (45 vs 12 pharmacists providing), but no statistical difference in medical history taking between intervention and control group	Robust study design Three month follow-up	Youth issues never explicitly explored, study included because mystery clients are <25

Raymond et al. 2003 United States (various settings) (Raymond et al., 2003)	Longitudinal Study mimics pharmacy access. Women requesting ECPs asked to review ECP package designed for OTC use and were sold ECPs	CLIENTS: n=585 females presenting for an ECP prescription at 8 Planned Parenthood sites and 5 pharmacies in 5 cities	Use of ECP product under (simulated) OTC conditions	ECPs available only through physician prescription	With ECP access, minors not significantly more likely than older women to use products in a contraindicated or incorrect manner and did not have more adverse events or subsequent pregnancy	Study modelled OTC setting closely Low loss to follow-up (only 7%)	Limited generalizability to women self-selecting ECPs
Conard et al. 2003 United States (Indiana) (Conard et al., 2003)	Cross-sectional (self-administered, mail-in survey)	PROVIDERS: n=948 chief pharmacists of active licensed pharmacies in Indiana	Pharmacists' attitudes and practices related to SRH services for adolescents.	ECPs and other contraception only available through physician prescription	Pharmacists <45 were more likely to state they dispensed ECPs Male pharmacists more likely to think adolescents asked questions about prescriptions Few felt trained in adolescent issues (13%), confidentiality (23%)	Excellent response rate (70%) Use of clear case studies to provide insight into prescribing practices	Limited generalizability to other cadres of pharmacy workers and beyond the state of Indiana

van Bergen et al. 2004 Netherlands (Van Bergen et al., 2004)	Cohort (picked up *Chlamydia trachomatis* screening kit at pharmacy and followed up for test results, questionnaire)	CLIENTS: n=446 women (<30 years) recruited from a pharmacy, who were offered kits	Response rates, Chlamydia test results, survey results	Prescription refills of oral contraceptives can be ordered remotely and collected at pharmacy, no GP contact required	CT-positivity detected among ethnic minority population where 15% were CT positive, as compared with 6-10% found in other Dutch STI clinics Higher rates of CT positivity among youth (13% among 15-19 year olds, and 14% among 20-24 year olds) as compared to older age group (5% among 25-29 year olds)	Vulnerable population focus: multicultural, low-income Cross-checked urine samples with test results Explored nonparticipation	Generalizability to other populations, pharmacies
Killick et al. 2004 United Kingdom (Killick and Irving, 2004)	Cross-sectional (questionnaire)	CLIENTS: n=419 pharmacy ECP clients (ages 16-39)	Knowledge of ECP use, planned future contraceptive use	ECPs available for purchase from a pharmacist for women aged 16+	Most of the users (72%) were <20. 49% of women in their 20s, 20% of women <20 and 31% of those 30+ paid.	Data from 112 different pharmacies	Systematic bias in questionnaire distribution and response rates
Raymond et al. 2004 United States (North Carolina) (Raymond et al., 2004)	Cross-sectional (screening data to an ECP telephone counselling and prescription service)	CLIENTS: n=7774 female callers, 88% aged <29 years, 37% aged <19 years	ECP use patterns	Special program: any woman needing ECPs could call service and be screened. 40 USD fee for prescriptions	83% adolescent users received 1 prescription (compared with 84% of users overall) 12% adolescent users received 2 prescriptions (compared with 11% of users overall) 5% adolescent users received 3 prescriptions	Generalizable data available for various ethnicities and education levels Extended hours of call service provides data on weekend use	Only data was that obtained as part of screening process, no ability to follow up with participants.

					(compared with 5% of users overall)		
Raine et al. 2005 United States (California) (Raine et al., 2005)	Randomized controlled trial Three arms (clinic access, pharmacy access, and advanced provision to ECPs)	CLIENTS: n=2117 female clients (ages 15-24) enrolled from 4 FP clinics	Use patterns, risky sexual behaviours and pregnancy/STIs	State legislation allowing women to obtain ECPs from pharmacies without consulting a physician	Women in pharmacy group were no more likely to use ECP than women in the clinic group Women in the pharmacy group (8.5%) not more likely than women in the clinic group to use ECP 2+ times No significant differences in sexually risky behaviour, pregnancy, or STIs by study group	Explores pharmacy provision distinct from advance provision Follow-up rates equal across groups, no difference in characteristics of women lost to follow-up	High contamination across study arms. Could not be an intent-to-treat analysis as some participants were lost to follow-up.
Blanchard et al. 2005 South Africa (Blanchard et al., 2005)	Quantitative (in-person questionnaire administered to pharmacy providers	PROVIDERS: n=34 pharmacy providers from 28 pharmacies	Providers' knowledge and attitudes towards providing ECPs	ECP available for purchase in pharmacies without prescription and for free in public health facilities	Fewer than half felt <18s should get ECP access. One third did not offer ECP to <18s Fewer than one-third thought <18s should get advance ECP provision Concern that ECP access increases risky behaviour	Careful screening of pharmacies for eligibility (pharmacies visited an average of four times before interview conducted)	Response bias Recall bias: reliance on pharmacist self-report
Lloyd et al. 2005 United Kingdom	Observational (Retrospective pharmacy record review)	CLIENTS: n=1412 Records of pharmacy clients	Trends in age of ECP users	All pharmacies in study area could provide ECPs on	At beginning, about 21% of the clients were <20. Increased to 46% after two quarters, and afterwards clients <20 accounted for	Study site in a rural area Data available	Limited generalizability to other areas of the UK

(Lloyd and Gale, 2005)	Pharmacies submitted monthly returns over 24 months			request (14 and 15 year olds had to demonstrate competence)	42-45% of consultations By end of study, community pharmacies were the largest provider of ECP	from before program start	
Harper et al. 2005 United States (California) (Harper et al., 2005)	Randomized controlled trial Three arms (clinic access, pharmacy access, and advanced provision of ECPs)	CLIENTS: n=964 female FP clinic clients, aged 15-24, recruited from four clinics in study area	Pharmacy use by age, risky sex, STIs and pregnancy	State legislation allowing women to obtain ECPs from pharmacies without consulting a physician	Use among adolescents <16 (38%) similar to group aged 16-17 (38%), and higher than those aged 18-19 (33%). Adults (aged 20-24) had lower overall use (24%). Pharmacy access no more likely than clinic access participants to use ECP, engage in risky behaviours, get STIs or be pregnant	Robust study design with specific youth focus (15-24), computer-generated randomization, researchers blinded to participant group allocation	Participants enrolled from clinics, making them not representative of those who seek services from non-facility sources
Bissell et al. 2006 United Kingdom (Bissell et al., 2006)	Qualitative (in-depth interviews)	PROVIDERS: n=45 pharmacists participating in program to supply ECPs without charge	Pharmacist views on provision of ECP to young people	ECPs made available for purchase from a pharmacist for women aged 16+. In some areas there is an option for obtaining free access to ECPs	Confidentiality noted as advantage of pharmacies Concern that pharmacy supply encouraged 'irresponsible' attitudes to contraception. Particular concern for younger women without a regular partner and those who chose to have unprotected sex Girls <14 requested ECPs	A diversity in gender, ethnicity, age of pharmacists, and socio-demographics of areas where pharmacies were located	Response bias: all pharmacists were participating in a special program designed to make ECPs more accessible to young people

Chin-Quee et al. 2006 Jamaica (Chin-Quee et al., 2006)	Qualitative (observation, interview)	BOTH: n=78 pharmacists interviewed n=524 females (age not specified) who purchased OC interviewed n=14 adolescent mystery client observations	Pharmacist willingness to sell OC to minors (<16 years) Access to OCs for 16 year olds	Oral contraception available for purchase in pharmacies without prescription	Mystery client refused access by 9 of 15 pharmacists and told she needed prescription. When MC could buy the pill, no report of negative reaction When asked whether they would sell to minors (<16), 46% of pharmacists said they would not, 38% said they would Age was the most mentioned factor in pharmacists' decisions to restrict customer access to OCs	Use of multiple data sources allows for triangulation in collection of data on contraceptive-accessing experience	Sampling limits generalizability Limited data collected on youth self-reported experiences as only 3% of interviewed pill customers were <20
Landau et al. 2006 United States (nationwide) (Landau et al., 2006)	Cross-sectional (nationally representative telephone survey)	CLIENTS: n=811 females, age 18-44, at risk of unintended pregnancy	Experiences with hormonal contraception and interest in pharmacy access to reproductive health commodities	Certain states have legislation allowing pharmacy access to ECPs.	Younger women (aged 18-25) nearly twice as likely (1.78 OR) as women 36+ to support pharmacy access to OC, patch and ring Uninsured, single, and young women more likely to have had problems obtaining a prescription for contraception	Random-digit dialling to obtain a nationally representative sample	Majority of data is not age-disaggregated and therefore not extractable Low response rate (37%)
Lara et al. 2006 Latin America (unspecified)	Qualitative (in-person interviews with pharmacy	BOTH: n=100 pharmacies visited by	pharmacy staff knowledge and provision practices of	Abortion legally restricted, but research	Half of participants knew of drug to 'interrupt a pregnancy'. Increased to 74% during MC encounters	Pharmacy staff survey followed by MC evaluation	Youth provision not explored: MC are aged 18 -25, but no

(Lara et al., 2006)	personnel and mystery clients visits to same pharmacies)	mystery clients (aged 15-24, male and female) n=97 pharmacies where a staff member was interviewed	misoprostol and other medical abortifacients	suggests many women frequently use misoprostol (often obtained from pharmacies) to self-induce abortion	60% said misoprostol was available in interview; 53% said it was available to MCs 6% of those recommending misoprostol in interviews and 17% in MC visit offered dosage effective for medical abortion 61% of the staff interviewed reported at least one request for abortifacient, more from women (71%) than men (31%); average age of requester: 22	of the same pharmacy compares staff's reported and actual behaviour Inclusion of male and female MC allows for assessment of pharmacy staff interactions with clients of different sex	comment on any age bias Same pharmacies received MC visits and staff surveys, but MC did not necessarily interview the same staff member as was surveyed
Lewington et al. 2006 United Kingdom (Lewington and Marshall, 2006)	Observational (pharmacy record review)	CLIENTS: n=203 females, aged 13-20, requesting ECPs from two family planning clinics, and community pharmacies	Differences in access experience between young women accessing ECPs at family planning clinics vs community pharmacy settings	ECPs in study community could be provided free to women <20. Women <16 who could demonstrate competence also had access	Weak but significant inverse correlation between age and time to access ECPs via pharmacy Clients <16 significantly more likely to not have used any form of contraception Clients took significantly less time to access ECPs from pharmacies (41hrs median at clinic compared to 16hrs at pharmacy)	Specific focus on women age 20 and under, data age-disaggregated, provides needed focus on younger adolescents (16 and under)	Small sample of youth under age 16

Foster et al. 2006 United States (California) (Foster et al., 2006)	Cross-sectional (questionnaire)	CLIENTS: n=426 females, aged 13-47, requesting ECPs from 25 pharmacies participating in the direct ECP access program	Previous use of ECP, information on unprotected intercourse, reason for requesting ECP and barriers to obtaining ECP	Post training, pharmacists can be certified to provide ECP without a prescription. No federal law in place providing prescription-free access.	Pharmacy faster and more convenient than a doctor Interest in getting more SRH services from pharmacist (contraceptives, STI testing) <16s took 27 hours longer to access ECP than women aged 30+, clinically and statistically significant delay	Questionnaire completed on site, reducing barriers to participation Demographic information available for all women accessing ECPs	Operating hours of pharmacies affected time to obtain ECP Respondent bias – participants women who requested ECP
Peremans et al. 2007 Belgium (Peremans et al., 2007)	Qualitative (focus group discussion)	PROVIDERS: n=33 (4 FGDs) general practitioners n=24 (3 FGDs) pharmacists n=26 (5 FGDs) school physicians	Health professionals' experiences dealing with ECP requests	ECP are accessible in pharmacies free of charge	Pharmacists report many ECPs sold in weekend and evenings, reluctance to dispense to men and young girls Concern with privacy in pharmacy and community for counselling young patients Pharmacists at ease with opportunity to help adolescents, quality counselling by pharmacists a concern, often refer to GPs	Asking similar questions of three cadres of health workers to triangulate experiences Including health professionals from both in-school and out-of-school settings	Assessed only self-report of behaviour - no other way to compare reported views and behaviour to actual performance

Griggs et al. 2007 United States (Texas) (Griggs and Brown, 2007)	Cross-sectional (mail-in survey)	PROVIDERS: n=148 community pharmacists	Knowledge and perceptions of ECP and dispensing	ECPs only available by prescription	Respondents (57.7%) believed patients receiving ECP should be a certain age: mean of 17.25 years	Extensive piloting of study instrument prior to its implementation	Minimal youth-related data
Delotte et al. 2008 France (Delotte et al., 2008)	Qualitative (adolescent mystery client requesting ECPs)	CLIENTS: n=53 pharmacies visited by MC random sample of all pharmacies in the city	Adolescent experience obtaining ECPs in pharmacies	ECPs available anonymously and for free through pharmacies to minors who meet dispensing criteria	Over 1/3 were refused ECPs Of those that provided, 1/3 asked for ID, almost half asked to confirm minor status Fewer than half that provided gave information on use or side effects. None provided additional SRH counselling	Adolescent MC record actual rather than reported pharmacist behaviours	Low generalizability
Krishnamurti et al. 2008 United States (Pennsylvania) (Krishnamurti et al., 2008)	Mixed-Methods (interviews and surveys) Structured surveys were administered either on paper or electronically and consisted of a combination of closed and open-ended questions	CLIENTS: n=30 interviews n=125 survey females aged 12-19, from 'at-risk' communities	Peer decision-making around sex and contraception, knowledge of ECPs, awareness and use of ECPs; prediction of effect of increased ECP availability on behaviour	Federal approval of over-the-counter sale of ECPs to women 18+	45.8% teens 16+ and 44% teens <16 thought their peers would have more unprotected sex with increased ECP access. When asked who should be able to purchase ECPs without a prescription, 18% chose 'anyone aged 12+', 43% chose 'anyone aged 16+' 23% chose 'anyone 18+' and 7% said no one.	Focus on high-risk populations (racial minorities, urban area) Open-ended interview guide allowed natural conversation among participants talking about	Social desirability and response bias based on sensitivity of topics

					<16s less likely to know about ECP, more likely to think that greater availability would increase unprotected sex	a taboo subject	
Arnet et al. 2009 Switzerland (Arnet et al., 2009)	Pharmacy record review Official 1-page ECP written assessment form is used during consultation and helps pharmacists make the decision to administer ECPs	CLIENTS: n=729 (380 from 2003, 349 from 2006) females, aged 15-49, obtaining ECPs accessing ECPs from 18 pharmacies in three cities	Profile of ECP users just after deregulation and three years later	ECPs accessible without prescription in pharmacies for women 16+, provided: a pharmacist dispenses, a counselling interview takes place	Stratification of the study population by age groups showed no differences in the contraceptive methods used between groups Re-use significantly more frequent in Group 2006 women aged 18–21 than Group 2003 (21.3% vs 33.1%, p<0.001). Significant correlation observed between span of time until re-use and age (p< 0.01)	Opportunity to assess client use of ECPs when deregulation took place and three years later Retrospective design assured that pharmacies were not biased by the study	Forms based on patient recall and reporting No age-disaggregated data provided on contraception use during ECP request period
Brabin et al. 2009 United Kingdom (Brabin et al., 2009)	Pharmacy record review Pharmacists offered screening kit with questionnaire after completing the ECP protocol	CLIENTS: n=2904 females, age range unspecified, requesting ECPs	Previous ECP use and chlamydia treatment	ECPs available free, without prescription in pharmacies for women <25. Pharmacies also offered mail-in *Chlamydia trachomatis* screening	Only one quarter of women provided ECPs were offered a chlamydia screening Using actual (rather than grouped) ages, there was a significant increase in the number of positive tests with age.	Pharmacy records during study allowed for later screening of proportion of kits offered to clients, and proportion of kits accepted and returned by clients	Lack of understanding why clients did not return the test, uncertainty as to whether clients felt obligated to accept test kits

					24/264 returned samples in total were positive (9.1%)		
Sampson et al. 2009 United States (California) (Sampson et al., 2009)	Mixed-methods (mystery client (MC) and interview) MC phone calls to pharmacies in English and Spanish, posing as a 15- or 18-year-old needing ECPs	BOTH: n=115 pharmacies called with mystery clients n=22 pharmacists and clinical providers interviewed	Comfort providing ECP to adolescents; ability for adolescent to obtain method	<18s can obtain ECPs without a prescription from designated pharmacies. ~1/5 of state pharmacies enrolled in this system	Rural pharmacies calls less successful than urban, Spanish speakers less successful than English speakers Pharmacist concern with effect on young girls, whether they were appropriate health professional to prescribe Those who did dispense cited desire to help young women	Study design provides opportunity to compare reported vs actual behaviour MC represented understudied adolescent populations	Did not assess actual provision of ECPs Cannot determine how age related to accessing ability
Glasier et al. 2010 United Kingdom (Scotland) (Glasier et al., 2010)	Qualitative (mystery client) Young MC visited pharmacies with a variety of scenarios.	CLIENTS: n=40 pharmacies visited by mystery clients	ability for youth to obtain ECPs, information provided by pharmacist, perceived attitude, privacy of consultation space	ECPs available for free, without a prescription from pharmacies to women aged 13+ across Scotland, through nationwide patient group direction	ECP was dispensed in 26 of 40 (65%) pharmacies. In 12 (43%) pharmacies where ECP was offered, MC asked about future plans for contraceptive use. A consultation occurred in 35 pharmacies, 83% in a private consultation room 31 pharmacists (98%) considered to be non-judgemental; 12 were very pleasant (34%), 18 pleasant (51%)	Random selection of pharmacies for study inclusion Single MC visited included pharmacies, completed data collection form immediately	Youth never explicitly explored, study was included because mystery clients are below 25. For all intents and purposes, this is a study of adults

						following visits	
Potter et al. 2010 United States-Mexico border (Potter et al., 2010)	Cross-sectional (in-person, structured survey)	CLIENTS: n=1046 females, 18-44 accessing OC from a FP clinic in Texas (n=532) or a pharmacy in Ciudad Juarez (n=514)	Experience obtaining pills and perceived advantages and disadvantages of using that source.	OC available free from FP clinics in United States. Women can also buy contraception in Mexico without prescription	Age positively associated with crossing the border to access oral contraception from Mexican pharmacies More US clinic users among 18-24 (34% v 23% using Ciudad Juarez pharmacy)	Study participants contain large number of traditionally understudied women: Spanish-speaking, low income	Many factors explain reluctance to cross international border Minimal age-disaggregated data
Thomas et al. 2010 United Kingdom (Thomas et al., 2010)	Qualitative (interviews)	PROVIDERS: n=26 pharmacists completing questionnaire n=12 pharmacists interviewed Recruited from pharmacies participating in *Chlamydia trachomatis* screening	Experience providing screening kits to clients, including why many pharmacists did NOT offer screening to eligible clients	Pharmacies in study area offer free ECPs to women under 25 years of age. Participating pharmacies also offered postal chlamydia screening	Pharmacists' decision to offer screening was personal rather than financial. None willing to approach a client in a long-term relationship Pharmacists felt ideally placed to talk to clients Less educated clients would not see benefit of screening <20s seen as poorly informed and at higher risk because of 'promiscuity', more likely to take a kit.	Discrepancies in knowledge versus behaviour reported in questionnaire could be probed during the in-depth interview	Sample was pharmacists who opted to participate in the screening program. This group displayed low adherence to protocol, in that many did NOT offer screening to eligible clients

					<16s seen as more reluctant and shy		
Dabrera et al. 2011 United Kingdom (Dabrera et al., 2011)	Qualitative (semi-structured interviews)	PROVIDERS: n=10 pharmacists from pharmacies registered with *Chlamydia trachomatis* screening program	Challenges to offering chlamydia screening	Nationwide chlamydia screening program offers screening opportunistic ally to young people (aged 15-24) in pharmacies	Concerns about privacy available. Concerns also expressed about offering screening to less-knowledgeable <16s Perception that screening only appropriate in relation to other SRH services and that it was difficult to bring up screening when clients attended for non-SRH complaints. Suggestion to use leaflets or promotions to encourage screening	Pharmacists interviewed reflected mix of multiple-site and single-site pharmacies in the study area	Very small sample size, subject to volunteer bias - only 10 of 17 pharmacists approached agreed to participate
Mackin et al. 2011 United States (Iowa) (Mackin and Clark, 2011)	Cross-sectional (telephone survey including closed and open-ended questions)	PROVIDERS: n=713 pharmacies, (surveyed 405 before and 308 after policy change allowing sales of ECPs to women 18+)	Availability of ECPs and reasons for continued non-availability	During data collection, ECPs approved for sale without prescription in pharmacies to women 18+	After deregulation, 70% of pharmacies had ECP available Percentage of pharmacists who agreed that ECP is safe for teens actually decreased significantly, from 43.8% before to 27.9% after deregulation	State-wide study Comparison of stocking practices and pharmacist beliefs before and after policy change	Minimal youth-related data 21% of pharmacies declined to participate in study, response bias

Ehrle et al. 2011 Nicaragua (Ehrle and Sarker, 2011)	Cross-sectional (researcher-administered semi-structured survey)	PROVIDERS: n=93 pharmacy personnel random sample of all licensed, operating pharmacies in the city	Knowledge of and attitudes towards ECPs	ECPs not available through public health services, but are available with or without prescription in private pharmacies	Majority of participants (85%) believed that females <16 could not safely take ECPs Concern selling ECPs because adolescents could abuse it 13% would sell to a minor without parental consent. Men more willing than women to provide to minors	Selected pharmacies visited up to three times during study in order to obtain face-to-face interviews with eligible participants	Results not generalizable to rest of the country Recall and social desirability bias based on topic sensitivity
Maharaj et al. 2011 South Africa (Maharaj and Rogan, 2011)	Qualitative (in-depth interviews)	PROVIDERS: n=30 retail pharmacists (n=20), health workers from NGO-operated FP clinics (n=2), nurses from public clinics (n=6), nurses from public FP clinics (n=2)	Health workers' views and experiences supplying ECPs	ECPs available without a doctor's prescription. Accessible in public health facilities at no cost and are sold in commercial pharmacies	Providers in private facilities report that requests for ECP on the rise among young women. Concern of ECP promoting sexual promiscuity among young people. Private sector (pharmacists) only stock dedicated ECPs because the product is more expensive, so people need to 'think twice' Providers reported refusing to supply ECPs because unsure about age at which a client can purchase EC products	In-depth perspectives of public sector health providers, commercial pharmacists, and specialized FP providers Study provides opportunity to explore lingering barriers to ECP provision	Limited youth-related data Lack of privacy, frequent interruptions, and suspicion towards the research Social desirability and recall bias

					without a guardian's consent		
Rafie et al. 2011 United States (California) (Rafie and El-Ibiary, 2011)	Cross-sectional (self-administered, web-based or paper survey)	PROVIDERS: n=502 pharmacy students recruited from all California schools of pharmacy	Willingness to provide contraception to minors	ECPs available without prescription in pharmacies to women 18+. State regulation allows trained pharmacists to sell ECPs to all women.	Student pharmacists indicated interest (96.2%) in providing hormonal contraception (pill, patch, and ring) under state-wide protocol to both minors and adults (53.3%), adults only (40.6%), or minors only (6.2%)	Opportunity to assess views of new pharmacy practitioners Comprehensive coverage of all schools of pharmacy in state	Limited youth-related data, as questionnaire contained only one question about willingness to provide to minors
Rubin et al. 2011 United States (nationwide) (Rubin et al., 2011)	Cross-sectional (self-administered, web-based survey)	CLIENTS: n=531 females, aged 14-19, who had engaged in unprotected intercourse when they were aware of ECPs	Access to ECPs, barriers to use, satisfaction with access experience	ECPs available without prescription in pharmacies to women 18+ (17+ by study end). 9 states allow access without age limits	Participants obtaining ECPs without prescription more likely to use within 24 hrs of unprotected sex than those who obtaining with prescription (OR: 2.17, p<.05) Minors who obtained in pharmacist access states more likely to report satisfaction with their experience (OR: 3.05 p<.05)	Ability to compare experiences of adolescents in states with and without pharmacy access	Not able to calculate a response rate Response bias Social desirability bias

Apikoglu-Rabus et al. 2012 Turkey [50]	Cross-sectional (self-administered, web-based survey)	PROVIDERS: n=667 pharmacists recruited from a professional networking website/online forum for pharmacists	Counselling practices and attitudes regarding ECP	ECPs are meant to be dispensed with a physician's prescription. In practice, customers can purchase products directly from community pharmacies	Only 52-57% of pharmacists had positive attitude towards: 'teenagers and youngsters can take responsibility for the use of ECPs'; 'ECPs give women increased sexual safety'; and 'ECPs increase women's control of reproduction' 58% of pharmacists agreed ECP should be limited for sale to 18+. 52% agreed that teenagers can responsibly use ECP	Comparisons between pharmacist practices based on sex and age of pharmacists Insight into practice when policy does not permit dispensing without a prescription	Recall/social desirability bias - self-completed survey on sensitive topic Limited focus on youth as study asked ECP dispensing in general
Raine et al. 2012 United States (various) (Raine et al., 2012)	Longitudinal Pharmacy availability of ECPs simulated, eligible participants read study product label and self-determined whether to use the product (and how)	CLIENTS: n=345 females, aged 11-17, requesting ECPs	ECP use, pregnancy, and adverse events	ECPs approved for sale without prescription in pharmacies to women 17+ nationwide during data collection. Study simulates access for women 11+	96.7% (298) of participants who received product used it by the 1-week follow-up. 274 (92.9%) correctly used it <72 hrs after unprotected sex Neither age nor previous use of emergency contraception associated with correct use 1 in 5 participants who used study product reported additional ECP use within the follow-up period	Participant self-screen on ECP offers detailed data on label comprehension and access competency for young adolescents Special focus on including young adolescents in sample	Response bias - recruitment from FP clinics, means recruiting care-seeking youth

Richman et al. 2012 United States (Florida) (Richman et al., 2012)	Cross-sectional (self-administered, mail-in survey)	PROVIDERS: n=272 practicing pharmacists random sample of registered pharmacists in the state of Florida	Knowledge and attitudes around ECP dispensing as well as actual dispensing experience	ECPs approved for sale without prescription in pharmacies to women 18+ nationwide. State conscience clauses allows for refusal to dispense	Reported comfort in dispensing ECPs varied: 67% reported comfort dispensing to adult women; 42% to men, 39% to adolescents	Randomly selected sample of pharmacies Survey instrument was pilot tested for face validity. Construct validity and reliability also established	Selection bias - only English-speaking pharmacists Low generalizability Limited youth-related data
Wilkinson et al. 2012 United States (various) (Wilkinson et al., 2012)	Qualitative (mystery caller) Mystery client telephone calls to pharmacies posing as 17-year-old in need of ECP or the physician of a 17-year-old patient in need of ECP	CLIENTS: n=943 every commercial pharmacy in five US cities, called by mystery client	Accuracy of information provided to adolescents and physicians of adolescents when requesting ECPs	ECPs approved for sale without prescription in pharmacies to women 17+ nationwide	Average estimated time for medication to be available significantly higher for adolescents than physicians (45 vs 39 hrs, p<.0001) Adolescent callers placed on hold more (54% vs 26%, p<.0001) and less likely to talk to pharmacist (3% vs 12%, p<.0001) than physicians 19% adolescent callers told they could not obtain ECP at all (vs. 3% in physician calls, p<.0001)	Comprehensive sampling of commercial pharmacies Adolescent vs. physician MC calls separated by at least two weeks	Calls made only during normal business hours. Cannot know how evening/weekend calls would have been answered

Samartzis et al. 2012 Switzerland (Samartzis et al., 2012)	Pharmacy record review Retrospective analysis of one-page patient assessment forms and protocol	CLIENTS: n=1500 (750 in 2004, 750 in 2009) females, aged 15-49, requesting ECPs	Profiles of ECP users following deregulation	ECPs available for free without prescription for all women 15+, following a medical history and a pregnancy test	Most ECP users who had never visited a gynaecologist were <21 Number of repeat ECP users rose between 2004 and 2009 For <20s, condom rupture reported significantly more frequently as reason for ECP use	Ability to assess profiles of ECP users over time - shortly after deregulation of ECPs and five years later	Generalizability - recruitment took place in only one pharmacy
Parsons et al. 2013 United Kingdom (London) (Parsons et al., 2013)	Mixed methods (pharmacy record review, structured questionnaire, mystery client) MC evaluations conducted at three pharmacies, using trained adolescent women	CLIENTS: n=741 consultations n=99 females client intercept questionnaire n=19 pharmacy visits by MC	Data on consultations, client satisfaction with pharmacy experience	Special program in select pharmacies to supply oral contraceptives without prescription to eligible women 16+, following pharmacist training	Over 40% of consultations were with 20-24 year-olds (largest proportion), 22.5% were with <19s A majority of adolescent mystery clients rated counter staff as helpful, no one felt uncomfortable at the counter, all were happy with the privacy, most were happy with the wait time Overall, majority of MCs were satisfied by experience	Combination of pharmacy consultation data, client intercept interviews, and mystery client visits offers ability to contextualize provision data with reported contraceptive-accessing experiences	MC data is the only extractable data - other data not presented with age disaggregation Small sample size for mystery client exercise
Both et al 2014 Ethiopia (Both and Samuel, 2014)	Qualitative (observations, survey, interviews)	BOTH: n=36 (survey) females and males, aged	youth experiences accessing ECPs, attitudes and beliefs of	ECPs available in private sector pharmacies and drug	Pharmacists worried about side effects (e.g. infertility or cancer), concerned that young people think only of pregnancy and not	Combination of observation, questionnaire, and	Survey data not age disaggregated, making only some of the

		18-29 n=41 (interviews) males and females (aged 15-29), adult stakeholders, healthcare providers Observations of ECP dispensing	policymakers and providers around ECP access	stores without prescription	preventing HIV/AIDS Sundays and Mondays were popular for ECP selling, along with holidays Providers intimidated to counsel youth who want to be in and out quickly Nearly all young people ensured visit was discreet. Secrecy and shame identified as key to young people's experiences of sexuality	interviews offer the opportunity to contextualize observed and reported behaviour Detailed observations and surveys of both young men and women accessing ECPs in pharmacies	qualitative data usable Limited generalizability Recall bias given the sensitivity of the topic
Rafie et al. 2014 United States (California) (Rafie and El-Ibiary, 2014)	Cross-sectional (self-administered, web-based or paper survey)	PROVIDERS: n=502 pharmacy students recruited from all California schools of pharmacy	Confidence ordering HC for minors	ECPs for sale without prescription in pharmacies to women 18+. Agreement allows trained pharmacists to sell ECPs to all women	68.7% of pharmacy students claimed to be moderately to extremely confident ordering HC for minors	Opportunity to assess views of new pharmacy practitioners Comprehensive coverage of all schools of pharmacy in state	Limited youth-related data

Wilkinson et al. 2014 United States (various) (Wilkinson et al., 2014)	Qualitative (mystery client) Mystery client telephone call, posing as 17 year old needing ECP and asking about availability of ECP	CLIENTS: n=943 every commercial pharmacy in five US cities, called by mystery client	Experiences of adolescents attempting to obtain ECPs from pharmacies	ECPs approved for sale without prescription in pharmacies to women 17+ nationwide	80% of pharmacies had ECP available on the day the call was made, 57% of available pharmacies provided correct information to the caller regarding ECP access Pharmacy staff used ethics-laden terminology to explain policies on dispensing ECP Pharmacy staff attempting to help the caller by clarifying regulations often created barriers	Comprehensive sampling of commercial pharmacies Investigator, expert and informant triangulation were all used to ensure credibility of the data analysis	In-depth discussions with pharmacy staff not possible due to study design
Barlassina et al. 2015 Republic of Ireland (Barlassina, 2015)	Cross-sectional (self-administered survey with both closed and open-ended questions)	CLIENTS: n=488 females, aged 18-50, presenting a prescription for oral contraception for personal use	Attitudes and views on making oral contraceptives available without prescription	Oral contraception available with prescription	Main reason for having missed a pill for youth (18-25) was for prescription running out (50.3%). 32.8% reported inability to renew a prescription as a reason for missing a pill Youth in favour of making hormonal contraception available without a prescription (85.6%) and likely to obtain hormonal contraception without a prescription (89.7%)	Pharmacies were located in both rural and urban areas Participants were existing OC users, and could therefore comment on related personal experiences	Selection bias – participants were only current OC users Target sample size was not reached

Fakih et al. 2015 United States (Michigan) (Fakih et al., 2015)	Cross-sectional (self-administered survey)	BOTH: n=343 female, aged 23-24 n=94 all community pharmacies in the selected county	Young women's perceptions and experiences with contraception supply	ECPs approved for sale without prescription and age limit nationwide. Hormonal contraception requires prescription	Young women in this study did not feel as comfortable talking about contraceptives with pharmacists as with others Overall, 51.3% of young women had a positive attitude toward pharmacy purchase of contraception	Linking client survey data with pharmacy survey data allowed for an examination of a woman's experience in the specific pharmacy she visited	Very narrow age range (23-24), not a random sample, fairly homogenous participants demographics limiting generalizability
Hussainy et al. 2015 Australia (Hussainy et al., 2015)	Qualitative (mystery client) Mystery client telephone calls to pharmacies including one scenario where a woman under 16 years requested ECPs	CLIENTS: n=168 pharmacies contacted by mystery caller	Pharmacist decisions to provide ECPs or not, justifications for decisions	ECPs available without prescription in pharmacies without age restriction (if competence can be demonstrated)	41.8% (69/165) declined ECP supply. Reasons pharmacists were unwilling to supply: - woman was <16; or - woman was under another specified age Other justifications included: - uncertainty of the safety of the ECP or limited data regarding its use in 14-16 year olds	Telephone scripts narrow on specific component of ECP provision by pharmacists: assessing pharmacists' persistent myths/misconceptions around ECP provision Random sample of pharmacies selected	Hawthorne effect from participants receiving mystery client calls soon after being alerted to the study Calls (during normal business hours) may have affected the number of referrals

Manski et al. 2015 United States (nationwide) (Manski and Kottke, 2015)	Cross-sectional (self-administered, web-based survey, following review of a mock-up label for over-the-counter oral contraceptives)	CLIENTS: n=348 female, aged 14-17 recruited via Facebook advertisements	Teenagers' attitudes towards over-the-counter access to oral contraceptives	Hormonal contraception available only with prescription	Nearly 80% supported pharmacy access to oral contraceptives, 73% supported OTC access to contraceptives (60.9% indicating they would likely use the service) Greatest advantages of increased access: fewer teen pregnancies (44.5%), easier for teens to get OC (22.4%), and more confidential (13.5%) Greatest disadvantages of increased access: teenagers might not use condoms to protect against STDs (21.6%), need a doctor to decide if oral contraceptives are safe for teens (18.7%), teens might have sex at a younger age (18.%), teens might use oral contraceptives incorrectly (15.8%)	Focus on younger adolescents (14-17) Participants asked to distinguish between OTC access and behind-the-counter access Study provides data both on younger adolescents' interest and ability to access OC in a pharmacy	Convenience sample impacts generalizability Selection bias - having to actively select (via online clicks) to participate in the survey

3.4 Results

Of the 45 studies identified from the 49 abstracted articles, a majority were from high-income countries, most notably the United States (22 articles, including one that spanned the US-Mexico border) and the United Kingdom (12 articles). Only six articles were from low- and middle-income countries. Emergency contraceptive pills (ECPs) were the subject of 33 of the 49 articles; the remaining 16 included provision of misoprostol as an abortifacient (one article); oral contraception (seven articles); STI self-screening kits (four articles); and SRH commodities in general (four articles). Most (n=28) described client (real or simulated) experiences, 17 described the experiences of the pharmacist or pharmacy personnel, while the remaining four provided both pharmacists' and clients' perspectives. Ten of the 49 articles included only adolescent populations (10-19 years), while an additional six focused specifically on youth (10-25 years). The remaining studies included a broader age range of clients but contained enough age-disaggregated data that we could report on some adolescent- or youth-related findings. The use of mystery clients to assess client experience in pharmacies was a popular methodology and featured in ten articles. Below, we summarize our findings into thematic areas.

3.4.1 The appeal of pharmacies for reaching young people

Young people expressed satisfaction with their experience accessing SRH commodities from pharmacies (Sucato et al., 2001, Glasier et al., 2010, Rubin et al., 2011, Parsons et al., 2013). Users cited convenience as a major draw of pharmacies, specifically their longer operating hours (including evenings and weekends) (Peremans et al., 2007, Both and Samuel, 2014, Wilson and Williams, 2000), accessible locations (Sucato et al., 2001), and ease of commodity access (Barlassina, 2015, Manski and Kottke, 2015). Five articles cited the speed to obtain SRH commodities, such as oral contraception or ECPs, as a major draw of pharmacy access (Rubin et al., 2011, Parsons et al., 2013, Barlassina, 2015, Lewington and Marshall, 2006, Raine et al., 2012). Young people accessed emergency contraception (ECP) faster, with fewer hours elapsing from the time of unprotected sex, when ECPs were available over-the-counter or without a prescription as compared to clinic or prescription access (Rubin et al., 2011, Lewington and

Marshall, 2006). Corroborating these findings, having to obtain a prescription for a needed SRH commodity was cited as an obstacle to access for young women in two studies (Barlassina, 2015, Landau et al., 2006).

With regards to anonymity and privacy, the evidence was mixed. Some clients reported privacy as one of the advantages of pharmacy provision (Sucato et al., 2001, Glasier et al., 2010, Parsons et al., 2013, Manski and Kottke, 2015); however clients and providers also noted a lack of privacy – particularly when running through commodity dispensing protocols, or other screening procedures -- as a key concern (Peremans et al., 2007, Delotte et al., 2008, Dabrera et al., 2011).

3.4.2 SRH Outcomes and ease of use

3.4.2.1 Repeated ECP use and risky behaviours

Over one-quarter of the included articles assessed the relationship between pharmacy availability of SRH commodities on a variety of SRH outcomes. While updated evidence-based recommendations dismiss the notion that repeat use of ECPs is detrimental to women's health (World Health Organization, 2015), concerns about repeat use were common at the time of data collection for a number of studies. In two studies, easing access to ECPs did not result in repeat use among young women when compared to older women (Raymond et al., 2004), or compared to traditional clinic access (Raine et al., 2005). In particular, two articles from a randomized controlled trial of 15-24 year olds as well as a 15-19 year old subpopulation, found that young women with access to ECPs through pharmacies were no more likely to use them than those who obtained their ECPs through traditional family planning clinics (Raine et al., 2005, Harper et al., 2005). However, two Swiss studies found an increase in repeat use among young women following ECP deregulation (Samartzis et al., 2012, Arnet et al., 2009).

Evidence from three articles found that increasing access to ECPs through pharmacies did not result in a rise in sexually risky behaviours such as age at first sex, number of partners, or frequency and consistency of condom use (Raine et al., 2005, Harper et al., 2005, Raymond et al., 2003). Additionally,

increased access had no adverse effect on unintended pregnancy and STIs (Harper et al., 2005, Raymond et al., 2003).

3.4.2.2 Appropriate self-screen and product use

When provided the opportunity, young women proved capable of accessing and correctly using emergency contraception without pharmacist assistance (Rubin et al., 2011, Raine et al., 2012, Raymond et al., 2003). Using 'simulated' over-the-counter conditions, minors (girls under age 18) could self-screen and use ECPs (Raine et al., 2012), and were no more likely than older women to use the product incorrectly (Raymond et al., 2003).

Importantly, based on pharmacy-level surveys and questionnaires, those under 25 years of age comprised a substantial proportion of total users in settings where pharmacies provided access to SRH commodities such as ECPs and oral contraception (Parsons et al., 2013, Killick and Irving, 2004, Lloyd and Gale, 2005, Foster et al., 2006). The only example where this was not the case was in a study that took place at the United States-Mexico border, which found that older women were more likely than younger women to cross the border to access oral contraception over-the-counter at a pharmacy (Potter et al., 2010). However, these results likely reflect the complex dynamics associated with international border crossings for younger women.

It is worth noting that three studies explored opportunities for expanding youth-targeted SRH services, namely through provision of self-test, mail-in STI (chlamydia) screening. One UK study offered chlamydia screening to young women requesting ECPs at pharmacies (Thomas et al., 2010, Brabin et al., 2009); a second UK study followed a national chlamydia screening program offered opportunistically to young people between 15-24 (Dabrera et al., 2011); while a third Dutch study targeted mainly ethnic minority young (15-29) women visiting pharmacies to collect contraception (Van Bergen et al., 2004). These studies had mixed results and low rates of kit acceptance – often due to reluctance on the part of the pharmacist to offer the kit (Thomas et al., 2010, Dabrera et al., 2011) - and kit return (between 17-27%

of offered kits were returned, as reported by the Dutch and one UK study) (Van Bergen et al., 2004, Brabin et al., 2009).

3.4.3 Reservations around increased access to SRH commodities

As detailed above, lowering barriers to SRH commodity access does not translate to increases in sexually risky behaviour. Yet, a persistent reservation expressed by both pharmacy personnel and clients was that increased access was unsafe for young people and would result in young people making poor decisions (Both and Samuel, 2014, Manski and Kottke, 2015, Barrett and Harper, 2000, Seston et al., 2001, Blanchard et al., 2005, Bissell et al., 2006, Krishnamurti et al., 2008, Mackin and Clark, 2011, Ehrle and Sarker, 2011, Maharaj and Rogan, 2011, Apikoglu-Rabus et al., 2012). In two U.S. studies, for example, adolescent girl participants voiced concerns that increased commodity availability might lead to teenagers having sex at an earlier age (Manski and Kottke, 2015) and engaging in unprotected sex (Manski and Kottke, 2015, Krishnamurti et al., 2008).

Similarly, reservations by pharmacy personnel and other health care providers (including general practitioners and nurses) could be largely categorized in two ways. First, they believed that increasing availability of SRH commodities (ECPs, in particular) could result in 'risky and promiscuous' behaviour among youth (Barrett and Harper, 2000, Seston et al., 2001, Bissell et al., 2006, Maharaj and Rogan, 2011). This notion that ECP availability condones or even encourages promiscuity among younger people persisted for some time after deregulation (Bissell et al., 2006, Maharaj and Rogan, 2011). A second key reservation of pharmacists and other health care providers centred around a general concern that SRH commodities (ECPs, in particular) were not safe for youth (Both and Samuel, 2014, Mackin and Clark, 2011), or that youth would not be able to take them as directed (Ehrle and Sarker, 2011, Apikoglu-Rabus et al., 2012).

Compounding these concerns about effects on health and behaviour are additional reservations on the appropriateness of pharmacy personnel themselves to provide expanded SRH services (Peremans et al.,

2007, Manski and Kottke, 2015, Conard et al., 2003, Rafie and El-Ibiary, 2011, Richman et al., 2012, Rafie and El-Ibiary, 2014, Fakih et al., 2015). Pharmacists did not always feel that it was their place to prescribe medicine due to time constraints (Sampson et al., 2009), limited availability and privacy to provide quality counselling (Peremans et al., 2007), and feeling that they had not been well trained in adolescent-specific issues (Conard et al., 2003). Meanwhile, some clients were concerned about leaving the pharmacy without enough information (Wilson and Williams, 2000).

Especially variable was the quality of reported interactions with clients around the offering or dispensing of SRH services and commodities (Peremans et al., 2007, Both and Samuel, 2014, Ratanajamit et al., 2002, Dabrera et al., 2011, Thomas et al., 2010, Delotte et al., 2008, Fakih et al., 2015). Studies noted pharmacy staff's discomfort (Dabrera et al., 2011, Thomas et al., 2010), even intimidation (Both and Samuel, 2014), in approaching clients as a reason that pharmacy interactions suffered. Several studies cited the pharmacy environment as a sub-optimal setting to provide proper counselling on SRH-related issues (Peremans et al., 2007, Both and Samuel, 2014, Wilson and Williams, 2000, Conard et al., 2003, Dabrera et al., 2011, Fakih et al., 2015). In particular, the lack of space and privacy (Peremans et al., 2007, Dabrera et al., 2011), especially when a pharmacy was busy (Peremans et al., 2007, Both and Samuel, 2014), could be hindrances to meaningful pharmacist-client interactions and counselling.

3.4.4 Pharmacy access in theory is not pharmacy access in practice

Even when made available through pharmacies, SRH commodity access was not uniform across age groups, with adolescents' (ages 19 and under) access and uptake often less than that of older youth (Chin-Quee et al., 2006, Lewington and Marshall, 2006, Foster et al., 2006, Griggs and Brown, 2007, Apikoglu-Rabus et al., 2012, Hussainy et al., 2015); this was despite implied similar levels of need for the two groups, as indicated by ECP use (Harper et al., 2005) in an experimental setting. Two studies found that younger youth (especially those 18 and under) were consistently and significantly slower to access ECPs than older youth and adult women (Lewington and Marshall, 2006, Foster et al., 2006).

Evidence indicated that other sub-populations of youth may face additional challenges to access; two studies from the United States underlined added barriers encountered by rural communities and certain minority groups (particularly those for whom language is a barrier) from pharmacies which may opt not to stock desired commodities or from pharmacists who may not be able to provide proper screening or counselling (Mackin and Clark, 2011, Sampson et al., 2009). Additionally, two studies revealed a reluctance on the part of pharmacists to provide commodities (ECPs) to men (Wilkinson et al., 2014, Peremans et al., 2007), in one case out of concern that they may not be well informed about their partner's health history or may take advantage of ECP access for use after rape (Peremans et al., 2007). Finally, in settings where SRH commodities are not subsidized or covered by insurance, commodity cost may serve as yet another barrier for youth. One South African study found many pharmacists opted to only stock dedicated ECP products because they were significantly more expensive than cut-up combined oral contraceptives, and would therefore discourage overuse by young people (Maharaj and Rogan, 2011).

Pharmacists themselves could be an insurmountable obstacle for young people (Blanchard et al., 2005, Bissell et al., 2006, Chin-Quee et al., 2006, Delotte et al., 2008, Brabin et al., 2009, Glasier et al., 2010, Maharaj and Rogan, 2011, Wilkinson et al., 2012, Wilkinson et al., 2014, Hussainy et al., 2015). Six studies using mystery clients found that anywhere between 20% and 65% of the time, youth clients could not obtain the selected SRH commodity (ECPs or oral contraception), despite regulations allowing access (Chin-Quee et al., 2006, Delotte et al., 2008, Sampson et al., 2009, Glasier et al., 2010, Wilkinson et al., 2012, Wilkinson et al., 2014, Hussainy et al., 2015). Some evidence indicated differences in dispensing practices by sex; two studies found male pharmacists more willing than female pharmacists to provide ECPs to minors (Delotte et al., 2008, Ehrle and Sarker, 2011). Pharmacists reported using personal comfort and bias to decide whether or not to dispense commodities (Thomas et al., 2010, Dabrera et al., 2011, Ehrle and Sarker, 2011, Both and Samuel, 2014). Pharmacist biases about the

appropriate age to dispense commodities were common (Chin-Quee et al., 2006, Griggs and Brown, 2007, Apikoglu-Rabus et al., 2012, Hussainy et al., 2015). A study from Jamaica, where certain oral contraceptives were legally available without prescription in pharmacies, found that an adolescent mystery client was refused contraception in 60% of pharmacy visits (Chin-Quee et al., 2006). An Australian study using telephone scripts found that, following a revision of the national ECP dispensing protocol clarifying that there was no reason for ECPs to be restricted on the basis of age, pharmacists still declined dispensing ECPs over 40% of the time when the caller was under the age of 16 (Hussainy et al., 2015).

Confusion or misinformation about various SRH commodities and their dispensing guidelines also created unnecessary barriers to quality commodity provision and counselling for young people (Ratanajamit et al., 2002, Lara et al., 2006, Ehrle and Sarker, 2011, Maharaj and Rogan, 2011, Wilkinson et al., 2012, Both and Samuel, 2014, Wilkinson et al., 2014, Hussainy et al., 2015, Peremans et al., 2007, Delotte et al., 2008, Glasier et al., 2010). Studies in the United States and South Africa revealed that uncertainty as to when young people were legally entitled to access ECPs resulted in pharmacists incorrectly denying access to eligible youth (Maharaj and Rogan, 2011, Wilkinson et al., 2014, Wilkinson et al., 2012). Young mystery clients requesting ECPs in France found – in contrast to French regulations - *no* pharmacies gave information on regular methods of contraception, prevention of STIs, follow-up medical care, or communicated any other place for full contraception education; additionally, fewer than half the pharmacies that dispensed ECPs dispensed it with information on how to use it or side effects (Delotte et al., 2008). A study on pharmacy provision of abortifacients in a Latin American city found that only 17% of pharmacists who correctly recommended misoprostol as an abortifacient to young mystery clients recommended a dosage potentially effective for causing a medical abortion (Lara et al., 2006).

3.5 Discussion

The evidence from this review suggests that pharmacies have qualities which make them convenient points of SRH commodity access for young clients. Between 2000 and 2016, the period covered by this review, there was a clear and steady shift towards legal policies and regulations becoming more favourable to over-the-counter or pharmacist access of SRH commodities for youth. Contrary to both young client and pharmacist concerns, there has been no corresponding increase in sexually risky behaviour or adverse health outcomes. A population-based study in France found that five years after the deregulation of ECPs, there had been no decrease in the use of other methods of contraception or determinants of ECP use (Moreau et al., 2006b); in fact there was an increase in the use of highly effective contraceptive methods, especially among young people.(Moreau et al., 2006a) There is, however, clear evidence that increasing access to SRH commodities through pharmacies can result in improved access, with trends of SRH commodity use (ECP use, in particular) being especially high among youth (Hobbs et al., 2011a, Marston et al., 2005, Moreau et al., 2006a, Moreau et al., 2006b, Soon et al., 2005, Hobbs et al., 2011b), a population that faces added barriers to obtaining accurate, high-quality SRH information and services.

Despite the convergence of a number of encouraging factors facilitating access to SRH commodities through pharmacies - youth expressed and demonstrated willingness to use pharmacies, increasing numbers of policies supporting youth access, and no evidence of adverse effects as a result of pharmacy access – there is still much to be improved in the access experience itself. Lingering and persistent concerns about commodity provision are often rooted in pharmacy personnel's personal biases, distrust of their young clients' judgment, or general discomfort with providing SRH commodities and any accompanying counselling. As a result, young clients can receive subpar, incorrect, or no information on their commodity of choice; can encounter arbitrary and unnecessary barriers to access; or can be denied access entirely.

As the positive impetus towards increasing access continues, and policymakers and medical communities become more comfortable with and confident in the ability of pharmacists to be a valuable SRH resource to young people worldwide, we must strengthen the quality and coverage of the commodity-accessing experience. Pharmacy personnel have enormous potential to become trusted sources of SRH commodities for the young people in their communities, but only if provided with adequate training and support.

Many earlier studies taking place before a given country deregulated ECPs assessed smaller programs that often required pharmacy personnel to undergo special training in order to be certified to dispense. As SRH commodities become more readily available through pharmacies, pharmacy personnel should have access to pre-service and in-service training to ensure they have accurate understandings of appropriate use, dosing, and side effects of the SRH products they dispense.

On the other side of the counter is the young client. More efforts are needed to ensure existing programs can achieve full coverage to *all* populations of young people – including younger adolescents, those living in rural areas, and minorities – who face added barriers which might delay or prevent their ability to access a commodity, even when legally permitted. Additionally, more research is needed in low- and middle-income settings – only six of the 49 studies in this review took place in LMICs. It is also telling that 33 of the 49 articles presented focused on the provision of ECPs. This demonstrates a dearth of documented exploration of the other SRH commodities that young people access through pharmacies, such as other methods of contraception; misoprostol for medical abortions; or related SRH services, including STI self-testing kits.

It is critically important to improve our understanding of how young people engage with existing pharmacy-provision services. There is a fine line between capitalizing on the potential of pharmacies and losing youth engagement; well-intentioned efforts to incorporate compulsory counselling, testing, or

referrals could make pharmacies lose their fast and discreet appeal that draw in young clients in the first place. A United Kingdom study from this review provides a positive example of improving the pharmacy as an SRH resource, without losing youth engagement; pharmacies offer chlamydia screening kits to young women already requesting ECPs, bundling commodities with services needed following a discrete SRH event (unintended unprotected sex), but minimizing added time in the pharmacy, as the kits can be used at home (Brabin et al., 2009, Thomas et al., 2010). Strategies for discretely making youth aware of their pharmacy as an SRH resource are also worth exploring; a few articles mentioned provision of leaflets (discretely slipped in a shopping bag) as an option (Both and Samuel, 2014, Glasier et al., 2010, Dabrera et al., 2011). The proliferation of mobile phones among this age group is also an opportunity to provide young people with needed SRH information or resources when needed, at their convenience, and with respect to their privacy.

This review has a number of limitations. First, as this is one of the first systematic reviews of pharmacy provision of SRH commodities, we aimed for broad inclusion criteria to allow for a full description of what is known about young people's experiences in pharmacies and providers' experiences providing commodities to young people. Many of the included studies have weak designs (if RCTs are the "gold standard"), and few studies included interventions or statistical analyses. However, our aim was to describe these experiences rather than draw on statistical inference and generalizability. The trade-off with a broad approach is that we could not use a single methodology to assess quality; most studies were descriptive in nature and standard scoring methodology was difficult to apply consistently. Instead, key limitations (and strengths) of the studies are described in Table 3.1. Future research should consider refining our review and assessing quality. This limitation notwithstanding, the review does indicate the context for pharmacy provision of SRH commodities for young people.

We also had to exclude a number of studies (or components of studies) that included young people as part of a broader age range of participants but did not disaggregate data by age group. Additionally,

some included studies are only technically youth relevant (for example studies featuring mystery clients 25 and under in age), but have no primary or even secondary focus on youth access. A number of studies reported on trends in pharmacy use but did not provide information on the direct experiences of youth or providers. The breadth of studies uncovered reflects a key strength of this review; our search strategy did not include age-related search terms; therefore, we were able to screen a wide range of SRH commodity-pharmacy articles which may not have explicitly addressed youth in the title or abstract, but which contained relevant data in the text. We also conducted a global search for studies, and although many came from high-income settings and focused on ECPs, we were able to identify several that included lower-income settings and a range of commodities.

3.6 Conclusion

Pharmacies have been demonstrated to be a resource young people are willing to use if permitted; however, there is a need for additional study in this field to understand how to most effectively harness pharmacies to improve young people's access to SRH commodities. The pharmacy makes for an excellent SRH resource to young clients, but should take care not to exactly replicate the health facility experience – to do so would risk pharmacies losing the unique qualities that make them so appealing to youth in the first place. Instead, pharmacists and pharmacy personnel should be recognized as important complements to the role that physicians and other medical practitioners play in the delivery of SRH services. For young people especially, seeking commodities from pharmacies may be their only option. It is important that future research consider adolescents and young people specifically, as they represent a population most in need of alternate forms of access to SRH information, services, and commodities. It is also important that pharmacy personnel are provided with clear information on the guidelines for provision and do not serve as an unnecessary barrier to access.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgements

We appreciate the contributions of Sara Cottler who assisted with the search strategy development and Dr Amanda Kalamar, who assisted with the title screening and results outline review. The manuscript represents the view of the named authors only.

3.7 Supplementary Material – Search Strategy

Our search strategy included papers published in any language and had a lower date limit of 1 January, 2000 and an upper date limit of 1 May, 2016.

The following search strategy was used for PubMed: "("Contraception"[Mesh:noexp] OR "Contraception, Barrier"[Mesh] OR "Contraception, Postcoital"[Mesh] OR "Natural Family Planning Methods"[Mesh] OR "Ovulation Inhibition"[Mesh] OR "Contraceptive Devices"[Mesh] OR "Contraceptive Agents"[Mesh] OR "Abortion, Induced"[Mesh:noexp] OR "Abortifacient Agents"[Mesh] OR ("misoprostol"[MeSH] AND "Abortifacient Agents"[Mesh]) OR ("Mifepristone"[Mesh] AND "Abortifacient Agents"[Mesh])) AND ("Community Pharmacy Services"[Mesh] OR "Legislation, Pharmacy"[Mesh] OR "Education, Pharmacy"[Mesh] OR "Pharmacies"[Mesh])

The following search strategy was used for Embase: ('contraception'/exp NOT ('female sterilization'/exp OR 'male sterilization'/exp) OR 'family planning'/exp OR 'contraceptive device'/exp OR 'contraceptive agent'/exp OR 'abortive agent'/exp OR 'induced abortion'/exp) AND ('pharmacy'/exp OR 'pharmacist'/exp OR 'pharmacist attitude'/exp OR 'hospital department'/exp)

The following keyword search strategy was used for Popline: (Fertility Control Postconception,Abortion,RU486,Misoprostol,Contraceptive Agents Female,Contraceptive Agents Male,Contraceptive Agents Progestin,Contraceptive Agents Postcoital,Contraceptive Methods,Emergency Contraception,Female Contraception,Male Contraception) AND Administration and Dosage,Pharmacy Distribution,Pharmacies,Pharmacists

The following search strategy was used for Scopus: KEY ("Contraception" OR "Contraception, Barrier" OR "Contraception, Postcoital" OR "Natural Family Planning Methods" OR "Ovulation Inhibition" OR "Contraceptive Devices" OR "Contraceptive Agents" OR "Abortion, Induced" OR "Abortifacient Agents" OR "misoprostol" OR "mifepristone" OR "family planning" OR "contraceptive agent" OR "contraceptive device" OR "induced abortion" OR "abortive agent" OR "emergency contraception")

AND KEY("Pharmacy" OR "Pharmacists" OR "Pharmacies" OR "Chemist" OR "Apothecary")

4 Mixed-methods study on pharmacies as contraception providers to Kenyan young people: who uses them and why?

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Published in *BMJ Open* on 8 July, 2020

https://bmjopen.bmj.com/content/10/7/e034769.full

4.1 Abstract

Objectives

This study sought to answer two questions: 1) what are the characteristics of young Kenyans aged 18-24 who use contraception obtained at pharmacies, and 2) why are pharmacies appealing sources of contraception?

Design and Setting

This was a mixed-methods study in one peri-urban part of Kwale County, Kenya. Methods included: cross-sectional survey (N=740); six focus group discussions; 18 in-depth interviews; and 25 key informant interviews. Quantitative data analysis identified factors pushing young people to pharmacies for modern contraception versus other sources. Qualitative data analysis identified reasons pharmacies were perceived to be appealing to young clients.

Participants

Participants were: 1) young people aged 18-24 from the study area, including a subset who had recently purchased contraception from a pharmacy; or 2) pharmacy personnel and pharmacy stakeholders.

Results

Among surveyed participants who had ever had sexual intercourse and had used modern contraception at last sexual intercourse, 59% obtained it from a pharmacy. In multivariable analysis, participants who used a condom or emergency contraception as well as those living alone were significantly more likely to get contraception from pharmacies. Pharmacies were valued for their: convenience; privacy; non-judgmental and personable staff; service speed; and predictable, affordable prices.

Conclusions

Our findings indicate a high percentage of young people in Coastal Kenya use pharmacies for contraception. Our inclusion of emergency contraception users partially explains this. Pharmacies were perceived to be everything that health facilities are not: fast, private and non-limiting. Policymakers should recognize the role of pharmacies as contraception providers and look for opportunities to link pharmacies to the public health system. This would create a network of accessible and appealing contraception services for young people.

4.1.1 Strengths and limitations of this study

- Participants were asked to specify where they or their partner had obtained the contraception used at last sexual intercourse. This is a standard question for studies looking to establish contraception prevalence. However, our not further ascertaining who specifically obtained the contraception affected our ability to distinguish differences in preferences of young men versus young women.
- One participant group (young people who had recently purchased contraception from a pharmacy) was recruited from five purposively selected pharmacies: this may limit the generalisability of the findings.
- This study is strengthened by its mixed methods design and inclusion of both pharmacy personnel and young people to triangulate research findings on a sensitive subject.

4.2 Introduction

Young people need access to contraception. However, around the world, and in low- and middle-income countries in particular, public sector contraceptive services are not meeting this need. Data from 61 low- and middle-income countries estimated that 33 million young women aged 15-24 had an unmet need for family planning (MacQuarrie, 2014). Adolescents (ages 10-19 years) and youth (15-24 years) are often reluctant to access contraception at public health facilities where they may encounter a lack of privacy, biased providers, and limited contraceptive options, in addition to broader financial, legal,

social, and cultural barriers (Chandra-Mouli et al., 2014, High-Impact Practices in Family Planning (HIPs), 2015).

Other parts of the health system may be able to step in to help fill this gap. In Kenya (where this study took place) and in the region, private pharmacies have become a source of modern contraception for young people (Dougherty et al., 2016, Corroon et al., 2016, High-Impact Practices in Family Planning (HIPs), 2013, Ostola et al., 2015). Additional research has indicated that when contraception is introduced in pharmacies, access improves for young people (Radovich et al., 2018, Gonsalves and Hindin, 2017). An analysis of 33 sub-Saharan African countries found that commercial drug sellers, including pharmacies, were the source of the most recent contraceptive method for nearly one in five young people between 15-24 years of age (Radovich et al., 2018). When also factoring in other informal and non-medical providers, including shops, these sources together serviced nearly half of women age 15-19 (Radovich et al., 2018).

Kenya's National Family Planning Guidelines allow for the provision of several kinds of modern methods (World Health Organization, 2018c) of contraception to be dispensed by pharmacists or pharmaceutical technologists (Kenya Ministry of Health, 2018)(colloquially referred to as 'chemists'). These include barrier methods like male and female condoms, as well as short-acting methods including emergency contraception (ECP), oral contraceptive pills, and injectable contraception. These permissions mean that outside of health facilities, private retail pharmacies have the largest selection of modern methods available (shopkeepers can also sell condoms, per the guidelines). Private retail pharmacies must be opened by and should always operate under the supervision of either a pharmacist or pharmaceutical technologist (National Council for Law Reporting, 1957 (revised 2012)).

Despite their demonstrable popularity among young people, there are little data on the individual-level circumstances or characteristics of young people that would drive them to pharmacies for

contraception. Therefore, we conducted a mixed-methods study describing how young people (aged 18-24) in Kwale County obtain contraception from pharmacies. Kwale County is one of six counties in Kenya's former Coast region. Young people between the ages of 15-24 were projected to make up 19% of the county's population by 2018 (Kwale County Government, 2018). In 2014, contraception prevalence in the county was 38%, lower than the national average of 53% (Kenya Ministry of Health, 2015a).

In this analysis, we sought to answer two questions: 1) what are the characteristics of young people who use contraception obtained at pharmacies, and 2) why are pharmacies appealing sources of contraception to young people?

4.3 Methods

The study took place in the peri-urban areas of Kwale Town and Ukunda, as well as the stretch of highway connecting the two towns. Data collection took place between October 2017 and March 2018. We used several methods (captured in Table 4.1) to understand the experiences of pharmacy personnel and young people themselves. This study was partly-nested in the ARMADILLO randomized controlled trial (RCT) (Gonsalves et al., 2018), which assessed the effect of an unrelated digital health intervention on sexual and reproductive health-related outcomes for young people aged 18-24.

Table 4.1 Study Methods

Method	N	Eligibility criteria	Relevant topics addressed
Cross-sectional survey*	**740**	• Age 18-24 • Literate • Have their own mobile phone (with them at time of recruitment) and report regular use • Report current use of text messaging	• Contraception used at last sexual intercourse and source • Demographic and behavioural characteristics
Focus group discussions*	**6 (58 participants)**	• Age 18-24 • Community members	• Sources of contraception for young people

			• Characteristics of young people who use each source
In-depth interviews	**18**	• Age 18-24 • Recently purchased contraception at pharmacy	• Reasons for having purchased contraception from pharmacy • What was valued (and not valued) about experience
Key-informant interviews	**19 (pharmacy personnel) 6 (stakeholders)**	• Age 18+ • Pharmacy personnel (any role) OR • Pharmacy-related stakeholder (Ministry of Health; regulatory agency; professional association; non-governmental organization)	• Characteristics of young people who purchase contraception • What clients appreciate about experience

***** Methods which were nested in the broader ARMADILLO Study, a digital health intervention RCT. Inclusion/exclusion criteria for these nested methods were determined by ARMADILLO's objectives.

To capture the perspectives of young people, a cross-sectional survey of young people age 18-24 captured demographic information and contraceptive use patterns, including source of last contraception (these questions were one section of a broader survey conducted as part of the baseline assessment for the ARMADILLO trial). The sample size was calculated based on the ARMADILLO trial's primary outcome – the full protocol for the trial has been previously published (Gonsalves et al., 2018), along with details of participants recruited (Gonsalves et al., 2019a).

To identify participants, we obtained a map of the study area from the Kenya National Bureau of Statistics. The KNBS divides the country into so-called 'enumeration areas' (EAs) in preparation for the country's 2019 census. EAs consist of blocks of households. Each EA had approximately 100 households. In October 2017, data collectors enumerated all age-eligible young people in every household using a random selection of 21 EAs in the study area. From this list of age-eligible youth, a random selection of households and random selection of one youth per household was generated. Data collectors visited the selected households to recruit participants (who met eligibility criteria captured in Table 4.1) starting in February 2018.

Additionally, six Focus Group Discussions were conducted with young people age 18-24, purposively recruited from the community by data collectors. Finally, we conducted in-depth interviews with 18 young people aged 18-24 who had recently purchased contraception from pharmacies. We purposively recruited these young participants in one of two ways. First, we stationed a young data collector outside of well-trafficked pharmacies over three evenings, who recruited young people purchasing contraception. Second, several pharmacists in the study area were provided with leaflets with study information and requested to provide these to young contraception purchasers at the end of a transaction.

To capture the perspectives of pharmacy personnel, data collectors mapped all private, retail pharmacies in the study area using a digital form with an embedded geolocator. A random subset of pharmacies was generated using the random number generator in Excel. Pharmacies were well-distributed across the study area. In each selected pharmacy, data collectors were instructed to approach the first person behind the counter, regardless of rank or level of training, explain the study and ask if they would be interested in participating. Nineteen interviews in total were conducted. An additional six key-informant interviews were conducted with stakeholders from the regulatory Pharmacy and Poisons Board, Ministry of Health, professional associations, and non-governmental organizations. These were conducted in the individuals' offices in either Ukunda, Mombasa, or Nairobi. Stakeholder participants were contacted first by phone or email, the studied explained, and a convenient time for an in-person visit set.

4.3.1 Data collection and management

We obtained informed consent from all participants prior to participation. All data were collected in English, Swahili, or a mix of the two, depending on participants' preference. Quantitative surveys were close-ended and administered using webforms on a tablet. Data collectors entered responses save for

the questions related to participants' sexual and contraceptive use history; here, to reduce potential discomfort and response bias, participants entered their own responses. Interviews and FGDs used semi-structured guides: FGD, in-depth interview, and key-informant interview guides are provided as Supplementary Material, as are relevant survey components. Qualitative data collection was informed by ground theory (Charmaz, 2006), allowing us to adopt an iterative approach, with question guides modified based on emerging themes. Qualitative data collection ceased upon reaching saturation. All qualitative methods used audio-recording (with participant permission). All study activities were conducted in a private location. Data collectors, speaking both English and Swahili, were recruited from the study area and specifically trained for this study.

This study received ethics approval from the Ethikkommission Nordwest- und Zentralschweiz (EKNZ) (Req-2017-00389) in Basel, Switzerland, as well as the University of Nairobi/Kenyatta National Hospital in Nairobi, Kenya (P274/05/2017). The ARMADILLO RCT also received ethics approval from the World Health Organization (Protocol WHO A65892) and is registered with the ISRCTN Registry (ISRCTN85156148).

4.3.2 Patient and public involvement

Our population (young people) were directly involved in parts of the study's design and implementation. Our survey data collection team consisted of young people recruited from the study area (Kwale County). Qualitative method data collectors were also young people recruited from both Kwale and Mombasa Counties. We relied on their insight and lived experience to determine how young people would feel most comfortable being recruited. We jointly designed our recruitment and consenting procedures. A dissemination meeting involving local, county, and national stakeholders (including some pharmacy stakeholder participants) took place in June, 2019. Several young data collectors were invited to attend, and they provided commentary on the findings.

4.3.3 Researcher characteristics and reflexivity

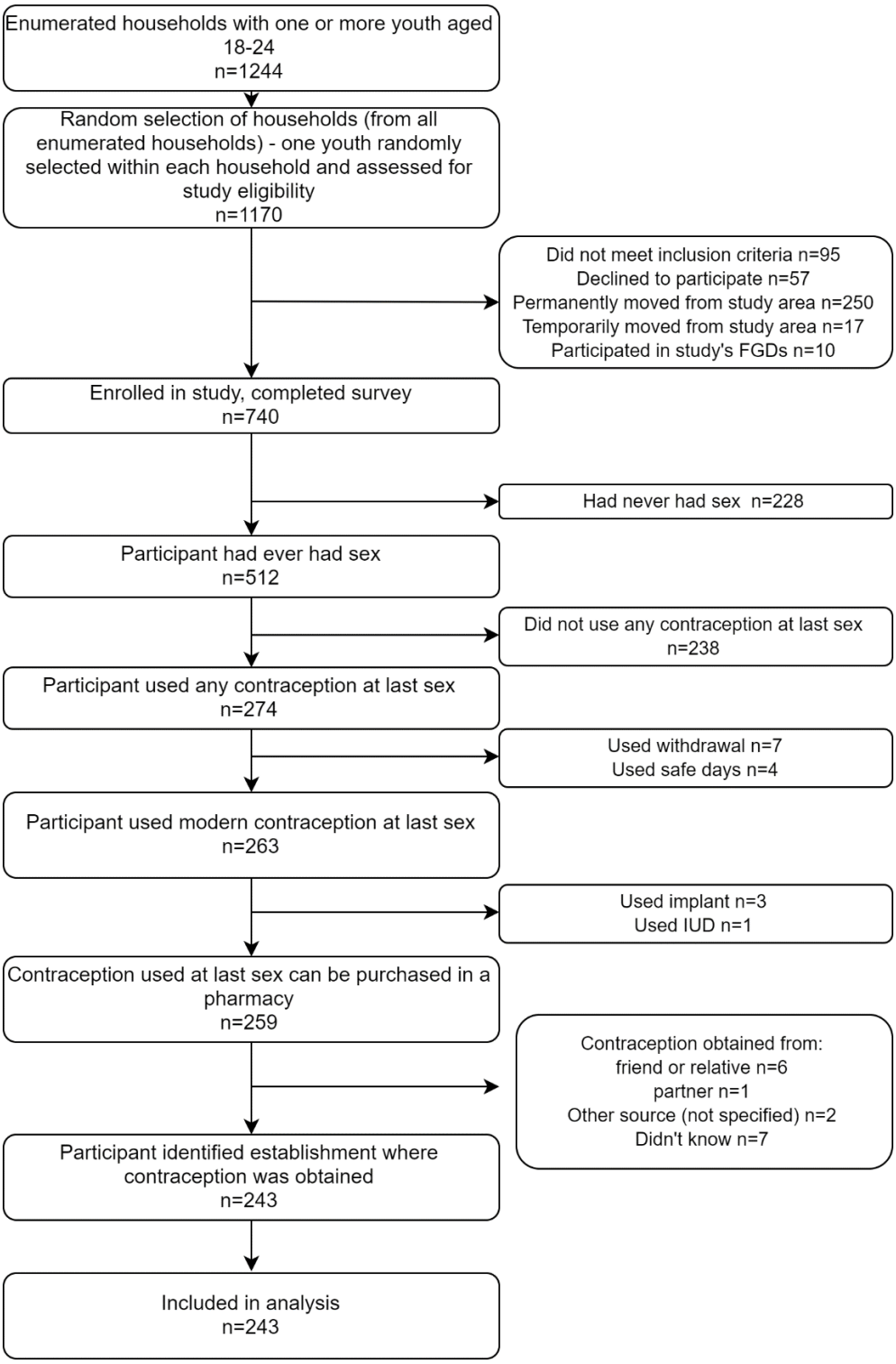
Data collectors were young people (nearly even numbers of men and women – 24 in total) recruited from Kwale and Mombasa counties. Kwale County data collectors were familiar with the study area and recognized within their communities, which facilitated enumerating pharmacies, recruiting youth participants, and getting consent to interview pharmacy personnel. They were also less educated and less experienced than data collectors from Mombasa County. This, at times, resulted in a subordinate dynamic with some pharmacy personnel participants who were university-educated. The first author conducted all interviews with pharmacy stakeholders. She is from the United States (from a racial minority group different from the study population) and presented as an outsider (someone not from Kenya) to interviewees. Her position (leading the study and professional affiliations) resulted in respondents treating her collegially and being open to participate.

4.3.4 Analysis

Quantitative data were analysed in Stata Version 14. The subject of the analyses (as described in Figure 4.1) were survey participants who reported using one of four contraception commodities available in pharmacies (either male or female condom, ECP, daily contraceptive pills, or injectable contraception) at last sexual intercourse *and* who reported their source. Sexual intercourse was presumed to be penetrative vaginal sex. Excluded were those participants who had not used contraception at last sexual intercourse, who had not used a contraceptive commodity (withdrawal method, calendar days), who could not remember where they had obtained their method and/or who had obtained it from a partner or friend. We developed a dichotomous 'source of family planning' outcome, distinguishing between 'pharmacy' and 'any other source'. The latter included any public or private health facility, community-based distributors, non-governmental organizations, shops, schools, supermarkets. Following descriptive statistics, bivariate log binomial regressions assessed the association between the outcome

and each behavioural/sociodemographic variable of interest. Any analysis showing a p<.2 moved the variable into a multivariable Poisson regression model with robust 95% CIs.

Figure 4.1 Flow Diagram of Study Participants



All qualitative data were analysed using the Framework Method (Gale et al., 2013). Data were first transcribed verbatim and then translated (if necessary) into English. For a sub-section of Swahili-language interviews, English-language transcripts were compared against the original Swahili-language interview audio file by another member of the research team to ensure consistency. Qualitative analysis for the broader study was guided by the five, *WHO-defined dimensions of quality health services to adolescents*: equity, accessibility, acceptability, appropriateness, and effectiveness (World Health Organization, 2012a). All transcripts were read once to improve familiarity with the data. Then, qualitative analysis was conducted in Atlas.ti Version 8, with deductive and then inductive coding of a subset of transcripts to develop and refine a coding framework. Deductive coding was informed by the 'accessibility' and 'acceptability' dimensions and broadly captured any reference to pharmacies being 'appealing'. Inductive coding of these data then identified specific reasons for appeal, subsequently grouping these into broad categories related to pharmacy outlet, personnel, and service appeal. These broad categories and individual reasons structure the presentation of the qualitative results.

4.4 Results

4.4.1 Survey sample characteristics

A total of 1170 youth were approached for participation, of which 740 (63%) consented to participate and completed the survey. Reasons for non-participation are captured in Figure 4.1. As seen in Table 4.2, of the 740 young people aged 18-24 who participated in the cross-sectional survey, 512 (69%) had ever had sexual intercourse. Male condoms were the most popular form of contraception purchased, used by 190 of the 274 (69%) participants who used contraception at last sexual intercourse. Of the participants indicating that they used a modern contraceptive at last sexual intercourse (N=263), 154 (59%, data not shown) had obtained it from a private, retail pharmacy (hereafter, 'pharmacy').

Table 4.2 Baseline characteristics

		All surveyed participants (N=740)		
		Female	Male	Total

Ever had sexual intercourse	231/347	281/393	512/740 (69%)
Used any contraception at last sexual intercourse	126/231 (55%)	148/281 (53%)	274/512 (54%)
Used a modern contraceptive at last sexual intercourse	118/231 (51%)	145/281 (52%)	263/512(51%)
Used pharmacy-available contraception*	116/231 (50%)	143/281 (51%)	259/512 (51%)
Where contraception was obtained	(N=116)	(N=143)	(N=259)
Pharmacy	63%	56%	59%
Shop	5%	17%	11%
Public dispensary or health centre	13%	7%	10%
Hospital	11%	6%	8%
NGO, private doctor	3%	4%	4%
Community-based distributor, school, supermarket	1%	2%	2%
*Other person***	1%	4%	*3%*
*Other source (not specified)/Don't know **	3%	3%	*3%*
	Included participants using pharmacy-available contraception (N=243)		
	Female (N=111)	Male (N=132)	Total (N=243)
Age			
18-19	17%	18%	18%
20-24	83%	82%	82%
Education (highest level attended)			
Primary or below	54%	27%	40%
Secondary	38%	55%	47%
Post-secondary	8%	18%	14%
Relationship status			
Single	23%	42%	33%
Friends with benefits	3%	8%	5%
Dating	42%	42%	42%
Cohabiting	3%	1%	2%
Engaged	9%	5%	7%
Married	20%	3%	11%
Any children			
No	74%	92%	84%
Yes	26%	8%	16%
Living situation			
Lives alone	8%	23%	16%
Lives with family (dependent)	66%	73%	70%
Lives with child or partner	26%	4%	14%
Contraception used***			
Male condom	56%	86%	72%
Female condom	4%	2%	2%
ECP	20%	6%	12%
Daily contraceptive pills	5%	2%	3%
Injection	16%	5%	10%

*these included male or female condom, emergency contraception (ECP), daily contraceptive pills, and injectable contraception
**these were excluded from analysis
***Participants could enter one contraceptive method

Of the 243 participants who were included in bivariate and multivariable analyses, 54% were male, 61% had attended secondary school or higher, and 70% were dependents (living with parents, grandparents, or other older family members). A higher proportion of female participants than male participants were cohabiting, engaged, or married and had at least one child. Male participants had attended higher levels of schooling than female participants. Supplementary Table 4.1 presents selected characteristics of the 243 participants disaggregated by whether they obtained contraception at a pharmacy, shop, or any other source: most shop users were male and purchased condoms.

4.4.2 Who accesses contraception from pharmacies?

Bivariate analyses (Table 4.3) indicated there was no evidence of an association between either age, sex, or education and a young person's contraception being from a pharmacy. There was an association between pharmacy-purchased contraception and a participant's relationship status, and whether they had children. The greatest predictors of whether a young person had visited a pharmacy were the type of contraception they purchased and with whom they lived. Following multivariable analysis (Table 4.3), there remained strong evidence of an association between pharmacy purchase of contraception and a young person's relationship status, living situation, as well as the type of contraception they used. Young people living alone were almost twice as likely to have sourced contraception from a pharmacy as those living with a child or partner (Adjusted PR 1.96, 95% CI [1.07-3.59]). Use of ECP remained the greatest predictor of a pharmacy purchase (Adjusted PR 2.27 as compared with pill/injection use 95% CI [1.21-4.27]).

Table 4.3 Bivariate and multivariable analysis to identify personal characteristics that may be associated with a young person obtaining contraception from a pharmacy (vs any other source)

	Purchased contraception from pharmacy	Unadjusted Prevalence Ratio (PR) [95% CI]	p-value*	Adjusted Prevalence Ratio (PR) [95% CI]	p-value
All	153/243 (63%)				
Age					
18-19	27/43 (63%)	Ref			
20-24	126/200 (63%)	1.00 [0.78-1.29]	0.979		
Sex					
Male	80/132 (61%)	Ref			
Female	73/111 (66%)	1.09 [0.90-1.32]	0.405		
Education					
Primary or below	60/96 (63%)	Ref			
Secondary or above	93/147 (63%)	1.01 [0.83-1.23]	0.904		
Relationship status					
Single	46/81 (57%)	0.76 [0.61-0.94]	0.0013	0.75 [0.61-0.93]	0.0284
Dating/'Friends with benefits'	86/115 (75%)	Ref		Ref	
Married/Engaged/Cohabiting	21/47 (45%)	0.60 [0.43-0.84]		0.95 [0.67-1.35]	
Children					
No	139/204 (68%)	1.89 [1.24-2.92]	0.003	1.25 [0.80-1.97]	0.318
Yes	14/39 (36%)	Ref		Ref	
Living situation					
Lives alone	30/39 (77%)	2.62 [1.51-4.53]	0.0024	1.96 [1.07-3.59]	0.0119
Lives with family (dependent)	113/170 (66%)	2.26 [1.33-3.85]		1.53 [0.84-2.82]	
Lives with child or partner	10/34 (29%)	Ref		Ref	
Contraception used					
Condom (m/f)	120/181 (66%)	2.36 [1.34-4.14]	0.0014	1.87 [1.02-3.43]	0.0224
ECP	24/30 (80%)	2.84 [1.59-5.09]		2.27 [1.21-4.27]	
Pills/Injection	9/32 (28%)	Ref		Ref	

*any variable with p-values <.2 in bivariate analysis were included in the multivariable analysis

4.4.3 Qualitative methods participant characteristics

Three FGDs were held with young men, and three with young women – each FGD had approximately ten participants. Of the 18 in-depth interview participants, ten were young women and eight were young men. Female IDI participants had most recently purchased emergency contraception (n=7), injection (n=2), and condom (n=1). Male IDI participants had most recently purchased condom (n=6), and emergency contraception (n=2).

Of the 19 key informant participants, 10 interviewed pharmacy personnel were women, 9 were men. Participants were not probed in detail on their formal training (and therefore whether they should be operating in their current role). That said, we could ascertain that 13 of the participants had an appropriate amount of training for their reported tasks, and four did not (the final two were unclear). Self-reported education ranged from having some secondary education to full training as a pharmacist or pharmaceutical technologist. One participant was a nurse. Stakeholders demographics are not described to ensure they remain unidentifiable.

4.4.4 Why are pharmacies appealing?

Participants indicated that it was a combination of the pharmacy *outlet,* the pharmacy *personnel* themselves, and the *services* provided by the pharmacy which together made these establishments the preferred source of contraception for many young people (Table 4.4).

Table 4.4 Reasons why pharmacies are appealing (selected excerpts from qualitative data)

Outlet appeal	*The physical pharmacy environment and its operation*
Convenience (locations and hours)	"The chemist is near and whenever you want it [family planning] you can access it, anytime." Female pharmacy purchaser: injection "The good thing with chemist is that they are many of them…when you missed a certain contraceptive at a certain chemist you can go to the next chemist because they are several of them, not like the hospital" – Female community member (FGD) "Yes, majority of them [young people] don't live near health centres. Second, health centres are usually busy. And it's not every day they [can be] attended to: there are specific days they have clinics… [The client] won't be able to make it there…even if the treatment was free. But there is a chemist - [they] can go for similar services." – Pharmacist
Anonymity	"At the chemist there are not many people. I may go to Diani dispensary [a local public health facility], and there is someone who knows me and I go for family planning. I saw it would be better to go the chemist because I know that will be my secret and the attendant." Female pharmacy purchaser: emergency contraception "When you go to the facility, when you go to the FP room, everyone knows that you've gone to get FP. For young people [especially] because no one will want to see me - I'm 18, I'm 16 and I'm already using family planning. I'm not supposed to be sexually active. The kind of population that is in those FP areas, around

	those FP areas it's your mothers who are either breastfeeding, or they're pregnant and have gone for ANC." – Ministry of Health official, County level
Personnel appeal	*The person behind the counter*
Interpersonal relationship	"the chemist is just within the neighbourhood and I know the guy he is my friend outside job, so it wasn't stressful for me in fact it was really fast and easy." – Male pharmacy purchaser: ECP and condoms "The person in charge is my friend, I can go to him with my problems and he would assist me, he is not that far for me to reach him with my phone - he is my neighbour I could have a problem even at night and be able to reach out to him." -Male pharmacy purchaser: ECP
Seen as part of the community	"I chose it because it has been there for many years even before I was born till the time I finished school. The attendants are just normal. Many people get help from there, so I saw it good to also go there." – Female pharmacy purchaser: ECP and injection "What I had said about the hospital, when you get there you will find the person who served you before is transferred but when you come to the chemist you will find the person that served you before." – Female community member (FGD)
Non-judgmental	"I thought at the chemist they will understand me, and I would talk to them [better] than at the hospital where they will say I do not need to use those things or even talk to me harshly." –Male pharmacy purchaser: ECP and condoms "At the chemist, that person wants - since it is a business – [to] just give, as compared to the hospital where when you get there you will find nurses who are arrogant or other doctors who will insult you." Male community member (FGD)
Service appeal	*The contraception-purchasing transaction*
Speed	You know at the dispensary it is a must you meet with the doctor for more explanation. And maybe there is a service you need to pay for, the expenses are many at the dispensary unlike the chemist where everything is fast, when you get there you get what you want and leave. – Youth female, has purchased ECP and condoms "You get in a hospital, there are so many people queueing outside that are waiting to see a doctor. Here comes a young lady who is in a hurry. That particular person will find it more convenient to go to a chemist shop rather than going to a hospital." – Pharmacist
Cost	It is not easy for the government hospital. It is best, if you have money, you go to private hospitals. Now that is why you see if someone does not have money, or us the young people, we just go to the chemist because there is no cash to see a doctor for Ksh 600. At the chemist you just go direct and you are served. – Male pharmacy purchaser: ECP and condoms Chemists are not expensive like hospitals. In hospital you can be told it is a government hospital, but you end up being asked to give out a lot of money. In [the] chemist the money you get asked is for [paying for] P2 [an emergency

	contraceptive], yah but in hospital you will be told to do some test because we think it is this and this. – Female pharmacy purchaser: ECP Free does not always mean free. Sometimes, something will be free, but by the time you get it, the process is a lot. Because for us, we don't just offer family planning, we do [mandatory] counselling. The person who is going to a chemist is someone who has made up his or her mind. But in the public facilities, you are counselled, you are explained to, you are told the different methods, then you are given a chance to make an informed choice. So, I think that…is a barrier somehow. – Ministry of Health Official, County level

Pharmacy outlets were appealing because of the convenience and anonymity they offered young clients. Pharmacies were located where young people lived, worked, and spent time, making them easy contraception access points. If one pharmacy lacked what a young person was looking for, it was a short trip to the next one. 'Convenience' also extended to the days and hours pharmacies were open. This made them especially important on days where health facilities were known to be busy, or evening and weekend hours when young people might need contraception.

Additionally, the relative privacy offered by pharmacies was especially important to young clients. Participants perceived pharmacies, with interactions limited to a pharmacy attendant and a client, to be far more discreet than similar services offered at public health facilities. Public health facilities had public waiting areas where young people may see someone they knew. Additionally, services in the health facility might be categorized by service type (for example, contraceptive services separated from immunization services, etc). This left young clients feeling particularly exposed should they need to walk up to a labelled 'family planning' window or step forward if a public announcement about contraceptive services was made.

The individuals behind the counter, and how they interacted with young people, were additional reasons young people preferred to obtain contraception from pharmacies. Pharmacy personnel were perceived to be established, fellow community members. Young clients appreciated seeing the same familiar faces, with less of the personnel turnover associated with public health facilities. When

personnel were a similar age to young clients (a very strong preference of all young participants), many reported being able to communicate openly with pharmacy personnel and being more comfortable interacting with them.

Pharmacy personnel were perceived to be non-judgmental compared with those working in health facilities. There was a perception that a trip to a facility would result in difficult questions, and a possible refusal to provide the desired contraceptive. Pharmacy personnel, by contrast, would treat young people "well". That is, they would provide the desired contraceptive without interrogation. Several participants speculated that the for-profit aspect of pharmacies could be a reason that they were treated better and not refused services.

Finally, pharmacy contraception services themselves were appreciated for being fast and cheap. Participants routinely referenced the queueing for services and long wait times driving young people away from health facilities and into pharmacies instead. Services were also perceived to be cheaper than both private health facility services as well as public health facility services. Private health facilities were considered out of financial reach for most young people – making a pharmacy a more affordable option. However, at public health facilities, where contraception-related services are meant to be free, participants indicated that this was often not the case in practice. Expenses related to travel, or 'tests' (for example, a pregnancy test) ordered by health care providers prior to dispensing contraception made real costs related to public services difficult to predict. Finally, as one government official acknowledged, even when services were free, the time and processes required could deter young people who knew what they wanted from going to facilities.

4.5 Discussion

This mixed-method study determined pharmacies to be the most popular source of contraception for young people in a peri-urban area of Kwale County. In total, 59% of participants (and 63% female participants) who had ever had sex and self-reported use of a modern contraceptive at last sexual

intercourse had obtained their contraception from a pharmacy. This is higher than previously reported for Kenya as a whole (Radovich et al., 2018). Multivariable analyses indicated that young people who were living alone relied more heavily on pharmacies for contraception than their peers. That said, the strongest predictor of young people's contraception coming from pharmacies was the type of contraception they used, specifically emergency contraception. Qualitative findings demonstrated that young people valued pharmacies for their convenience, anonymity, non-judgmental and personable staff, service speed, as well as predictable and affordable prices.

Together, these mixed methods indicate that pharmacies provide a valued source of contraception for those young people who may face increased scrutiny or gatekeeping in health facilities. For young people using condoms or ECP, the reported convenience and speed of service explains the strong preference for pharmacies. Following unprotected sex, a young person needing ECP would understandably prefer to pay for it at a nearby pharmacy instead of traveling to a health care facility, waiting in line, and negotiating with a possibly reluctant health worker to obtain it for free (assuming the public facility stocked ECP (Riley et al., 2018)).

This study had several limitations. In the survey, participants were asked to specify where they or their partner had obtained the contraception used at last sexual intercourse. This question is standard in studies looking to establish contraception prevalence. However, our not further ascertaining whether it was the respondent or their partner *who picked up the contraception* affected our ability to distinguish differences in preferred sources between young men who obtain contraception versus young women who obtain contraception. Second, to recruit young people who had recently purchased contraception from pharmacies, we relied on assistance from five pharmacies, purposively selected. It is possible that young purchasers patronizing different pharmacies might have had different experiences than those captured here. Finally, our youth participants in focus group discussions may have felt uncomfortable discussing contraceptive use in a group; we attempted to mediate this by structuring discussion around

vignettes of 'typical' young people. This study is strengthened by its mixed methods design and its use of multiple qualitative methods, and inclusion of both pharmacy personnel and young people to triangulate research findings on a sensitive subject.

Our quantitative findings differ substantially from an analysis of Kenya's DHS (KDHS) data, which found that nationwide, 13% of Kenyan women aged 15-24 currently using contraception reported obtaining it at a commercial drug seller (Radovich et al., 2018). There may be several reasons for this, in addition to the four years between the KDHS and our own data collection. Our study area was a peri-urban setting while the DHS analysis uses nationwide data. Over 70% of Kenya's population is rural (The World Bank, 2018). Finally, our study's inclusion of emergency contraception and measuring contraception use at last sexual intercourse (rather than 'current use') is also a likely contributor. Twelve percent of participants in this study used emergency contraception at last sexual intercourse, and the KDHS did not specifically capture emergency contraception use (Kenya National Bureau of Statistics et al., 2015). The DHS's measures of contraception 'current use' in general has been previously critiqued for not being able to capture contraceptive methods which may be used periodically, including ECP (Marston et al., 2017). Our link between ECP purchasers and pharmacies are in line with earlier data from urban Kenya, which indicated that upwards of 96% of adult women needing emergency contraception obtained it at a pharmacy (International Consortium for Emergency Contraception, 2013a).

By contrast, our qualitative findings were largely in line with previous research. One systematic review featuring studies mostly from high-income countries (HICs) affirms that young people appreciate pharmacies for their convenience, speed of service and ease of contraception access (Gonsalves and Hindin, 2017). However, this review also reported mixed evidence (all from HICs) as to whether pharmacy services were considered 'private' (Gonsalves and Hindin, 2017), while our study found an almost universal appreciation of pharmacies for their anonymity/privacy. This difference may be a result of different dispensing protocols and establishment layouts in pharmacies and public health facilities in

HICs vs LMICs. Evidence from other LMICs corroborates our findings that among young people (Cartwright et al., 2019), and the general population (Peterson et al., 2019), pharmacies' contraception services are appreciated for the privacy offered.

While this study focused on pharmacies, its findings also cover perceptions around how contraception services are delivered to young people in public health facilities. Pharmacies were naturally contrasted with health facilities when participants explained young people's preferences and were perceived to be everything that health facilities were not: fast, private and non-limiting. The extra 'procedures' required to obtain contraception in health facilities – which in many cases are unnecessary (World Health Organization, 2016b) and have been demonstrated in other settings to limit access (Grossman et al., 2006, Leeman, 2007) - were especially unwelcome for young people, who were uninterested in extended counselling and wary of laboratory tests. As a result, pharmacy services were deemed more 'predictable' than those obtained in health facilities (public or private).

For Kenya, pharmacies are likely to remain a preferred choice of contraception as long as barrier methods and short-acting forms of contraception are popular with young people (Kenya National Bureau of Statistics et al., 2015). Policymakers should therefore recognize their role as contraception providers, especially for a community's younger members. Finding ways to link the myriad licensed pharmacies to focal points in public health facilities could strengthen a supportive 'network' of accessible and appealing contraception services available to young people. A similar hub-and-spoke approach is used in the implementation of Kenya's broader Community Health Strategy, where community health volunteers are embedded within the community and report back to a facility-based community health extension worker (Oliver et al., 2015). Such a system, complemented by improved adolescent-friendliness of public health facilities, would also enable easier referral of young people to providers who can offer them more effective forms of contraception. However none of this can succeed

without taking needed steps to improve pharmacy regulation, personnel training, and the overall quality of services (Gonsalves et al., 2019b).

Our data revealed that shops were the second most popular source of contraception for young men. The reliance on shops and lower-level drug dispensaries is seen elsewhere in the region: one survey in Nigeria found that among young people age 15 to 24, around half sourced their contraception from 'chemists/patent medicine shops' (a cadre of establishment below pharmacies, which does not exist in Kenya) (Oye-Adeniran et al., 2005). Unfortunately, exploring shops in further detail was beyond the scope of our data collection. Additional research is needed to understand how to incorporate these more informal sources into contraception interventions. That said, integrating them into the broader 'network' of contraception providers for young people will be even more challenging: lower-level drug dispensers are only peripherally associated with the health system in many settings, while shops are not associated at all.

Finally, we must acknowledge those still left behind. Of participants who reported ever having sex, almost half of them (49%) had *not* used any modern contraception at last sexual intercourse. Aside from those who wished to conceive, these are young people who are not being reached by the current network of public and private health facilities, pharmacies, and even neighbourhood shops. They are a reminder that improving the quality of services in these outlets is necessary but not sufficient to address young people's contraceptive needs. There is a continued need for multi-sectoral interventions, including comprehensive sexuality education, to increase demand for contraception among youth (dispelling myths, addressing taboos and stigma, and increasing agency) (World Health Organization, 2017b), address barriers to accessing it (including community norms around acceptability) (High-Impact Practices in Family Planning (HIPs), 2015), and promote uptake of highly effective forms of contraception.

Young people in Coastal Kenya steadily rely on pharmacies for contraception and often prefer them to health facility services. Many of the pharmacy qualities most appreciated by young participants are also hallmarks of youth-friendly health services, which should be available in any outlet a young person accesses health services (Erulkar et al., 2005, World Health Organization, 2012a). If a young person chooses to use modern contraception, their selection of an outlet will be determined by several factors, including the type of contraception desired, living situation, and relationship status. Collaboration between health facilities and retail pharmacies at local levels can exchange operational strengths between these providers. Then, wherever a young person presents for contraceptive services, they encounter one part of a supportive network of quality providers.

Competing Interests

None declared.

Acknowledgements

We appreciate the support of Jefferson Mwaisaka and Winnie Wangari. Our sincere thanks to all data collectors and participants. The manuscript represents the view of the named authors only.

Funding Statement

This work was partially supported by the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP).

Data availability statement

The full deidentified quantitative dataset can be made available on request to corresponding author. Qualitative data cannot be shared publicly, as consent procedures for participants did not include making full interview and focus group discussion transcripts publicly available. However, transcript excerpts are available to researchers on request from the corresponding author and following approval from the University of Nairobi/Kenyatta National Hospital Ethics Committee (contact via uonknh_erc@uonbi.ac.ke).

Author contributorship

LG conceived of the study and developed the protocol with substantive input from KW and AMH. PG, was Principal Investigator of the AMADILLO study and thereby supported LG in setting up this study's infrastructure in Kenya. LG trained and supervised data collectors, with guidance from PG. JAC and MW developed the statistical analysis plan. LG led the manuscript writing with substantive input from KW and AMH. All authors reviewed and edited drafts.

4.6 Supplementary Material

The *BMJ Open* publication included several instruments as supplementary material: focus group discussion guide, in-depth interview guide for young contraception purchasers, key informant interview guide and relevant survey components. These can be found in Appendix 1.

Supplementary Table 4.1 Selected characteristics of young people purchasing contraception at a pharmacy, shop, or any other source

	Pharmacy (N=153)	Shop (N=29)	Any other source (N=61)
Age			
18-19	27 (18%)	6 (21%)	10 (16%)
20+	126 (82%)	23 (79%)	51 (84%)
Sex			
Male	80 (52%)	24 (83%)	28 (46%)
Female	73 (48%)	5 (17%)	33 (54%)
Education			
Primary or below	60 (39%)	7 (24%)	29 (48%)
Secondary or above	93 (61%)	22 (76%)	32 (52%)
Relationship status			
Single	46 (30%)	10 (34%)	25 (41%)
Dating	86 (56%)	18 (62%)	11 (18%)
Cohabiting/Married	21 (14%)	1 (3%)	25 (41%)
Children			
No	139 (91%)	28 (97%)	37 (61%)
Yes	14 (9%)	1 (3%)	24 (39%)
Living situation			
Lives alone	30 (20%)	3 (10%)	6 (10%)

Lives with family (dependent)	113 (74%)	25 (86%)	32 (53%)
Lives with child or partner	10 (7%)	1 (3%)	23 (38%)
Contraception purchased			
Condom	120 (78%)	28 (97%)	33 (54%)
ECP	24 (16%)	1 (3%)	5 (8%)
Pills/Injections	9 (6%)	0 (0%)	23 (38%)

5 Pharmacists as youth-friendly service providers: documenting condom and emergency contraception dispensing in Kenya

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Keywords: youth; pharmacy; family planning; contraception; sexual and reproductive health; low-income country;

Published in the *International Journal of Public Health* 22 May, 2020

https://link.springer.com/article/10.1007/s00038-020-01348-9

5.1 Abstract

Objectives: This Kenya-based study ascertained whether pharmacies were an untapped source of 'youth-friendly' health services by determining 1) whether young people (aged 18-24) could successfully obtain condoms and emergency contraception (ECP); 2) if contraceptives were dispensed according to national guidelines; and 3) how young people felt about obtaining ECP and condoms from pharmacy personnel.

Methods: This study used several methods to capture and cross-check purchasing experiences as reported by young people with those of dispensing pharmacy personnel. These included: focus group discussions; in-depth interviews; key informant interviews; and mystery shoppers.

Results: When in stock, young people were successfully able to obtain ECP and condoms from pharmacies. Counselling was sporadic: when it happened, it was not always accurate. Despite a lack of counselling, young people reported being satisfied with the quick, transactional interaction with pharmacy personnel.

Conclusion: The brief, transactional interactions between pharmacy personnel and young clients appear to be 'youth-friendly enough'. While there is room to strengthen the services provided (improving both accuracy and scope), this should be done in a manner that does not fundamentally alter the current interaction.

5.2 Introduction

There are over 1.2 billion young people between the ages of 15-24 in the world today, 86% of whom live in low- and middle-income countries (United Nations Secretariat, 2015). Young people face special vulnerabilities related to their sexual and reproductive health (SRH) and wellbeing (World Health Organization, 2018a, Patton et al., 2009). They also struggle to obtain and use SRH information and services and family planning commodities from health facilities and health care providers (Chandra-

Mouli et al., 2014). As a result, in many regions, young women wanting to avoid pregnancy can be up to twice as likely as adult women to have an unmet need for modern contraception (Guttmacher Institute, 2010). Data from 61 low- and middle-income countries (LMICs) estimate that 33 million women aged 15-24 have an unmet need for contraception (MacQuarrie, 2014).

In response, many countries have introduced 'youth-friendly health services' aimed at improving care for young clients by ensuring quality services meet established criteria around equitability, accessibility, acceptability, appropriateness, and effectiveness (World Health Organization, 2012a). However, challenges to effectively designing, implementing or scaling up these services mean that, in practice, facility-based youth-friendly health services may be unavailable or underutilized by their target population (Chandra-Mouli et al., 2015, High-Impact Practices in Family Planning (HIPs), 2015, Chandra-Mouli et al., 2014). Additionally, public sector facilities may not always have short-acting forms of contraception (particularly emergency contraception) available (Riley et al., 2018).

For youth unwilling or unable to go to a health facility, pharmacy provision of contraception - that is, over-the-counter (openly accessible at a pharmacy), or behind-the-counter (dispensing contingent on evaluation from a pharmacist) provision of contraceptives - can help to overcome barriers to access for young people (World Health Organization, 2017a, Chandra-Mouli et al., 2014). Studies from France, Australia, Canada, and the United Kingdom demonstrate that improved access to emergency contraception (ECP) through pharmacies results in high utilization among youth (Hobbs et al., 2011a, Marston et al., 2005, Moreau et al., 2006a, Moreau et al., 2006b, Soon et al., 2005, Hobbs et al., 2011b). Additional studies have assessed how pharmacy access is operationalized (pharmacist personnel's feelings about dispensing, young people's actual ability to purchase contraception) (Gonsalves and Hindin, 2017). Data from Kenya, Nigeria and Ethiopia also suggest that young people and unmarried people access emergency contraception from pharmacies (Corroon et al., 2016, Gold, 2011); however

there is a general paucity of documentation from LMICs on what this access looks like in practice (Gonsalves and Hindin, 2017).

In Kenya, young people between the ages of 15 and 24 constitute one-fifth of the total population (Kenya National Bureau of Statistics, 2010). The 2014 Kenya Demographic and Health Survey found that short-acting modern contraceptive methods – condoms, pills and injectables, particularly – were popular among both married and unmarried sexually active young women aged 15-24 (Kenya National Bureau of Statistics et al., 2015). However, it also noted that among currently married young women, 23.0% of 15-19 year-olds and 18.9% of 20-24 year-olds still have an unmet need for family planning. Among sexually active unmarried women, 49.9% of 15-19 year-olds and 30.7% of 20-24 year-olds are not currently using any contraceptive.

Over the last twenty years, Kenya's government has increasingly prioritized SRH programming for this age group, with an Adolescent Reproductive Health Policy (2003) which aimed to double the use of modern contraceptives among 15-24 year-olds by 2015 (Kenya Ministry of Planning and National Development and Kenya Ministry of Health, 2003) and the updated 2015 Adolescent Sexual and Reproductive Health Strategy aspiring to have 75% of 15-24 year-olds using a condom at sexual debut by 2025 (Kenya Ministry of Health, 2015b). Additionally, Kenya's National Family Planning Guidelines for Service Providers expressly supported provision of contraceptive services for adolescents and youth(Kenya Ministry of Health, 2018).

Importantly, these Family Planning Guidelines also authorize pharmacies to dispense various forms of contraception, including emergency contraception and male condoms (Kenya Ministry of Health, 2018). These can be accessed for free in Kenyan public facilities (Keesara et al., 2015b) and are available for purchase from private pharmacies (sometimes locally referred to as "chemists"). Specifically, for emergency contraception (ECP), the guidelines authorize two available ECP types for pharmacies (Kenya

Ministry of Health, 2018): combined oral contraceptives (the Yuzpe method), and dedicated progestin-only ECPs. The first dose for all available methods should be taken as soon as possible after unprotected sex, up to 120 hours (World Health Organization, 2018b). Anyone dispensing ECP is expected to explain how it works and possible side effects, inform users of other available family planning methods, counsel on STIs or HIV/AIDS risks and testing, and refer for any needed SRH services. In dispensing condoms, the guidelines indicate that clients should be advised on proper use and disposal.

Against a backdrop of continued unmet need for contraception and supportive national policies for pharmacy provision of contraception, this study aimed to determine whether pharmacies in Coastal Kenya, might be an untapped potential source of youth-friendly modern contraceptive sources. Specifically, we aimed to answer three questions: 1) can youth (aged 18-24) successfully obtain emergency contraception and condoms from pharmacies; 2) are these contraceptives dispensed according to Kenya's National Family Planning Guidelines; and 3) how do youth purchasing ECP or condoms act and react to the experience?

5.3 Methods

This analysis was part of a broader, mixed methods study aiming to understand what drives young people in Kwale County in need of any contraception to obtain it from pharmacies. Emergency contraception and condoms are the focus of this analysis given their over-the-counter availability globally (International Consortium for Emergency Contraception, 2013b), their popularity among young people in the study area (data unpublished), their connection to a single sex act, and the fact that they are self-administered (rather than requiring intervention from a trained provider).

Kwale County is one of six counties in Kenya's former Coast province, and young people aged 15-24 are estimated to comprise 19% of the County's total population (Kwale County Economic Planning Division, 2017). This study took place in the peri-urban towns of Kwale and Ukunda, as well as the stretch of

highway connecting the two. Data was collected between November 2017 and March 2018. Young data collectors, speaking both English and Swahili, were recruited from the study area and from nearby Mombasa and specifically trained for this study. As captured in Table 5.1, this study used several methods to capture and cross-check experiences as reported by young people aged 18-24 who might purchase contraception from pharmacies, and pharmacy personnel tasked with dispensing contraception.

Table 5.1 Description of study methods (Kenya, 2017-2018)

	Participant inclusion criteria	Topics addressed	N	Youth perspective	Dispenser perspective
Focus Group Discussions	• Age 18-24	• Locations in the community where young people obtain contraception and why • The type of young person who would rely on each given location	6 (58 participants)	x	
In-depth interviews	• Age 18-24 • Recently purchased contraception from pharmacy	• Detailing personal experience buying contraception from a pharmacy • Reasons for choosing to buy contraception at a pharmacy	18	x	
Key Informant Interviews	• Age 18+ • Currently works (in any capacity) at pharmacy OR • Pharmacy-related stakeholder (Ministry of Health; professional association; non-governmental organization)	• General personal/pharmacy policies for dispensing contraception • Detailing personal experience dispensing contraception to young people • Feelings about dispensing contraception to young people	19 (pharmacy personnel) 6 (stakeholders)		x
Mystery shopper	*Trained data collectors (aged 18-24) served as mystery clients*	• Documenting purchase-related interactions with pharmacy personnel • Objective assessment of the interaction	142 visits	x	x

Six Focus Group Discussions (FGDs) with young people aged 18-24 (three FGDs with young men, three with young women) were conducted with 8-10 participants each. We also conducted 18 in-depth interviews with young people who had recently purchased some form of contraception from a pharmacy. Recent-purchasers were recruited through local pharmacies: after a young person had purchased the contraception, participating pharmacists were instructed to provide a leaflet with information about the study to the client. Additionally, one young data collector spent three evenings stationed outside of two pharmacies with high client traffic and recruited young people who had just purchased contraception.

Data collectors mapped all the pharmacies in the study area. Pharmacies (whether open or closed at the time of the visit) were mapped via digital form with an embedded geolocator. A total of 60 pharmacies were enumerated. Data collectors conducted interviews of pharmacy personnel in a random sample of the enumerated pharmacies. A total of 19 interviews were conducted, and data collectors interviewed whomever they found dispensing medicines behind the counter, regardless of their qualifications or formal role. An additional six key-informant interviews were conducted with Kwale County and Federal-level Ministry of Health stakeholders, as well as representatives from the Pharmaceutical Society of Kenya (the professional association for practicing pharmacists) and non-governmental organizations working on contraception access.

During the mapping process, 50 of the 60 pharmacies also consented to be visited by mystery shoppers. Two of the 50 participating pharmacies were permanently closed when data collection began, leaving 48 pharmacies to be visited by each shopper. Three mystery shoppers (two male, one female) visited these pharmacies with fictitious personas reflecting common situations in which a young Kenyan would need contraception. The personas (further detailed in Table 5.2) were developed jointly with youth from the area and informed by preliminary findings from the qualitative data collection described above. Mystery shoppers were provided a set amount of money with which to purchase their assigned contraceptive. All

mystery shoppers were instructed to answer questions put to them by pharmacy attendants; however, their self-initiated interactions were limited to asking for their specific contraception. Each mystery shopper piloted their persona in two pharmacies outside of the study area prior to beginning data collection.

Table 5.2 Description of mystery shopper personas (Kenya, 2018)

Mystery Shopper (MS)	**Persona description** *Characters were developed to reflect common scenarios which might send a young person to a pharmacy for ECP or condom. Additionally, they reflect typical backstories, concerns, and knowledge that young people purchasers might have.*
MS 1 Emergency contraception (female)	Student, 22 years old. Had sex with her boyfriend two days ago. They used a condom, but it burst. This is her first time using ECP. She does not know her boyfriend's HIV status but is only worried about pregnancy, not HIV/STIs. Has 100 Kenyan shillings to purchase ECP.
MS 2 Emergency contraception (male)	Student, 21 years old. Has a girlfriend but he doesn't use a condom during sex because 'he trusts her' – they use ECP instead. He is purchasing ECP on his girlfriend's behalf and does not know the instructions for use. Has 100 Kenyan shillings to purchase ECP.
MS 3 Condom (male)	Secondary school graduate, 19 years old. Single, known as a 'hit and run' (someone who has sex with many women but does not date them). He is going to a party in the evening, and wants to purchase condoms in advance. Knows about HIV/STIs but more worried about pregnancy. Has 50 Kenyan shillings to purchase condoms.

5.3.1 Data Collection

Semi-structured interview guides were developed and used for focus group discussions, key informant interviews, and in-depth interviews. After obtaining informed consent from participants, all FGDs and interviews were audio recorded. Qualitative data collection was in Swahili, English, or a mix of the two, depending on the participant's preference. The time and location of interviews were set based on participants' availability and preference: in the case of pharmacy personnel and stakeholders, this was often the participant's place of work. Mystery shoppers were provided with short, semi-structured digital forms to complete on mobile phones. The forms were adapted from a previous family planning mystery shopper study (Chin-Quee et al., 2006) and included questions about the pharmacy, its staff,

and the purchase-related interaction. Mystery shoppers were instructed to complete the form immediately after each visit.

This study received ethics approval from the Ethikkommission Nordwest- und Zentralschweiz (EKNZ) (Req-2017-00389) in Basel, Switzerland, as well as the University of Nairobi/Kenyatta National Hospital in Nairobi, Kenya.

5.3.2 Analysis

All qualitative data was transcribed and translated (if necessary) into English. Data collection and analysis were informed by an iterative approach, allowing for adapting and modifying of question guides and checklists as data collection evolved. The qualitative data were analysed through thematic analysis, using inductive and deductive coding (the latter of which was informed by a research objective to understand dispensing practice) on an initial cross-section of transcripts to develop a coding framework. Qualitative analyses were conducted in Atlas.ti Version 8. Mystery shopper data was analysed in Stata Version 14, with analysis consisting of descriptive statistics.

5.4 Results

5.4.1 Young people successfully obtain condoms and ECP from pharmacies

Focus Group Discussion and interviews indicated that young people could readily access both emergency contraception and condoms from pharmacies in the study area. The mystery shopper exercise confirmed this. As seen in Table 5.3, emergency contraceptive pills and condoms – when in stock – were always dispensed to the mystery shoppers. The female ECP shopper successfully purchased emergency contraception in every pharmacy she visited. The male ECP shopper was nearly as successful, being denied ECP in only one pharmacy due to its being out of stock. The condom shopper was able to purchase a pack of three condoms at 33 pharmacies and left empty-handed if condoms were out of

stock (in six pharmacies) or if they were too expensive (in five pharmacies). One additional pharmacy did not sell condoms, and two more pharmacies were closed when visited.

Table 5.3 Number of pharmacies visited, number of successful purchases, and 'additional interactions' (above and beyond the purchasing itself) between pharmacy personnel and mystery shopper, by mystery shopper (Kenya, 2018)

	Pharmacies visited (N=48)	**Successfully purchased family planning**	**Any additional interaction***	**Additional interaction details**
Mystery Shopper (MS)		n (%)	n (%)**	(n)***
MS 1 Emergency contraception (female)	47	47(100)	8(17.0)	• Timing of unprotected sex (1) • MS age and student status (1) • Brand description/recommendation (6) • Instructions on use (4)
MS 2 Emergency contraception (male)	48	47(98)	4(8.5)	• Timing of unprotected sex (1) • Whether MS knew how to use ECP (1) • Brand description/ recommendation (1) • Instructions on use (2)
MS 3 Condom (male)	47	33(70)	4(12.1)	• Brand description/ recommendation (4)
Total	**142**	**127(89)**	**16(12.6)**	

**additional interactions were described as any interaction beyond the purchase itself, and were broadly grouped into three categories: 1) assessment of need/prior use; 2) personal questions; 3) assistance selecting contraception (including instructions on use)*

*** percentages are presented as a proportion of any additional interaction in pharmacies where contraception was successfully purchased.*

***number of pharmacies where additional interaction took place – note, multiple interactions may have taken place in the same pharmacy.

5.4.2 Condoms and ECP are not consistently dispensed with counselling

Most interview participants reported that young clients only received counselling if they requested it. Otherwise, they were just given the contraception.

> "We don't bother unless they ask us, 'Oh, I don't know how to use this.' That is when we can explain but if they don't, we just dispense and they are gone." – Pharmacy attendant (no formal training) (Pharmacy A2).

> "When you ask questions, they [pharmacy personnel] explain to you and they advise you…unless you do not want advice. But when you ask any question on family planning, they answer you." – Youth interview 10, female, has purchased ECP and condoms.

Among pharmacy personnel who admitted that they dispensed contraception without counselling, some did so under an assumption that a client asking for a specific product already knew how to use it.

> "now they will want for example, the emergency pill…sometimes, there is that kind of atmosphere with the person, so you dispense it because they kind of know what they want, they have asked their friends."- Pharmaceutical technologist (Pharmacy F2).

More often, however, pharmacy personnel indicated that they could see that a young client did not want questions, advice, or prying.

> "A girl coming to buy e-pills…just telling them how to use that drug is a challenge, she will pick it up and right away put it in her bag and does not want any explanation about it from you." – Pharmacy personnel (training not specified), (Pharmacy B1).

Several pharmacy personnel insisted that young clients received some counselling when purchasing emergency contraception. However, the counselling described consisted of ECP counselling and eligibility screening based on inaccurate information. For example, participants thought ECP was usable

only up to 72 hours following unprotected sex, rather than 120 hours. This may be a result of commercial brands of ECP in Kenya still being labelled for use up to 72 hours, and pharmacy personnel reading this labelling.

> [re-enacting a purchase with a fellow pharmacy attendant] "When you have had sex, let not 72 hours pass… after 72 hours this drug will not be of help but before that it is okay. And it is important to know your safe days…so, if you are sure you are unsafe I will sell to you the drug." – Pharmacist (Pharmacy C10).

Reported counselling also included warnings that 'overuse' of ECP could result in health problems (another unfounded concern).

> "I tell her that these [emergency] pills are good and bad as well, because if you use them consecutively for six months, they might cause a growth in your stomach. Other times, it is said they can bring problems when you are trying to have a baby." – Pharmaceutical technologist (Pharmacy C9).

In practice, the mystery shopper exercise (detailed in Table 5.3) confirmed a lack of engagement between pharmacy personnel and young people, including around issues which would ensure quality service provision. For example, each ECP shopper was asked about the timing of unprotected sex (critical for determining eligibility) in only one pharmacy. ECP shoppers received instructions on how to take the pills – also an expected interaction - in four pharmacies for the female ECP shopper, and twice for the male ECP shopper.

The lack of engagement also extended to unnecessary questioning. ECP shoppers were asked very few intimate questions regarding age, relationship status, and/or whether they were students (none of which are relevant to determining their ability to access ECP). In one pharmacy, for example, the female ECP shopper reported receiving a 'little lecture' from a 'shocked' pharmacy attendant. The male ECP

shopper also reported that one pharmacist indicated that he should 'give money to his girlfriend so she could come herself'; however, he was still able to purchase the ECP. Finally, in a handful of interactions, pharmacy personnel shared their personal views on ECP brands, including perceived differences in cost, effectiveness, and quality, as well as personal favourites.

Engagement between pharmacy personnel and the condom mystery shopper was even more hands-off: the *only* non-purchase-related interaction for this shopper was pharmacy personnel in four pharmacies sharing their personal preference for condom brands. It is worth emphasizing that any interactions documented by the three mystery shoppers were the exception rather than the norm: in 111 out of a total 127 mystery shopper-pharmacist interactions, shoppers entered, requested their contraceptive, received it, paid for it, and left. There was no additional interaction with the person behind the counter.

5.4.3 Young people are pleasantly surprised by polite, transactional purchasing experiences

Both pharmacy personnel and youth participants reported that young purchasers initially approached pharmacies with trepidation. Young purchasers worried about the pharmacy attendant being older and/or of the opposite sex; what they would be required to disclose about their personal lives; and what lecture they might have to endure as a result.

> "I was relieved, because I thought he was going to judge me or lecture me, but it was a relief knowing it was easy to purchase. I thought he was going to ask if I had an ID and [say] that I was still young and what in the world was I going to do with them because they were meant for adults…but he did not." – Youth interview 16, male, has purchased ECP and condoms.

As a result, both groups reported that young people sometimes sent friends or partners to purchase on their behalf. If they went themselves, participants reported the young person waiting to purchase contraceptives until the pharmacy was empty.

> [Describing a young person purchasing a condom] "It is something that needs a lot of courage in a young person…some send others instead. Some wait until no others customer is present at the chemist. They check first [and then] they approach. Even if he came first, others get served first and then go so that he may get his turn. He'll say, 'I'm in no rush, serve them.'" -Trained pharmacist or pharmaceutical technologist (not specified), (Pharmacy D5).

Once in the pharmacy, young people had strategies to keep their contraceptive purchase discreet.

> "Say for example, a young man comes in and he wants 'Trust' [a popular condom brand]. He will gesture, pointing. 'Can I have that?' He is pointing, so, if you are not keen you might not know what the young man wants. Alternatively, they will use coded language, which luckily enough, we happen to know." – Pharmacist (Pharmacy I1).

Specific codewords identified included 'lifesavers' or 'our tablets' for emergency contraception and 'balloon' or 'socks' for condoms. The use of codes and gestures (pointing, or miming what was needed) stemmed from discomfort or embarrassment with requesting these contraceptive methods out loud or being overheard by other customers. This same fear contributed to young participants' appreciation of brisk, transactional interactions with pharmacy personnel, devoid of counselling.

> "He did not give me any advice, because when I went there, I did not want any stories. I wanted him to give me what I wanted [and] then I leave. I did not want to create a conversation because I feared other people could walk in and find me purchasing" – Youth interview 17, male, has purchased condoms.

After the purchase was complete, young purchasers indicated they left in a hurry, with a lingering worry that a pharmacy attendant would think poorly of them. However, overall, despite needing to "gather courage" to enter the shop, every young purchaser interviewed described polite, transactional experiences purchasing condoms and emergency contraception. In fact, more than one third of the

young purchasers interviewed reported that they had purchased contraception from pharmacies more than once.

> "The interaction is very fast, because you want to buy and leave. He served me well, because he took it that I was a young person who just wants to avoid the pregnancy and protect herself." – Youth interview 10, female, has purchased ECP and condoms.

5.5 Discussion

Our findings indicated that a young Kenyan, aged 18-24 who wished to purchase either condoms or emergency contraception from a pharmacy could expect to successfully do so via a brisk, non-intrusive interaction with pharmacy personnel. This meant that young ECP purchasers rarely received eligibility screening or instruction on use. However, it also meant that pharmacy personnel rarely subjected young purchasers to unnecessary values-based questioning related to marital/relationship status, age, or the appropriateness of engaging in sex. With some exceptions, counselling was only provided when the client asked for it (in line with previous findings from a mystery shopper exercise in Kenya (Liambila et al., 2010)), out of an assumption that the young purchaser prioritized speed and discretion over information. When this happened, young clients were satisfied with the information they received and way it was conveyed. Interactions with pharmacy personnel that were neutral at worst and warm at best left them pleasantly surprised and more comfortable returning to the pharmacy in the future. The pharmacy purchase experience in its current form, for these contraception types, is 'youth-friendly enough'.

Recognition that young people should be able to access quality health services, including SRH services, in a 'youth-friendly' environment has resulted in a focus on improved public SRH services (Chandra-Mouli et al., 2015, UNAIDS Inter-agency Task Team on Young People, 2006). The role of the private sector, specifically pharmacies, as an important source of contraception has been less clear. WHO's 2001

consensus statement from a Global Consultation on Adolescent Friendly Health Services acknowledged that adolescents used pharmacies and that these anonymous, rapid, and numerous contraception sources warranted further study (World Health Organization, 2002). Nearly 15 years later, a systematic review found that assessments of most out-of-facility interventions (including pharmacies) as effective providers of ASRH services were still lacking (Denno et al., 2015). This study is contributing to the body of knowledge by documenting the role of pharmacies as a source of youth-friendly services.

Clients vote with their feet and in Kenya, as in many countries, the popularity of pharmacies for ECP is clear (Benevides et al., 2014, Liambila and Gathitu, 2013, Kenya National Bureau of Statistics et al., 2015). Progestin-only emergency contraception in particular has been extensively studied and deemed safe (World Health Organization, 2018b) and appropriate for over-the-counter sale (International Consortium for Emergency Contraception, 2013b), as condoms are. This makes engagement with a pharmacist (per global evidence), ideal but not necessary. That said, these current interactions are still a missed opportunity to discuss SRH more broadly and bridge interested young people to a more regular form of contraception. The challenge, therefore, is to improve pharmacy personnel-youth interactions around ECP and condom dispensing without fundamentally modifying an interaction which appears to be youth-friendly enough for young people (Liambila and Gathitu, 2013).

Creative ways to unobtrusively link young customers with additional information or services (Liambila and Gathitu, 2013), such as a digital health campaign(L'Engle et al., 2016) or an easy-to-read leaflet in a bag (Both and Samuel, 2014), can provide young people with instructions on use and further contraception referrals they may be open to, at a moment of their choosing. Youth-targeted information and education (IEC) materials displayed in pharmacies (Both and Samuel, 2014) can provide basic information, address common concerns, and encourage young people to speak up and discuss their purchase with pharmacy personnel. IEC materials also become a resource for pharmacy personnel themselves.

This study demonstrated that there appear to be lingering and pervasive misconceptions among trained and untrained pharmacy personnel about ECP's effectiveness beyond 72 hours as well as its safety. Despite clear consensus about ECP's safety and window of use (World Health Organization, 2010), the misinformation about ECP's safety is not limited to pharmacists. A previous review demonstrated that a variety of providers in various LMIC settings shared concerns about ECP possibly causing congenital abnormalities, infertility, even cancer (Dawson et al., 2015). There is also apparent disconnect between what national (and international) guidelines say for ECP's window of use (120 hours) and what registered drugs on the market advertise (72 hours). This discrepancy likely contributes to continued confusion among pharmacy personnel.

Collaboration between professional associations, pharmaceutical training institutions, Ministry of Health, and even ECP retailers, can provide pharmacy personnel with improved pre-service training as well as in-service refreshers (Liambila and Gathitu, 2013, Benevides et al., 2014) and resources which dispel myths and reinforce important messages around ECP and contraception more broadly. Any initiatives to strengthen pharmacy services will have to consider opportunities and challenges created by their dual role as health service provider and for-profit business. For example, at present, pharmacists will not likely deny a young person contraception; at the same time, they have no particular incentive to provide additional counselling.

This study and analysis had certain limitations. The goal of the mystery shopper exercise was to observe dispensing practices of pharmacy personnel, without any prompting from a client. As such, this exercise could not probe pharmacy personnel on their beliefs about emergency contraception or systematically test the accuracy of the ECP-related counselling among pharmacy personnel: further research might explore these. Additionally, during the early rounds of interviews with pharmacists, we discovered barrier methods like condom and the post-facto ECP were not always considered 'family planning' by this group. This created a challenge during data analysis in determining whether ECP was included when

pharmacy personnel shared their thoughts about contraception in general: as a result, we only included data that made explicit reference to ECP or condoms. Also, as we visited all pharmacies to obtain consent for a mystery shopper visit prior to the exercise, there is a risk of observation bias – that is, pharmacies modifying their normal treatment of young people knowing that one customer might be a mystery shopper. That said, our mystery shopper exercise only began about two months after the initial visit. Finally, social desirability bias likely caused participants to overstate the level of pharmacist-youth engagement for the benefit of our data collectors. This would explain the discrepancies between qualitative participants reporting more engagement than our mystery shoppers observed in practice, and reinforces the benefit and importance of triangulation across different methods, especially in research which explores culturally sensitive topics.

5.5.1 Conclusion

As a preferred source of condoms and ECP for young people, this study demonstrated that pharmacies in Coastal Kenya currently dispense ECP and condoms in a manner responsive to young customers' self-reported needs. In Kenya, pharmacies have an essential role to play in youth SRH service provision, which could be capitalized upon under the country's broader health agenda. In 2017, Kenya's president unveiled his 'Big Four' development agenda, which included universal health coverage as one pillar (Otinga, 2018). Under this umbrella, there has been interest to link with private sector healthcare providers in order to improve the reach of health services beyond what the public sector can offer (The Star, 2018).

If pharmacy-based care were considered under this initiative, it would necessitate close collaboration with pharmacy stakeholders, public health service providers, and especially young people to ensure quality of care, and continued youth-friendliness. However, for an otherwise healthy young person, a

visit with the neighbourhood pharmacist may be their only health system engagement for their SRH: exploring improvements and expansions of SRH services in pharmacies is a worthwhile undertaking.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest

The authors declare that they have no conflict of interest. [funding information included in title page]

Research involving human participants

"All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (include name of committee + reference number) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards."

Informed consent

"Informed consent was obtained from all individual participants included in the study."

Acknowledgments:

We appreciate the technical advice from Lale Say and Elena Broaddus-Shea, and the support of Jefferson Mwaisaka and Winnie Wangari. This work was partially supported by the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP). The manuscript represents the view of the named authors only.

6 Regulating pharmacists as contraception providers: A qualitative study from Coastal Kenya on injectable contraception provision to youth

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Published in *PLOS ONE* on 19 December, 2019

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0226133

6.1 Abstract

Young people worldwide are often reticent to access family planning services from public health facilities: instead, they choose to get contraception from private, retail pharmacies. In Kenya, certain contraceptives are available in pharmacies: these include injectables, which can be dispensed but not administered, according national guidelines. However, Kenya struggles with enforcement of its pharmacy regulations and addressing illegal activity. Therefore, in this qualitative study, we assessed private pharmacies as an existing source of injectable contraception for young Kenyans (age 18-24), and investigated the perceived quality of service provision. This study used: focus group discussions (6) with young community members; in-depth interviews (18) with youth who had purchased contraception from pharmacies; key informant interviews with pharmacy personnel and pharmacy stakeholders (25); and a mystery shopper (visiting 45 pharmacies).

The study found that for injectable contraception, private pharmacies had expanded to service provision, and pharmacy personnel's roles had transcended formal or informal training previously received – young people could both purchase and be injected in many pharmacies. Pharmacies were perceived to lack consistent quality or strong regulation, resulting in young clients, pharmacy personnel, and regulators being concerned about illegal activity. Participants' suggestions to improve pharmacy service quality and regulation compliance focused on empowering consumers to demand quality service; strengthening regulatory mechanisms; expanding training opportunities to personnel in private pharmacies; and establishing a quality-based 'brand' for pharmacies.

Kenya's recent commitments to universal health coverage and interest in revising pharmacy policy provide an opportunity to improve pharmacy quality. Multi-pronged initiatives with both public and private partners are needed to improve pharmacy practice, update and enforce regulations, and educate the public. Additionally, the advent of self-administrable injectables present a new possible role

for pharmacies, and could offer young clients a clean, discreet place to self-inject, with pharmacy personnel serving as educators and dispensers.

6.2 Introduction

Young people around the world are often reticent to access sexual and reproductive health (SRH) services, including family planning services, from public health facilities – well-established obstacles include provider bias, a lack of privacy, few contraceptive options, limited financial resources, and legal and policy (real or presumed) barriers (High-Impact Practices in Family Planning (HIPs), 2015). Instead, they may seek contraception from non-judgmental, confidential, and convenient sources: retail pharmacies provide one such option (Gonsalves and Hindin, 2017, High-Impact Practices in Family Planning (HIPs), 2013). Pharmacies are sources of contraceptive commodities and services (High-Impact Practices in Family Planning (HIPs), 2013), particularly condoms, emergency contraception, and daily oral contraceptive pills, all of which can be accessed informally or formally without prescriptions in many countries (OCs OTC Working Group, 2018, International Consortium for Emergency Contraception, 2018). Very effective injectable contraceptives (Curtis et al., 2016), including the popular depot medroxyprogesterone acetate (DMPA) are also sold (Riley et al., 2017).

For both contraceptive and broader health services, the role of pharmacists in low- and middle-income countries (LMICs) has rapidly broadened into that of a service provider. A Cochrane review in 2013 described the health impacts of pharmacist-provided services, finding that they could positively-impact certain clinical outcomes related to management of non-communicable diseases (e.g. management of glucose levels for diabetic clients, as well as management of hypertension and asthma) and reduce visits to healthcare providers (Pande et al., 2013). However, enthusiasm for using pharmacies to expand the reach of health services is tempered with apprehension about the quality of services provided: two systematic reviews of pharmacy services in LMICs found common problems in counselling and

questioning of clients, inaccurate diagnoses, poor referral, inappropriate medicine sales, and a lack of adherence to prescribing and advising protocols (Smith, 2009b, Miller and Goodman, 2016).

6.2.1 Retail pharmacy policy in Kenya

In Kenya, private retail pharmacies (locally referred to as *chemist shops*), are registered, regulated and inspected by the Ministry of Health's specialized agency, the Pharmacy and Poisons Board (PPB) (National Council for Law Reporting, 1957 (revised 2012)). The PPB is also tasked with licensing pharmacy professionals, and registering and regulating the manufacture and sale of medicines and medical devices (National Council for Law Reporting, 1957 (revised 2012)). Pharmacy compliance standards are determined by the country's Pharmacy and Poisons Act (National Council for Law Reporting, 1957 (revised 2012)), originally drafted in 1957 when pharmacy activities were traditionally limited to drug supply and dispensing. Private pharmacies can only be legally opened by registered pharmacists (requiring a five-year bachelor's degree in pharmacy or higher) or pharmaceutical technologists (requiring a two year, post-secondary diploma program) (National Council for Law Reporting, 1957 (revised 2012)). Once open, they operate independently as for-profit businesses, fully removed from the commodity procurement, reporting, and training infrastructure used in public sector pharmacies. Private pharmacy registrations must be renewed annually (National Council for Law Reporting, 1957 (revised 2012)). These private pharmacies are the only legally recognized tier of retail drug outlet, making Kenya unique in a region where other countries also accredit lower-tier drug shops (Riley et al., 2017).

Pharmacists and pharmaceutical technologists must renew their licenses ever year (Aywak et al., 2017). Throughout their practicing career and as a mechanism for maintaining and building knowledge and skills, pharmacists and pharmaceutical technologists have to complete a certain number of 'continuing professional development' (CPD) credits per year. A number of membership-based professional

societies, including the Kenya Pharmaceutical Association (for pharmaceutical technologists) and the Pharmaceutical Society of Kenya (for pharmacists) have traditionally carried out CPD for their respective cadres (Kenya Ministry of Health - Pharmacy and Poisons Board, 2013, Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2013). That said, CPD programs have been challenged by a limited capacity to regulate and enforce CPD requirements, poor organization, and limited support from pharmacists' employers (Kenya Ministry of Medical Services and Kenya Ministry of Public Health and Sanitation, 2013).

6.2.2 Kenyan policies on contraception provision through pharmacies, including to young people

For contraception specifically, Kenya's 2009 National Family Planning Guidelines, indicate that an array of commodities, including condoms, emergency contraception, daily contraceptive pills, and injectables can be dispensed in pharmacies (Kenya Ministry of Health, 2010). Both progestin-only injectables (such as DMPA) as well as combined injectable contraceptives are available in private pharmacies, with a single note adding that the client is to be referred for the injection itself (Kenya Ministry of Health, 2010).

Young people's ability to access contraception was strongly supported by Kenya's Adolescent Reproductive Health Policy in 2003, which aimed to double the use of modern contraceptives among 15-24 year-old by 2015 (Kenya Ministry of Planning and National Development and Kenya Ministry of Health, 2003). The updated 2015 Adolescent Sexual and Reproductive Health Strategy affirmed a commitment to promoting young people's sexual and reproductive health and rights, and acknowledged the need for strategic partnerships between the public and private sector to ensure SRH services were delivered in a manner responsive to adolescents' specific needs and vulnerabilities (Kenya Ministry of Health, 2015b). That said, there are no specific references to the role that pharmacies play in

contraception provision (injectable or otherwise) in these adolescent-specific strategic documents. Additionally, pharmacy practice guidance documents also contain no instructions on pharmacy provision of any contraception (Riley et al., 2017).

According to the 2014 Kenya Demographic and Health Survey, the unmet need for family planning among young women remains high: 23.0% of currently married 15-19 year-old women and 18.9% of currently married 20-24 year-old women. Among sexually active, unmarried young women, 49.9% of 15-19 year-olds and 30.7% of 20-24 year-olds are not currently using any contraceptive (Kenya National Bureau of Statistics et al., 2015). Short-acting modern family methods available through pharmacies (including injectable contraception) have proven popular among sexually active young women (Kenya National Bureau of Statistics et al., 2015), and private pharmacies in Kenya are a relied-upon source of contraception commodities for adults and young people alike (Kenya National Bureau of Statistics et al., 2015, Ostola et al., 2015, Corroon et al., 2016).

It is important to support contraception provision through the existing channels preferred by young people. However, like many countries, Kenya struggles with enforcement of its existing pharmacy regulations and addressing illegal pharmacy activity (Riley et al., 2017, Monja, 2018). Additionally, there has been minimal documentation as to the quality of contraception provision services in Kenyan pharmacies, and we are not aware of any study exploring the quality of injectable contraception provision to young clients in particular. Therefore, in this qualitative study, we investigated private pharmacies as an existing source of injectable contraception for young Kenyans, and sought to understand the quality of the service provision and perceived influence of the current regulatory climate.

6.3 Methods

This study was embedded in a larger mixed methods study which sought to understand how young people aged 18-24 in Coastal Kenya use their local pharmacies to access contraception. Data collection took place in Kwale County (one of six counties in Kenya's former Coast Province), specifically the peri-urban towns and surroundings of Kwale and Ukunda between November 2017 and March 2018. Table 6.1 describes all the methods used.

Table 6.1 Description of study methods

	Participant inclusion criteria	Topics addressed	N
Focus Group Discussions	• Age 18-24 • Community members	• What happens when young people attempt to access contraception in pharmacies • Feelings about contraception service quality at all access points • Suggestions to improve the regulation and quality of pharmacy services	6 (58 participants)
In-depth interviews	• Age 18-24 • Recently purchased contraception at pharmacy	• Actual experience accessing injectable or other contraception in private pharmacies • Feelings about quality of contraceptive service provided • Suggestions to improve the regulation and quality of pharmacy services	18
Key Informant Interviews	• Age 18+ • Pharmacy personnel (any role) OR • Pharmacy-related stakeholder (Ministry of Health; regulatory agency; professional association; non-governmental organization)	• Current pharmacy policies in Kenya, especially as they relate to injectable provision for young people • What happens when young people attempt to access contraception in pharmacies • Suggestions to improve the regulation and quality of pharmacy services	19 (pharmacy personnel) 6 (stakeholders)
Mystery shopper	*Trained youth data collector served as mystery client*	• Actual experience accessing injectable contraception in private pharmacies	45 visits

We used several qualitative methods to describe the experience dispensing and administering injectable contraception and other contraceptive methods, both from the perspectives of young people who might purchase it, as well as the pharmacy personnel who provide it. Six focus group discussions (FGDs) were carried out with people aged 18-24, purposively recruited by data collectors from the study area. Three FGDs were conducted with men, and three with women; there were 8-10 participants in each FGD. Additionally, 18 in-depth interviews (IDI) were conducted with young people aged 18-24 who had recently purchased contraception from a pharmacy. IDI participants were recruited in one of two ways: 1) selected pharmacists in the study area handed out leaflets with the study information to young customers following their purchase of any contraception, and; 2) a young data collector spent three evenings stationed outside of two popular pharmacies recruiting young people who had just purchased contraception by describing the study and collecting their contact information.

Data collectors also conducted a full mapping of the pharmacies in the study area, identifying 60 pharmacies in total. Pharmacies (whether open or closed at the time of the visit) were mapped via digital form with an embedded geolocator. From this group, a random sample of pharmacies was generated, and data collectors conducted key informant interviews with one person working at the pharmacy (their training or formal role was not important), until saturation was reached. A total of 19 interviews of pharmacy personnel were conducted. Additionally, six interviews were conducted with representatives of the Ministry of Health, Pharmacy and Poisons Board (PPB), the Pharmaceutical Society of Kenya, and non-governmental organizations working on contraceptive commodity development and provision. These stakeholders worked at either County (Kwale-based), Regional (Mombasa-based), or National (Nairobi-based) levels.

Fifty of the 60 enumerated pharmacies also consented to be visited by a mystery shopper, whose objective was to observe first-hand whether any family planning injection was available for sale in each pharmacy and to inquire whether she could be injected on site. Our mystery shopper was a young data

collector who assumed the fictional persona of a typical young Kenyan who would need an injectable contraception. Her persona, developed in close collaboration with young people in the community and our youth data collectors, was: a newly married 24-year-old with no children, who had received her first ever Depo Provera injection from a health clinic three months prior (making her due for another injection). Our mystery shopper successfully visited 45 of the 50 pharmacies.

6.3.1 Data collection

All qualitative methods used semi-structured guides. FGD, IDI and key-informant interviews were audio-recorded with participants' permission and data was collected in Swahili, English or a mix of the two, based on participant preference. The time and location of interviews were set based on participants' availability and preference. The mystery shopper was provided with short, semi-structured digital forms to complete on mobile phones. The form was adapted from a previous family planning mystery shopper study (Chin-Quee et al., 2006) and included questions about the pharmacy, its staff, and the purchase-related interaction. The mystery shopper was instructed to complete the form immediately after each visit. We were able to determine the registration status of 40 of the 45 pharmacies visited by the mystery shopper using an official list of registered pharmacies in Kwale County, obtained from Kenya's Pharmacy and Poisons Board.

6.3.2 Analysis

All qualitative data was transcribed and translated (if necessary) into English. The qualitative data were analysed through an iterative approach to thematic analysis, using inductive and deductive (informed by a research objective to understand dispensing practice) coding on an initial cross-section of transcripts to develop a coding framework. Qualitative analyses were conducted in Atlas.ti Version 8. Quantitative data from the mystery shopper exercise was analysed in Stata Version 14, and analyses consisted of descriptive statistics and a chi-square test to test any association between a pharmacy being willing to

inject our mystery shopper and its registration status. Quantitative and qualitative results were triangulated across methods to validate findings.

6.3.3 Ethics

Informed consent was obtained from all participants in writing. This study received ethics approval from the Ethikkommission Nordwest- und Zentralschweiz (EKNZ) (Req-2017-00389) in Basel, Switzerland, as well as the University of Nairobi/Kenyatta National Hospital in Nairobi, Kenya (P274/05/2017).

6.4 Results

6.4.1 Current private pharmacy practice: Can young people obtain injectable contraception?

Participants confirmed that injectable contraceptives were routinely sold and administered in pharmacies. Youth interview participants who reported recently purchasing an injectable contraceptive indicated that they had also been injected at the pharmacy. The mystery shopper's experience reflected the qualitative findings as well. As can be seen in Table 6.2, the mystery shopper was told that she would be able to purchase the injection in 29 of the 45 (65%) pharmacy shops she visited; in the 16 (36%) where she could not purchase the injectable, it was because the injectable was either out of stock (15 pharmacies) or was not stocked at all (one pharmacy). In 44% of the visited pharmacies, the mystery shopper was told she could both purchase *and* receive the injection on site. However, in 12 (27%) pharmacies, she was told that the contraceptive injection was not available *and* that the pharmacy did not inject. It should be noted of the 21 (47%) pharmacies where the mystery shopper was told that she could *not* be injected on site, she reported that 12 referred her to either an individual or clinic qualified to provide the injections.

Table 6.2 Ability of mystery shopper to both purchase injectable contraception from the pharmacy and be injected on site, as reported to her by attending pharmacy personnel

	Can be injected on site		
Can purchase injectable	No (n=21)	Yes (n=24)	Total (n=45)
No (n=16)	27%	9%	36%

Yes (n=29)	20%	44%	64%
Total (n=45)	47%	53%	100%

Finally, of the 40 pharmacies visited by our mystery shopper whose registration status we could verify, almost two-thirds (63%) were not appropriately registered. Registration status was not significantly associated with being willing to inject (chi2 = .3274, P=.567).

In alignment with national family planning guidelines, pharmacy stakeholders and personnel all agreed that trained pharmacy personnel could dispense injectables. However, when it came to injectable administering, opinions and rationale diverged. All told, pharmacy stakeholders and personnel identified two ways in which clients purchasing injectable contraception could also be injected at a pharmacy: a qualified medical professional administers the injection (regulation-compliant); or a trained or untrained pharmacy personnel administers the injection (regulation non-compliant).

Some pharmacies (especially larger pharmacies) might be staffed by both a pharmacist/pharmaceutical technician to dispense medication *as well as* another medical professional who was also authorized to administer injections, such as a clinical officer or a nurse. In these scenarios, pharmacies effectively became a private, one-stop-shop for certain health services, including injectable contraception provision.

> "The other person who works here is the clinical officer…His roles are like those of giving injections. He told me not to give injections to anyone…He does that work…Other problems like chest problems, he listens to the heart like asthma or pneumonia, things like that. The rest, I am the one who does." – Pharmaceutical technologist

Alternatively, interviews with both pharmacy stakeholders and local pharmacy personnel also revealed that injections were also administered by pharmacists, pharmaceutical technicians and untrained pharmacy workers. Only one untrained pharmacy worker admitted to a data collector that she had been instructed to provide injections herself. Of the two additional interviewees who said that they personally

administered injections, in one of these cases the respondent – a nurse – also indicated that she also owned the pharmacy, which she was *not* authorized to do.

One additional, regulation-compliant option was a reciprocal referral system between pharmacies and nearby public or private clinics. Many interviewed pharmacy personnel who said that they would not inject clients themselves described themselves as having close ties to neighbourhood doctors or clinics (usually located very close to the pharmacy).

> "Aah I don't inject. There is a clinic in front here where they inject, so most times when they come, we sell them the injectable and she goes to get injected. The referral is just near here." – Pharmacist

Some respondents indicated that they would even offer to call a doctor at the clinic, to let them know a customer was coming. Many interviewed pharmacy personnel added that this relationship was reciprocal, and clinics would send clients to their pharmacy to purchase an injectable contraceptive.

6.4.2 Perception of quality of private pharmacy service provision

Both pharmacy regulators and young client participants agreed that private pharmacies lacked consistent quality. Participants were aware of the variation in whether and how injectables (and other contraception services) were provided and expressed concern about a lack of regulation among private pharmacies in Kenya. Both groups described an illegal part of the pharmacy sector, which included persons offering health products of doubtful quality (in the worst case, counterfeit); owning and operating a pharmacy without appropriate licensing or training; or dispensing commodities without trainings.

Youth participants indicated that a visit to a new pharmacy in the area risked the purchase of sub-standard commodities from an untrained worker in an unlicensed establishment.

> "Those who sell those drugs [in a pharmacy] most of them are not people who are qualified. Most of them are people from school, and being told to go and help there, the person will help. When you go there to buy drugs you find that he/she is selling otherwise, and those drugs were needed in another dose." – Youth female community member

Young community members also expressed concern at the government's inability to regulate this illegal activity.

> "The government should be keen on licensing these people that open up those chemist because there are things like medicine, [some] go through the right channel but others go through the back [illegal] door." – Youth male community member

For their part, regulators recognized that their ability to monitor with current resources was limited, and they indicated that they did not feel like they were able to keep pace with illegal pharmacies. One inspector described challenges to conducting mandated periodic inspections of the pharmacies in Kwale County:

> "You'll find that these [illegal pharmacies] they've just sprung up suddenly. When they find that we are heading towards that place, they normally close it. And they have …these social media network: the person will just text and say that 'PPB, their vehicle was seen somewhere in Kwale'. We move around and find that the illegal outlets are closed…so we have to wait for the next day. We try to [show] that we are going back to Mombasa and then come back maybe in the evening and see whether they are open." – Pharmacy and Poisons Board inspector

Regulators and other pharmacy stakeholders, therefore, shared young people's concerns about unqualified pharmacy personnel dispensing counterfeit commodities, including contraception commodities.

> "Quacks are people without any level of- any form of pharmaceutical training or any formal training. Maybe they were um, employed in a pharmacy …and then they've seen 'oh, this is a good business, it's about just giving drugs when people come!' and they set up their own pharmacy outlets. They may employ [pay] a registered professional who lends them their license. But the quack runs the show." **–** Pharmaceutical Society of Kenya board member

> "Especially at the Coast, it's very porous. They [drugs] come from Tanzania through unofficial routes – in buses, in suitcases. It's only the authorized medicines that should be in the market… Especially with the family planning commodities – we've had *problems.* Either they are counterfeit or falsified products, especially Postinor-2 [an emergency contraceptive pill] - we've received so many complaints." **–** Pharmacy and Poisons Board regulator

Regulators indicated that there were existing mechanisms for increasing accountability, but that these often worked better in theory than practice and did not necessarily deter illegal activity. For example, the Pharmacy and Poisons Board had implemented an SMS-based pharmacy registration system with the goal of providing community members with a tool to verify the registration status, licensed owner, and location of the pharmacy they visited. However, when asked how the system functioned in practice, one respondent noted:

> "People are using it but it's not up to what we were expecting initially, despite the fact that it is free of charge…It's only for the licensed [pharmacies]. Because, for the unlicensed, number one, they should not be there *(laughs)*, then secondly, uh, you don't have much control." – Pharmacy and Poisons Board regulator

6.4.3 Suggestions to improve pharmacy service quality and regulation compliance

Study participants had suggestions to improve service quality and regulation compliance in private pharmacies. One was educating consumers as to what they should look for when seeking quality pharmacy services and empower them to demand it.

> "We advise them [customers] to use drugs that are registered because there are some drugs that are from black market, so we advise them to [visit] a registered shop, ask for drugs that you can confirm if they are original drugs." – Trained pharmacist or pharmaceutical technologist (not specified)

> "I would like the chemist to keep papers to show that this is a doctor or a chemist attendant. So that we can avoid those who act to be doctors and they are not." – Young female contraception purchaser (injection)

Participants also indicated a desire to see regulatory mechanisms strengthened. In particular, county and national-level stakeholders and policies routinely referenced need for an overhaul of the country's Pharmacy and Poisons Act, expressing frustration that Act remained the source legislation for present-day pharmacy practice in Kenya, despite its not having kept pace with decades worth of changes in evidence and pharmacy practice. Respondents also speculated that the Act's punitive measures on unregistered pharmacies would hardly be considered a deterrent in modern-day Kenya.

Additionally, participants identified a need to improve opportunities for professionals working in retail pharmacies to participate in CPD and other training opportunities. They noted that trainings usually only actively targeted private pharmacy personnel when driven by a non-governmental organization, external donor initiative, or pharmaceutical company.

> "There is this organization called [international NGO] that has been empowering us, they call us to seminars and empower us on that, so then we are able to help the community with that information." –Pharmacist

Participants encouraged more of these strategic collaborations to reach private sector pharmacy personnel, in order to both reinforce existing skills but also expand their scope of authorized activities, including contraception provision activities.

> "For example, in the past we were unable to test for malaria in the chemist, but we were taken for training and nowadays we test. If donors would come and say we also want pharmacists to help [with family planning] injections, they help us. So that if someone comes and wants to be injected we can help such a client." – Trained pharmacist or pharmaceutical technologist (not specified)

Finally, a board member of the Pharmaceutical Society of Kenya suggested 'branding' pharmacies, that is, developing a visible and recognized mark of quality which pharmacies could join through demonstrated adherence to a set of standards. Such an exercise would require collaboration across governmental, non-governmental, and possibly private stakeholders. Incentives to join would include opportunities for training and the ability to provide an expanded set of services (as suggested above).

> "Let's say I own a pharmacy, my own personal pharmacy – I would want to train my staff on certain things: customer service, even pharmaceutical knowledge just to refresh their knowledge. We have partners who are ready to do that, so when we offer those kinds of [trainings], we believe a lot of pharmacists will want to join the chaining and branding initiative. And then of course because of the standards we'll have for joining, if you're a quack you won't join. You'll have to be a registered and licensed professional to join. And in this proposal, we're

proposing expanded services at the pharmacies. So, we need approval from- we need buy-in from the Ministry of Health." – Pharmaceutical Society of Kenya board member

6.5 Discussion

This study described a private retail pharmacy sector dispensing contraception with its own momentum, its regulators a few steps behind. Specifically for injectable contraception, in Kwale County under the current regulatory policy, some pharmacies had become 'one-stop-shops' when it came to injectable contraception. Clients wanting a contraceptive injection could often purchase the contraceptive and be injected on site, either through strategic collaborations with other health system personnel, or through pharmacy staff expanding their scope of services on their own (without authorization). These models are common around the world. Pharmacies are an established source for injectable contraception across Africa and Asia (High-Impact Practices in Family Planning (HIPs), 2013, Riley et al., 2017) and nurses, doctors, and other clinical officers have also been observed working as drug-dispensing (and administering) staff elsewhere in the region (Mayora et al., 2018), though there is a lack of evidence from LMICs evaluating these multidisciplinary collaborations between pharmacy personnel and other medical personnel (Pande et al., 2013). Similar to reports from this study of pharmacy personnel injecting clients, pharmacy personnel in Uganda have also reported providing injections themselves, without official authorization (Janowitz, 2012).

Regulators and young community members using pharmacies described the sector as being difficult to monitor, support, empower and track. This had a deleterious effect on the profession's reputation, including among the young people who relied on pharmacies as a source for contraception services. Our young community participants – even those who regularly purchased contraception from pharmacies - were all aware that among the private pharmacies in Kwale County, there were unregistered establishments with unqualified personnel dispensing poor-quality commodities. Young people

frequently cited uneducated pharmacy personnel as a drawback to accessing care at pharmacies and did not feel able to identify unqualified personnel themselves. Their concerns mirror findings elsewhere in the literature. One systematic review on the quality of private pharmacy services highlighted similar shortcomings across 30 studies in 15 countries relating to dispensing of appropriate medicines in correct dosages, a lack of qualified pharmacy personnel doing the dispensing, and varying quality in advice given to clients, if it was given at all (Smith, 2009b). Another systematic review looking at practices of 'specialized drug shops' in sub-Saharan Africa found 62 articles describing similar variance in pharmacy personnel's training, their knowledge, and dispensing practices (Wafula et al., 2012).

Pharmacy services in Kenya have received increasing attention over the last few years. There have been recent, controversial efforts to revise the Pharmacy and Poisons Act (CAP 244) (Otieno, 2018), and proposals to create a new regulatory agency, the Kenya Food and Drug Authority (Sunday, 2019). Additionally, in 2017 Kenya's president named universal health coverage as one of the country's four key development priorities. In this context, there is renewed interest to link with private sector healthcare providers in order to improve the reach of health services beyond what the public sector can offer (The Star, 2018). Now is the time to propose measures to improve the quality of pharmacy services and personnel. Participants in this study had several ideas in this regard.

Participants suggested measures to increase clients' awareness of and demand for regulated, quality pharmacy services. There is existing client-side awareness of the need for quality services: the concerns expressed by this study's participants are corroborated by recurring news coverage of illegal pharmacies, unqualified pharmacists, and counterfeit medicines (Monja, 2018). The existing SMS based system for clients to check the registration and ownership status for their neighbourhood pharmacy can help to improve client-side accountability. A similar proposed system to improve the quality, safety, and effective use of medicines available in Kenya would also apply unique codes to any imported and locally-manufactured medicines, so that clients could obtain SMS-based information on whether the drug was

real and registered, as well as its side effects (Thiong'o, 2019). However, Kenya's Pharmacy and Poisons Board will need adequate resources to ensure that pharmacy clients around the country are sensitized to these services and empowered to use them.

Participants also emphasized a need for improved government regulations, as well as improved access to CPD and other in-service training for retail pharmacy personnel. For contraceptive injections in particular, respondents recognized the opportunity to officially expand access of injectable provision by training pharmacy personnel to both dispense and inject. While this proposal is out of line with the with Kenya's current family planning guidance, a 2017 family planning task sharing brief from the World Health Organization indicated that pharmacists, and even pharmacy workers in certain circumstances, could administer injectable contraceptive services, provided they received appropriate training (World Health Organization, 2017c). Additionally, the very recent advent of self-administrable injectable contraception (DMPA-SC) and growing evidence that self-administration can match or improve rates of injection continuation as compared with provider administration (Kennedy et al., 2019), presents another possible role for pharmacy personnel: that of counsellor and dispenser, with pharmacies offering women a clean, discreet place to self-inject and safely dispose of their injectable.

Finally, the suggestion of a branding exercise to create a network of 'quality' pharmacies, brings together all of the above and describes a multi-faceted approach to improving pharmacies as contraception providers: client- and provider-focused interventions as well as improved regulatory capacity. The need to *holistically* change pharmacy practice has been recognized elsewhere in the literature (Mayora et al., 2018, Hermansyah et al., 2016, Smith, 2009a), notably in neighbouring Tanzania. For its lower-tier drug shops, Tanzania's accredited drug dispensing outlet (ADDO) program implemented a series of interventions to improve public-sector regulatory capacity; educate the public on pharmacy service quality and treatment compliance; train and supervise staff on dispensing skills; train drug shop owners on business skills; and provide business incentives for achieving ADDO

accreditation (for example, access to microfinancing, or the ability to sell an expanded set of essential medicine) (Rutta et al., 2015). Similar accreditation and social franchising programs have been launched in Liberia and Uganda (Rutta et al., 2015, Embrey, 2018), Thailand and Vietnam(Hermansyah et al., 2016), and are being explored in Bangladesh (Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, 2015, High-Impact Practices in Family Planning (HIPs), 2013). Accreditation programs combine business incentives with public sector standards-setting and may provide a rich potential ground for collaboration between Kenyan public sector regulatory agencies; educational institutions; professional associations; drug distributors; and individual retail pharmacies.

This study had some limitations. Our mystery shopper could only inquire as to whether she could receive a contraceptive injection on site, so in those cases where she was told on-site injection was possible, she could not confirm *who* would have administered it and had to rely on what she was told by the pharmacy personnel. As our mystery shopper was meant to reflect likely actions of a nervous young client, she was also not able to ask for the training or position of the person who assisted her. Our youth participants in focus group discussions may have felt uncomfortable discussing contraception in a group environment; we did our best to mitigate any discomfort by using a series of vignettes for participants to react to and having our data collectors keep any discussion from lingering on personal experiences. Additionally, during interviews with pharmacy personnel, the participant's background and training often came up in discussion; however, in an oversight, we did not systematically confirm training in all interviews, so there were some participants for whom this information was missing. Social desirability bias may have also caused certain interviewed pharmacy personnel to not report their dispensing practices accurately, especially if they knew they were out of line with regulations. However, a major strength of this study was the use of multiple methods and inclusion of both young clients and pharmacy personnel to triangulate actual pharmaceutical practices from the various reported practices.

6.6 Conclusion

Pharmacy personnel (trained and untrained) around the world serve as clients' primary point of contact with the health system. As observed in this study focusing on injectable contraception provision to young people, retail pharmacies have expanded to contraception service provision, and pharmacy personnel's roles have transcended formal or informal training previously received. However, Kenya like many other countries, faces challenges in monitoring the types of services available in pharmacies, the quality with which they are provided, and who does the providing. Public health initiatives, including those related to contraception, often struggle to engage with private providers who fall out of the public healthcare system. That said, investing in multi-pronged initiatives with both public and private partners to improve overall pharmacy practice, update and enforce regulations, and educate the public can strengthen services at young people's preferred point of care.

Acknowledgements:

We appreciate the support of Jefferson Mwaisaka and Winnie Wangari. This work was partially supported by the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP). The manuscript represents the view of the named authors only.

6.7 Supplementary Material

The PLOS ONE publication included several instruments as supplementary material: focus group discussion guide, in-depth interview guide for young contraception purchasers, key informant interview guide (for a person working in a pharmacy) and mystery injection shopper checklist. These can be found in Appendix 1.

7 Potentials and pitfalls of including pharmacies as adolescent-friendly contraception providers in LMICs

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Keywords: adolescent, contraception behaviour, pharmacies, family planning services

Published in *BMJ Sexual and Reproductive Health* on 11 August, 2020

https://srh.bmj.com/content/early/2020/08/10/bmjsrh-2020-200641

7.1 Pharmacies enabling youth 'self-care' in sexual and reproductive health

Youth (older adolescents and young adults between the ages of 15-24) face a variety of barriers when trying to access sexual and reproductive health (SRH) services – particularly contraceptive services – from health facilities (High-Impact Practices in Family Planning (HIPs), 2015). Policy restrictions and community norms which deem youth access 'inappropriate' can dissuade young people from going to a facility. Those who do go often encounter 'unfriendly' staff, and facilities with inconvenient opening hours or a lack of confidentiality and privacy (High-Impact Practices in Family Planning (HIPs), 2015).

In recent years, evidence on the safety and efficacy of contraceptives, coupled with global commitments by countries and donors to address health systems barriers and expand access to contraception (through Family Planning 2020 (Family Planning 2020, 2020) and other global initiatives), have resulted in key services and products being made available outside of health facilities (World Health Organization, 2017c). As a result, certain contraceptive services, including emergency contraception and daily contraceptive pills, are now available through retail pharmacies and drug shops (lower-tier establishments which do not employ a trained pharmacist, and are limited in the drugs they can dispense (High-Impact Practices in Family Planning (HIPs), 2013, World Health Organization, 2017a). Additionally, the recent advance of self-administered injectable contraception reflects a trend towards broader 'self-care' (individuals addressing their own health needs, with or without support of a health-care provider) and user autonomy in accessing and using modern contraception (World Health Organization, 2019c, Kennedy et al., 2019).

Pharmacies and drug shops, therefore, could be considered an important alternate contraception source for young people, especially in low- and middle-income countries (LMICs) (High-Impact Practices in Family Planning (HIPs), 2013). Yet they are not uniformly lauded as a panacea to meet young people's need for contraception. The breadth of contraception available in many pharmacies remains narrow.

Also, many LMICs struggle with illegal pharmacy activity: unregistered premises, untrained personnel, and/or substandard commodities makes the quality of services variable. So, to what extent can pharmacies and drug shops be a quality catalyst for empowering a young population around their SRH?

7.2 'Youth-friendly enough' – pharmacies as contraception providers to young people

Service provision to young people in general can be assessed by five tenets of quality, or adolescent/youth-"friendliness": accessibility, acceptability, appropriateness, effectiveness, equity (World Health Organization, 2012a). From a programming perspective, *all* five qualities must be present to ensure quality services are available to all young people who need them. However, studies which have explored young people's access to contraception services through pharmacies indicate that these standards may not be equally valued by young users (Gonsalves and Hindin, 2017).

Appropriateness (ensuring the *right* health services are provided) and effectiveness (ensuring the right services are delivered in the correct manner) are essential for health programmers and governments. However, young people encountering individual, family, and/or community resistance related to sexual activity value confidentiality and respectful treatment (both elements of acceptability) (World Health Organization, 2012a). Similarly, young people appreciate pharmacy services for their acceptability and accessibility: non-judgmental personnel (in certain settings), privacy (in certain settings), convenient locations and proximity, opening hours, speed of service, and ease of access (Gonsalves and Hindin, 2017). As a result, young people seek support from pharmacies and drug shops, even where there are concerns about service appropriateness, effectiveness, or cost. Put simply, young pharmacy customers prioritize a narrower set of 'quality' standards than health programmers or policy makers.

7.3 Attention to equity – financing contraception services in pharmacies

Pharmacy personnel providing contraception services and broader support for 'self-care' brings contraception closer to users of all ages. Additionally, 'self-care' has generated enthusiasm for its

potential to improve the cost-effectiveness of delivering SRH interventions. For pharmacy interventions, however, financing concerns remain: pharmacy services in many countries, particularly in LMICs, are often paid for out-of-pocket (a non-reimbursed, direct payment by the individual).

As identified by Remme and colleagues (Remme et al., 2019), evidence on how self-care interventions are financed is lacking, and with it insights into the equity (or lack thereof) of these interventions. For young customers, pharmacy access seems important, yet is it only well-off young people and those living in urban areas who take advantage of these services?

Our own research in peri-urban Coastal Kenya found young people reported contraception purchased at a pharmacy to be 'cheaper' than going to a health facility. Transport expenses, waiting time, and payment for provider-ordered tests made 'free' contraception services at public facilities surprisingly costly (Gonsalves et al., *in press*). However, even in settings where pharmacy purchases are objectively more expensive, we posit that with the exception of the very poorest, young users with less access to money are still likely to absorb the financial cost. For them, contraceptives purchased from private sources may still be less 'costly' than the financial and especially the *non-financial* costs of traveling to and being seen accessing services in a public health facility. Young users, therefore, may appear willing to shoulder the cost of contraception in pharmacies, while still being disproportionately burdened (as compared with adults) by the costs.

Research to understand young people's willingness to pay and their sources of income is needed, given that this is a population group is likely to be financially dependent on other household members. As contraceptive services are shared to private retail pharmacies, we urge caution to ensure that disproportionate financial burden does not shift to the consumer, even those groups who appear to be enthusiastic adopters.

7.4 Reaching 'quality' adolescent friendly health services in pharmacies

The enthusiasm for self-care as it relates to contraception services and the role that pharmacies can play is not unwarranted. In many countries, private pharmacies are already an integral part of the network of providers relied on by young people. Nonetheless, there is still much to be done to improve the current provision of contraception services to young people in pharmacies and drug shops around the world. We agree with Narasimhan and colleagues' assertion that 'self-care' (provided through pharmacies or otherwise) is not a 'shortcut' for countries to achieve universal health coverage (Narasimhan et al., 2019).

Making additional contraception services available in pharmacies cannot come without improved regulation and control of pharmacy services as well as multi-sectoral efforts to improve demand for and delivery of quality services. Providing contraception through pharmacies can overcome important barriers to accessibility and acceptability for young people. It does not, however, absolve the health system and governments of their responsibility to ensure young people are receiving appropriate and effective and affordable contraceptive services.

Author contributorship

LG developed the draft, with assistance from LS. All authors provided extensive edits of drafts. The manuscript represents the view of the named authors only.

Acknowledgements

The authors appreciate the technical contributions of Dr Veloshnee Govender.

8 General discussion and conclusions

8.1 Review of research objectives

Young people age 18-24 are a heterogenous population group. As such, no single contraceptive outlet (even the 'friendliest' public health facility) is likely to ever draw in all youth (Chandra-Mouli et al., 2014). Instead, understanding service provision and strengthening services in a variety of contraceptive outlets can ensure that young people have access to a constellation of quality contraceptive sources depending on their needs. This dissertation was prompted by recognition that much of the attention to improving contraceptive services for young people had traditionally focused on strengthening services in public health facilities. Private pharmacies, by contrast, while recognized as a valuable contraception outlet for this age group, have been less systematically studied. There was a need, therefore, to understand who chooses pharmacies, why they are perceived to be appealing, and what contraceptive services look like in a pharmacy.

As such, this dissertation used a systematic literature review followed by a mixed-methods study to develop an understanding of young people's experiences accessing contraception through pharmacies, globally and then in a peri-urban setting of an LMIC. The research was informed by three research objectives, initially described in Chapter 1.7. These objectives are 'answered' briefly in the table below, drawing from across key points from Chapters 3-7.

Table 8.1 Dissertation summary results

Research Objective	Summary results (additions to the literature)
Objective 1: Develop a comprehensive understanding of the experiences of young people worldwide who access contraception through pharmacies (Chapter 3)	• Pharmacies are appreciated for their: longer operating hours, accessible locations, speed and ease of access. Mixed appreciation for privacy. • Making ECP (and other SRH commodities) available through pharmacies without prescriptions does not result in adverse sexual health-related behaviours or outcomes • Young people can appropriately self-screen and use contraceptive products.

	• That said, young people and pharmacy personnel remain concerned that increased access does lead to poor health and behavioural outcomes. • Young people may leave empty handed if pharmacy personnel are unclear on guidelines, uncomfortable dispensing, or if legal minor or rural adolescent.
Objective 2: In Kwale County, Kenya, what kind of young person access contraception from pharmacies, and why? (Chapter 4)	• Pharmacies were the single most popular source of contraception used at last sex • Choice of contraception (particularly ECP and condoms) and living situation predict having gone to a pharmacy versus than any other source. • Pharmacies are appreciated for their: convenience, privacy, non-judgmental personnel, speed, and low cost.
Objective 3: Assess the contraception-dispensing practice of pharmacies in Kwale County, Kenya (Chapter 5 and 6)	• All contraception available in pharmacies is rarely dispensed with any screening or counselling • ECP and condoms are widely and easily (no gatekeeping) available • Injectable contraception also available for purchase, can be injected on site in some pharmacies • Young people were concerned by the quality (broadly defined) of pharmacy services.

The findings from Kwale County addressing Objectives 2 and 3 can be compared to a broader global context using the findings from the global systematic review conducted to address Objective 1. There are some similarities and a few notable discrepancies to briefly discuss – with the caveat that most literature included in the systematic review came from high-income settings. In both the primary research and the review, pharmacies were appreciated by young clients for similar qualities including: opening hours, locations, ease and speed of access. Where they differed was on perceived anonymity and privacy. The systematic review found that some studies reported these to be an advantage of pharmacy services, while others cited a lack of privacy as a concern. Meanwhile in the primary research, pharmacies were almost uniformly appreciated for the privacy and anonymity offered, particularly in comparison to public health facility services.

This difference may speak to how contraception services are provided in public health facilities and pharmacies in HICs versus LMICs. Had pharmacy personnel in Kwale been obliged to run young clients through screening protocols in the pharmacy before dispensing a commodity (for example, conducting a

patient consultation for every ECP request and ensuring the ECP is ingested on site, as is the case in Switzerland (Haag et al., 2019)), perhaps young people would have found the interactions less private. Similarly, if public health facilities in HIC settings were set up to be as 'open' as those in LMICs (e.g. family planning registration windows, public announcements inviting people waiting for contraceptive service to identify themselves), perhaps young clients in HICs would have seen pharmacy services as a welcome private alternative.

Separately, in both the systematic review and the primary research, pharmacy personnel expressed reservations around the safety and appropriateness of contraception they were dispensing for their young clients. Both the review and research found that contraception was often not dispensed with information, even when – as in the case of several studies in the review – information-provision was part of the dispensing guidelines. Additionally, as described in Chapter 3, six studies from the review which used mystery clients (five of which were from HIC settings) found that anywhere between 20-65% of the time, the clients were told they would not be able to obtain their desired contraception (ECP in five of six studies). The mystery clients in this study were more successful - the ECP mystery shoppers both successfully obtained their contraception in 47 of 48 pharmacies visited (94 out of 95 interactions).

That the findings from Kwale County highlighted some interesting differences between how pharmacy services are used, operated, and appreciated in LMIC vs HIC settings speaks to the benefit of further research in LMICs. The rest of this section places the Kwale County findings (Objectives 2 and 3) in a conceptual model with the broader SRH literature to address the overall dissertation aim of presenting an understanding of what drives young people aged 18-24 in Kwale County, Kenya to access contraception from pharmacies.

8.1.1 Conceptualizing young people's contraception-seeking behaviour

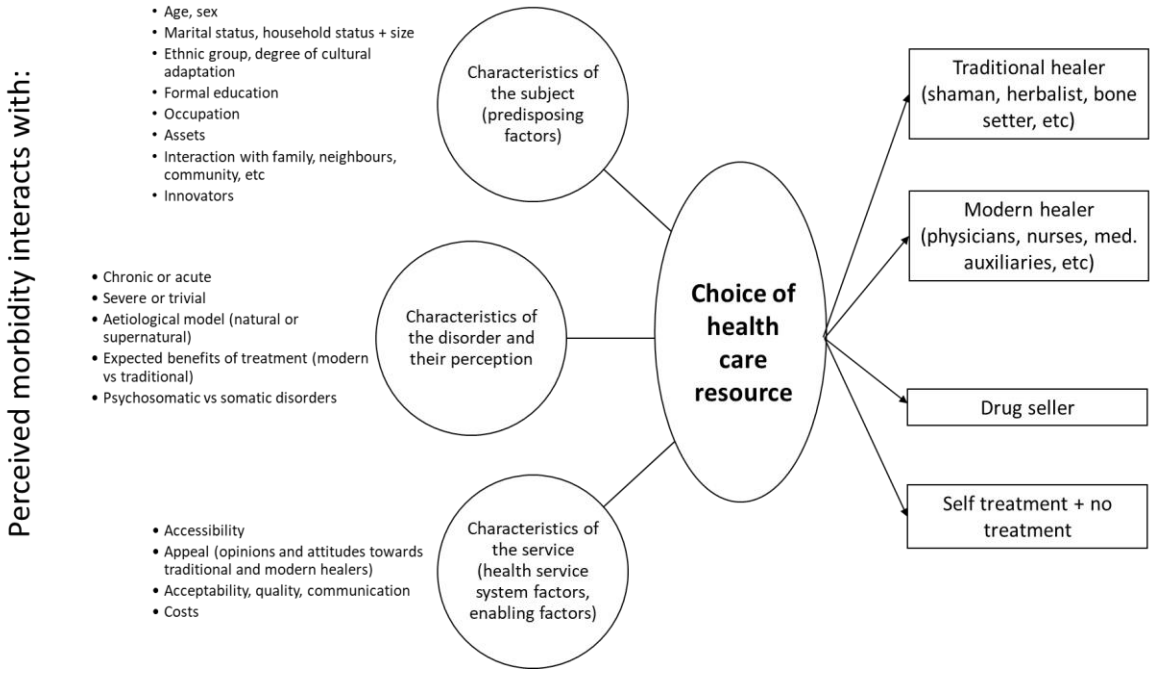
Behaviour-change theories including the Health Belief Model, the Theory of Reasoned Action and its expanded Theory of Planned Behaviour have been used to describe the complex factors that influence

an individual's intention or readiness to adopt a certain behaviour. Where the desired behaviour involves seeking health services, as is the case with this dissertation's focus on 'contraception-seeking', there are decades-worth of literature dedicated to understanding health-seeking behaviour.

'Pathways models' focus on the individual's journey and document a care-seeking process, starting with recognizing symptoms and continuing through seeking care, receiving treatment, reaching some 'resolution' (for example, recovery and rehabilitation) (Obrist et al., 2007, Kroeger, 1983). 'Determinants models' capture characteristics of users as well as characteristics of the health system and available services to explain *use* of a given health service (Mackian et al., 2004, Obrist et al., 2007). For example, Anderson's Behavioural Model of Health Services Use (the original and resulting iterations) identifies predisposing factors (traits of the individual like age, sex, race, education), need factors (their perceived need for health care, as well as objective health measures), and enabling factors (which either facilitate or hinder an individual's ability to access services) which influence health service use (Babitsch et al., 2012, Andersen, Aday and Andersen, 1974).

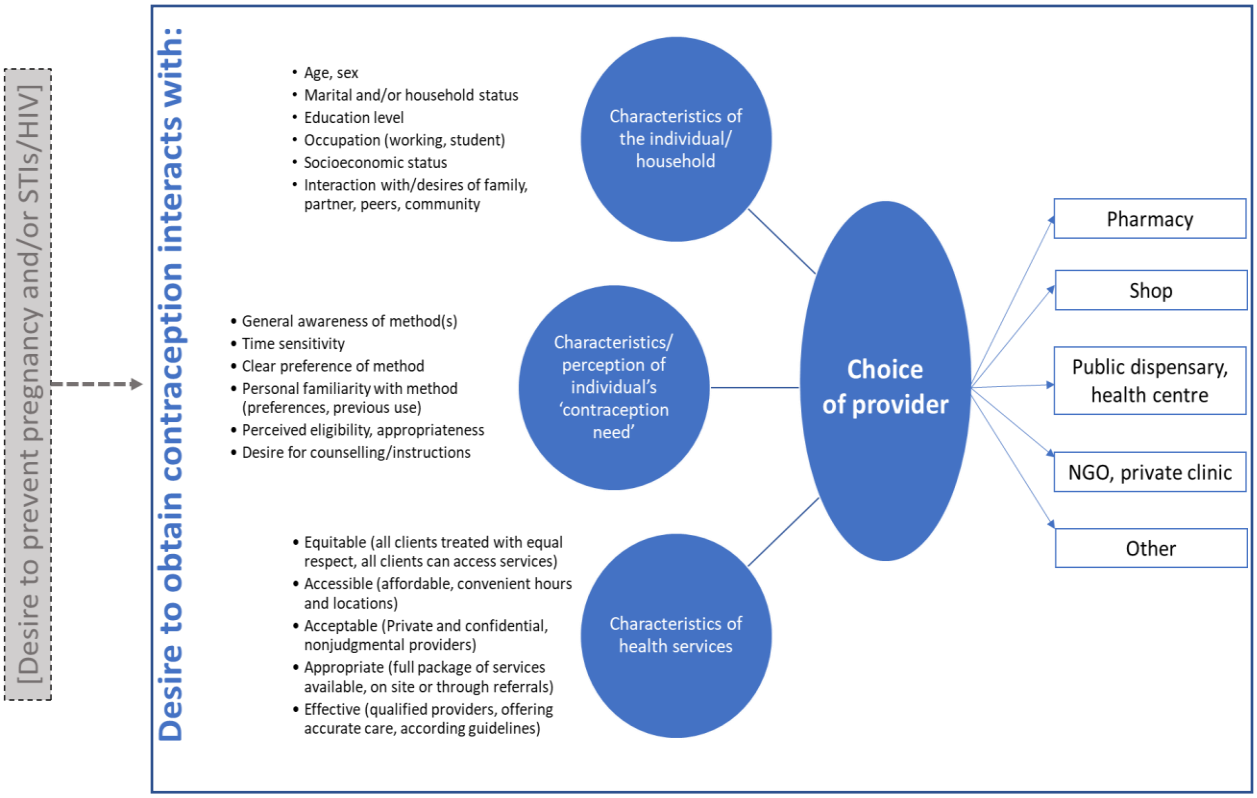
This dissertation makes use of another determinant model, developed by Axel Kroeger (Kroeger, 1983) (Figure 8.1), which considers how various determinants might influence an individual's choice of provider.

Figure 8.1 Original Kroeger framework (1983), reproduced



Kroeger's initial framework was developed to better understand individuals' choice of traditional versus 'modern' health providers in developing countries. An individual's 'perceived morbidity' (any ill-health, in the original framework) might result in that individual seeking care from a 'traditional healer' (herbalist, shaman, etc.), 'modern healer' (a physician, nurse, health worker, etc), 'drug seller' (not specified, but presumed to include pharmacy personnel), or opting for self-care (which was also grouped together with 'no treatment'). A combination of mediating variables would simultaneously influence the individual's choice of provider (or choice not to seek treatment at all), including: characteristics about the individual/household; characteristics/perception of the illness; and characteristics of the health service (health systems factors). In Figure 8.2 below, Kroeger's model is adapted for this research, and now captures factors influencing a young person in Coastal Kenya's choice of a contraception provider.

Figure 8.2 Determinants of contraception outlet among youth age 18-24 in Kwale County, Kenya (adapted from Kroeger)



'Perceived morbidity', has been replaced with a 'desire to obtain contraception', while provider options reflect those most commonly identified in Chapter 4. 'Desire to obtain contraception' is used rather than 'unmet need for contraception' to clearly distinguish this individual-level framework's starting point from commonly-used population-level indicators. It is also distinct from 'desire to prevent pregnancy and/or STIs' to distinguish it from individual-level behaviour change models which might be applied to this framework's preceding step, greyed out in Figure 8.2. The assumption here is that the individual wants to engage in protected sex and has decided to do something about it (obtain contraception). This dissertation and the model pick up at the remaining question: what influences their choice of contraception outlet?

'Individual/household characteristics' reflect characteristics identified in the survey and through FGDs with young people. 'Characteristics/perceptions of contraception need' refer to how the young person understands their own need for contraception, including their perceptions of which method is most

appropriate and their own knowledge about methods. Kroeger's original 'perceptions of the disorder' included reflections on the illness' severity and origins: variables which reflect differences in how an individual might seek health care for acute diarrhoea versus chronic back pain, for example. Whereas Kroeger's 'perceived morbidity' can be any range of illness, in this model, 'perceived morbidity' is constant: a desire to obtain contraception. Therefore, the determinants here reflect variations in that individual's understanding and familiarity of contraception types, their uses and their relative 'appropriateness' for that person's situation. Finally, the characteristics of health service has been updated to reflect the five elements of 'youth-friendliness' described in Chapter 1.

8.1.2 Framing the pharmacy-accessing experience

Using the *Determinants of contraception outlet model* displayed in Figure 8.2, this dissertation's findings and the broader ASRH literature demonstrate how a certain constellation of the above determinants would result in a young person choosing to go to pharmacy for contraception.

8.1.2.1 Characteristics of the individual/household

Chapter 4 found that young people who reported living alone were more likely to have used a pharmacy than their peers who reported living with their children or partner (in more of a 'head of household' role). The qualitative findings (see Box below) explain why additional differences among youth demographic categories were not observed or more pronounced. Here, pharmacies were described as a contraception outlet for anyone in the community. Among young people, married and unmarried, male and female, those living alone and those leading households, and those with and without children could and *did* get contraception from pharmacies.

It was also socially acceptable for young 'heads of households' (i.e. young people who are already married and/or parents) to more openly seek contraception from facilities. By contrast, their peers who are still seen as young 'dependents' (that is, living in a household headed by an older, non-spousal

family member) might need to 'sneak out' for contraception, a result of societal discomfort with unmarried young people accessing contraception (Chandra-Mouli et al., 2019). Those living alone in particular may have a more sporadic sex life (Chandra-Mouli et al., 2014), necessitating quick, unplanned trips to pharmacies and other easy-access outlets.

BOX 1. WHO GOES TO PHARMACIES FOR CONTRACEPTION – QUALITATIVE NOTES

Chapter 4 used quantitative data only to assess *who* [what kind of person] *goes to pharmacies to buy contraception,* while qualitative data was restricted to identifying the reasons *why pharmacies were appealing.* Here, qualitative results on 'who goes to pharmacies' are presented, feeding into sections 8.1.2.1 above and 8.1.2.2 below.

Characteristics of the individual/household: age and sex

Pharmacy personnel indicated that they sold contraception to a variety of individuals, including but not limited to young people. However, the *type* of contraception sold could be linked to a certain age and sex demographic. Condoms were almost exclusively purchased by men (of all ages, including young men). Emergency contraception was predominantly purchased by young women. Daily contraceptive pills and injection would be purchased by 'mature' women (older women of a reproductive age, usually married).

In the society mostly youths, you cannot see a lady like the age of my mom who comes here to buy P2 [Postinor-2, an ECP brand]. Most of them, they are the ones buying femiplan [a daily contraception pill] but the youths, my age like the university students, those in high school they are the ones using Postinor-2. Some men …they use Trust [a condom brand]…. - Pharmacy attendant (no formal training)

"The emergency pills I see are mostly popular to the young girls who are not married. The others for 21 days are for those who are married. They will say, "I can't use emergency pills because I am with my partner every day" And the other one will tell you, "if I use these [daily pills], is it every day that I am with my partner? The one day we are together is when I will take them." – Pharmaceutical Technologist

"[Condom] is for the males, while P2 is for the females" – Pharmacy attendant (no formal training)

Characteristics of the individual/household: marital and/or household status

Married young people were generally perceived to have more contraception options and contraception outlets to choose from. Unmarried individuals were perceived to be more heavily reliant on pharmacies.

"Young people fear going to the hospital, because someone should be married for her to get that one for months [likely injectable] or that one for years [implant or IUD]." -Youth female community member (Focus group discussion)

"If maybe you are single, mostly you will go to a chemist. But those that are married, you will find them going to hospital to be injected because at chemist there are no such services like that. So [the] status of someone contributes to where one is to go." Youth male community member *(Focus group discussion)*

BOX 1. WHO GOES TO PHARMACIES FOR CONTRACEPTION – QUALITATIVE NOTES (CONT.)

Characteristics of the individual/household: desires of partner

Pharmacies were perceived to be outlets where women could obtain contraception independent of their partner's wishes. This was the case for married and unmarried individuals.

"I decided to use the P2 because I did not want to use the condom because my partner refused. And I did not want to tell him so I decided on my part [to use P2]" – Young female purchaser: ECP

Characteristics/perception of individual's contraception need: time-sensitivity

Youth participants who purchased emergency contraception and condoms often alluded to buying these in preparation for or following a sexual encounter. These did not appear to be regularly scheduled.

"The lady I was to visit a certain morning…I [went] to the chemist first… after that, I called her and then she came." – Young male purchaser: condom

This 'emergency purchase' of contraception was even more pronounced for shops. Individuals who reported purchasing injection or daily contraceptive pills did not share this pressure, instead reporting desires to space birth for economic reasons.

8.1.2.2 Characteristics/perception of contraception need

Contraceptive needs can be met in many ways: obtaining contraception can be a spontaneous decision or require scheduling and coordination. Box 1 supports the idea of pharmacies serving 'time-sensitive' contraception needs, pre-sex or post-sex. Additionally, young pharmacy patrons likely went in with a method in mind, as evidenced by 'typical' interactions of young people coming in, requesting a specific commodity, paying for it, and leaving (Chapter 5). As has also been observed in Pakistan, preferred contraception also influenced the selection of outlet (Qureshi, 2010).

Chapter 4 found that condom and ECP users were much more likely to have gone to a pharmacy than their peers who reported use of another pharmacy-available contraception. As evidenced by Box 1, demographic characteristics of the individual (described previously) were closely linked with that individual's perception of their contraception need: pharmacy personnel reported associating contraception methods with a type of purchaser. ECP purchasers were female and unmarried, while condom purchasers were male and unmarried, or married and having sex with non-marital partner. Condoms, the most widely used contraception used at last sex in this study, have also long been

recognized for their popularity among young people (especially unmarried young people) because of their affordability and accessibility (Chandra-Mouli et al., 2014, UNFPA, 2016b).

Perceived eligibility for a given contraceptive method also influenced a young person's choice of provider. Some young people, including those who were married and/or had children, were perceived (by the community, health providers, and themselves) to be eligible for the full array of modern contraception methods. This included methods only available at facilities, such as intrauterine devices (IUDs) and implants. A survey of providers in Nigeria found health facility providers similarly restricting access to LARCs based on marital status or parity (Schwandt et al., 2017). Conversely, other groups, including unmarried youth, were perceived to be eligible to use a much narrower mix of methods, and relied more heavily on short-acting forms of contraception (a global trend (UNFPA, 2016b)). A young person may therefore choose a pharmacy in part because they perceive themselves to be eligible for a limited number of methods (which happen to be pharmacy-available).

Finally, 'perception of contraception need' is also influenced by an individual's desire and perceived need for counselling and instructions. With a preferred contraceptive in mind, young people would not go to a pharmacy expecting or seeking 'traditional' counselling on a full spectrum of contraceptive options. Chapter 5, which looked specifically into young people's experiences purchasing condoms and emergency contraception found that young people were wary of prolonged interactions, and concerned about intrusive questions, and/or having to engage with someone substantially older than them (or of the opposite sex). Similar findings were observed among postpartum women in Nairobi, who reported going to private providers (including pharmacies) in search of fast access to their preferred contraception and respectful treatment, not extended counselling and screening (Keesara et al., 2015a).

8.1.2.3 Characteristics of health services

For pharmacy users, the perceived accessibility and acceptability of pharmacy services as compared to other outlets was sufficient to overcome concerns about their appropriateness and effectiveness.

Accessible: Pharmacies were viewed as highly accessible and were appreciated by young clients for their opening hours, locations, and ease of access. Anyone who could pay for contraception was able to obtain it (equity implications are addressed below). Factors related to accessibility were among the top reasons pharmacies were appreciated by young people, for example: physical accessibility (geographic location, convenient opening hours) and financial affordability (including not only the price of services on site but indirect and opportunity costs to getting to services (Evans et al., Levesque et al., 2013)). Low use of health services is strongly tied to distance, for adolescents (Barker, 2007) as much as other age groups. One scoping review of determinants of patient choice of healthcare providers found service users are generally averse to travel time and prefer providers to be in close proximity (Victoor et al., 2012). This holds for contraception services in the region as well, where primary research and secondary analyses from sub-Saharan Africa found that distance to a provider of contraception services can be a barrier to contraceptive use (Zimmerman et al., 2019, Shiferaw et al., 2017, Silumbwe et al., 2018).

Acceptable: Unless a client specifically asked a question, pharmacy personnel and clients reported next-to-no interaction outside of the customer requesting the contraception and paying for it. Pharmacy personnel reported keeping interactions brief based on a perception that their young clients did not want the information (or anything that would otherwise lengthen the interaction). This allowed young clients to enter and exit with their desired commodity quickly, and speed of service was reported as an appreciated quality of pharmacy services. The 'hands-off' interactions also meant that pharmacy service were perceived to provide confidentiality and privacy. No information was collected from the young person: indeed, some reported sending in friends to make purchases on their behalf. Pharmacy personnel were perceived to be respectful and non-judgmental.

Appropriate and Effective: Standard contraceptive care includes counselling on an array of methods and the opportunity for a young client to make an informed decision as to the one best suited to their needs. If they come in with a method in mind, counselling procedures should ensure that a client's

understanding of the method and its appropriateness is accurate, provide instructions on use, and information on side effects (World Health Organization and Johns Hopkins Bloomberg School of Public Health Center for Communication Programs, 2018). Pharmacies did not consistently offer appropriate, effective services. All hands-off interactions reported (and appreciated by young clients) were devoid of the counselling described in Kenya's Family Planning Guidelines. There were various additional concerns about the 'quality' of the contraception-dispensing interactions. Nearly two thirds of the pharmacies visited by an injectable-purchasing mystery shopper were not appropriately registered. Chapter 6 found that young people were both aware of and concerned by illegal and substandard pharmacy activity, a documented problem across the region (Wafula et al., 2012). However, in choosing to go to pharmacies anyway, the advantages of pharmacy services superseded concerns about quality, as has been seen elsewhere (Keesara et al., 2015a).

Appropriate, effective services also indicate that providers can and should make use of referrals when necessary to ensure young clients get what they need (World Health Organization, 2012a). This would be of particular importance for pharmacies, who have fewer contraceptive methods available than health facility providers (in either public or private sectors) (Campbell et al., 2015b). However, referrals were not consistent. In 40% of visited pharmacies in our study area, a young person could both purchase injectable contraception and be administered on site. In some instances, pharmacies had developed regulation-compliant referral strategies – hiring appropriate health workers (like nurses, or doctors) to administer on site or linking with nearby facilities or clinics. However, in other cases, pharmacy personnel stepped outside their authorized roles and provided the injection themselves.

Equitable: As described in Chapter 5 and 6, contraception was widely available and young people (as reported by them and as observed by mystery shoppers) rarely had any issues obtaining them. Purchasers encountered polite, hands-off interactions with pharmacy personnel. Interestingly, the price of services was not reported as a factor which might limit access for some young people, despite family

planning services supposedly being available for free in public facilities (Radovich et al., 2019). There are two possible explanations for this.

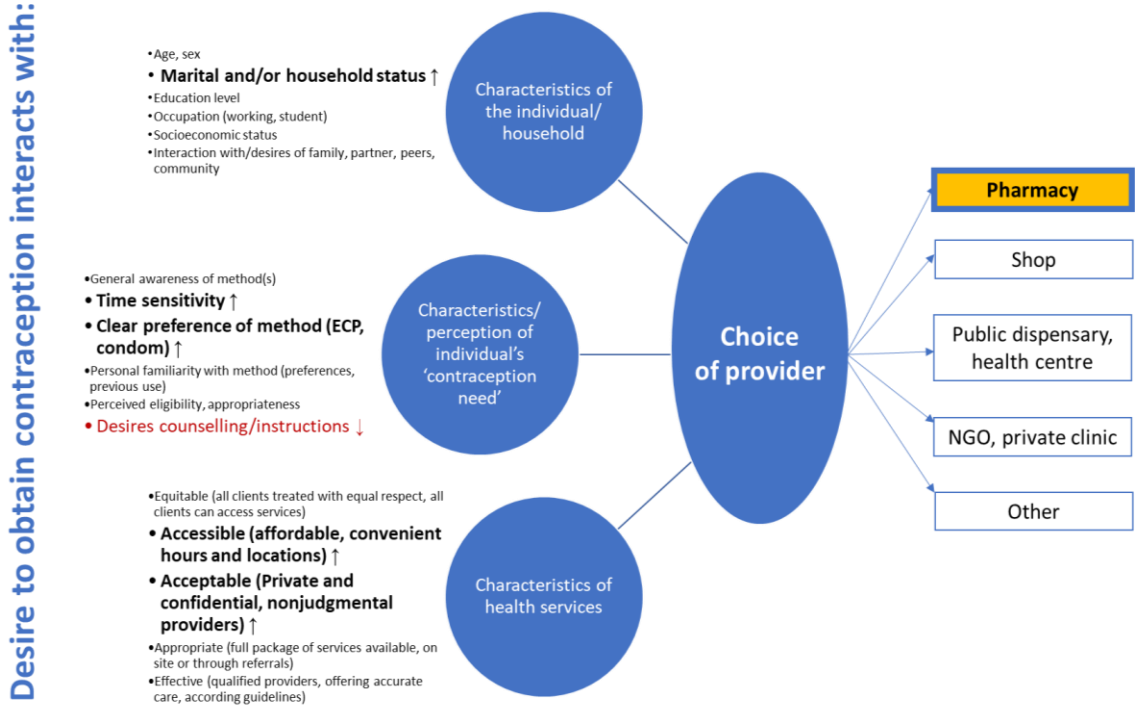
First, as described in Chapter 4, participants reported that in addition to the transport cost to get to a public facility, services themselves often had fees associated with them. Some fees might result from tests and commodity purchasers outsourced from the health facility. However, research from Nairobi and Kisumu has found that that 'informal fee payments' for users are common in public facility contraception services (Tumlinson et al., 2020). Together, these may explain reports that half of Kenyan women who reported accessing contraception in public health facilities reported paying a fee (Tumlinson et al., 2020, Radovich et al., 2019).

Second, as this study took place in a peri-urban setting, participants may have been better-off, financially, than young people nationwide. One study of equity of public and private family planning and child health services in Kenya found that three-quarters of users of urban and peri-urban facilities (likely urban residents themselves) sat in the top two wealth quintiles, nationally (Chakraborty et al., 2019). Our peri-urban participants may have perceived costs associated with contraception services to be less burdensome that their rural peers.

8.1.3 The young person who accesses contraception through a pharmacy

This dissertation identified a variety individual- and health system-level characteristics that inform a young person's selection of contraception outlet. For the young person who chooses a pharmacy, however, several of these are especially salient (see Figure 8.3).

Figure 8.3 Determinants of contraception outlet: choosing pharmacy, for youth age 18-24 in Kwale County, Kenya



This study demonstrates that a young person comes to a pharmacy when they know the method they want and particularly if looking for condoms or emergency contraception. For these purchasers, there is usually a time-sensitive need: recent sex (for ECP shoppers) or the potential for sex in the near future (condom shoppers). Young pharmacy purchasers are actively *not* looking for (nor desire) counselling, out of either embarrassment, or possibly because they have used the method previously.

The findings also confirm that pharmacies are a good option for young people for whom sexual activity may not be socially acceptable. However, the ability to reliably obtain your desired method via a quick, non-judgmental, affordable, and private interaction at a location close by makes pharmacies appealing for various short-acting reversible contraception users. These service characteristics carry disproportionate appeal for young people choosing their outlet, outweighing concerns about service quality.

8.2 Reflections on study methodology and validity

8.2.1 Mixed methods approach

The use of mixed methods was a strength of this study. As alluded to in Chapter 2, the term 'mixed methods' conjures up a variety of definitions, descriptions, and scope. There have been numerous efforts to classify these, based on: the stage in the research process at which the methods are integrated (for example, during data collection, data analysis, or data interpretation); which method (quantitative or qualitative) is prioritized or 'drives' the study; as well as the sequence in which quantitative versus qualitative data collection takes place (Östlund et al., 2011, Kroll and Neri, 2009, Creswell and Creswell, 2017, Morse, 2016). This study adopted a mixed method approach in order to understand a phenomenon (contraception purchasing) which involved multiple actors and multilevel influences (Morse, 2016). The quantitative data provided the scale of the behaviour of interest – obtaining contraception at a pharmacy. The qualitative data provided the context – the 'why' and 'how'.

Chapter 2 indicated that the study could be only 'imperfectly' classified as *concurrent and dependent* (Schoonenboom and Johnson, 2017). The study's nesting in the larger ARMADILLO trial meant a more precise classification was not possible. Out of necessity, this mixed-methods study adopted a flexible and pragmatic approach to data collection, as research activities (including field visits, trainings, etc) were largely determined by the research schedule of the larger trial. Within these constraints, however, the qualitative methods sequence was well-scheduled and facilitated triangulation (further detailed in Section 8.2.3).

One area for improvement would have been to incorporate a second 'wave' of interviews of youth purchasers and pharmacy personnel. With more time allocated to field work, it would have been useful to review preliminary findings from these groups, conduct mystery shopper visits, and then follow up with a subsequent, more focused round of interviews to get richer data. However, as many of the

interviews were in Swahili, there was a significant lag time in obtaining the translated transcripts. Instead post-interview debriefs with data collectors during the weeks of data collection were relied on to adapt interview guides where appropriate.

8.2.2 Quantitative data collection and validity

A strength of quantitative data collection was the rigour with which this cross-sectional survey was undertaken, thanks to its nesting in a randomized controlled trial. The resources and scale of the ARMADILLO trial enabled this study to capture quantitative data from a large, randomly selected sample of 18-24 year olds covering the largest urban area in Kwale County. The resources required to enumerate households and their youth residents, and then visit a random subsample for a survey of this scale would have been well beyond what was realistic for this study.

There are some limitations as well, including the missed opportunity to include additional demographic questions (precluded by the trial), such as 'religion of respondent'. Additionally, questions on contraception use and contraception source were adapted from validated contraception-related surveys. However, as indicated in Chapter 4, the primary intention of these surveys was to capture general contraception use, not the nuances of who (in the sexual partnership) purchased it. This created some limitations in interpreting this study's quantitative data in Chapter 4. For the broader dissertation, however, the incorporation of qualitative data on demographics of pharmacy purchasers (presented in Box 1 of this chapter) enriches the quantitative analysis.

Several factors strengthen the internal validity (Campbell and Stanley, 1963) of this study's findings: the random selection of participants prevents one source of sampling bias which could resulted from a different sampling strategy. Participants also filled out sections of the survey related to this study themselves, which mitigates response bias which may have arisen if the interviewer had asked them

about details related to their most recent sexual experience (including where they had obtained contraception, if used).

The random sample and large study population also improve the external validity of these results. However, there are two points of caution in attempting to generalize these results to 18-24 year olds nationwide or even county-wide. First, the eligibility criteria of the randomized controlled trial meant that participants in this survey also reported owning their own phone. It is possible that young people with the means of owning their own mobile phones, may be more able to purchase contraception at pharmacies than their non-phone-owning peers. Second, this study took place in the most urban part of an otherwise rural county. The reduced numbers of pharmacies and pharmacy personnel in rural parts of the country (Kenya Ministry of Health, 2017, Oketch, 2019) almost certainly means that the mix of contraceptive outlets used by youth in this study is different than that of their rural counterparts.

8.2.3 Qualitative data collection and validity

The breadth of participants was a strength of the qualitative data collection. Particularly for young participants, there was a benefit to doing both FGDs and IDIs. The FGDs captured broader community norms around accessing contraception through pharmacies, while the IDIs zeroed in on the individuals purchasing and their process for doing so. The highlight of the qualitative data collection, however, was the mystery shopper exercise – the data produced in each 2-3 minute interaction was highly-valuable.

Limitations of qualitative data collection were related to data collector recruitment and training. Data collectors were hired from Kwale County (an area without robust research infrastructure) to map pharmacies and interview pharmacy personnel. As locals, they had the benefit of being able to easily identify pharmacies and being recognized in their community; however, both had only secondary level education and no prior research training. For inexperienced data collectors, learning to probe and to create an interview dynamic where participants are comfortable sharing takes time to master. Being

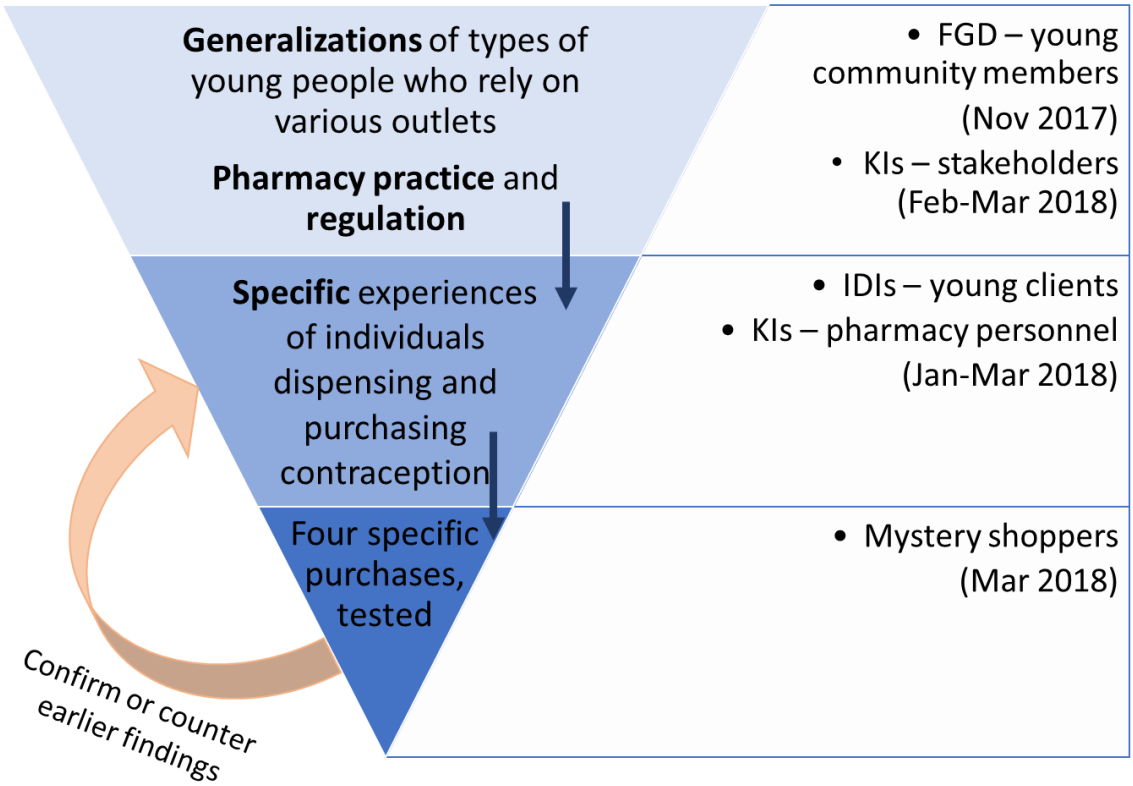
familiar enough with a study's scope and research questions to move a participant through a semi-structured question guide also takes time. Therefore, it was an oversight not to spend more time (a week minimum) on training, with multiple rounds of practice and feedback, before sending them to the field.

Additionally, some of the qualitative data collected by these collectors must be viewed through the lens of a hierarchical relationship (described in the reflexivity statement in Chapter 4) that became apparent in reading the transcripts, where these new data collectors were viewed as 'less-educated' by a few qualified pharmacists. This may have factored into how the data collectors perceived their own role, resulting in them being more reluctant to probe.

To address the above concerns, for the second round of planned interviews (with young clients), experienced young data collectors from Mombasa County (an area with far more research infrastructure) were hired. During the second half of data collection, they conducted additional interviews in pharmacies. Their report of the interviews (and subsequent review of transcripts) indicated that the Kwale County interviewers' collected data still well-addressed this study's objectives, and confirmed saturation had been reached in capturing pharmacy personnel perspectives.

Concepts of 'credibility' and 'transferability' replace internal validity and external validity, respectively, as alternative criteria against which the 'trustworthiness' of a study can be assessed (Lincoln and Guba, 1985). In order to enhance this study's 'credibility', or confidence that findings reflect participants' experiences, this study used triangulation across methods (see Figure 8.4) (Nowell et al., 2017, Lincoln and Guba, 1985, Pandey and Patnaik, 2014). Focus group discussion findings related to general contraception-seeking behaviour and stakeholder key informant interview (KI) insight into pharmacy

Figure 8.4 Triangulation of methods in qualitative data collection



practice and regulation resulted in the guides for in-depth interviews (IDI) and KIs with pharmacy personnel to be more precisely-focused. These guides evolved further as interviews continued. Findings from the KIs, IDIs, and FGDs informed the development of the mystery shopper personas and their data collection forms. Testing four 'typical' scenarios across nearly 50 pharmacies, provided an 'objective'

perspective that could then enrich or counter findings from earlier research activities with pharmacy personnel and young purchasers.

Modified peer debriefs (where the researcher is extensively probed following data collection)(Lincoln and Guba, 1985) also enhanced this study's credibility. These took place with qualitative data collectors (including mystery shoppers) at the end of each day of data collection. Each data collector was extensively interviewed by the dissertation author. These interviews captured detailed content of the interview and interaction (as reported by the data collector), and explored any assumptions made by the data collector, including where they perceived tension or saw need for further inquiry. Feedback could be provided on interviewing techniques and questions guides adapted to follow lines of inquiry.

Transferability describes the extent to which the conclusions of this study might be relevant or 'transferable' to different contexts (Lincoln and Guba, 1985). If this study presents "thick" (detailed) descriptions of findings and processes, its results can be adequately compared to findings from similar studies in different settings. This study's use of several methods to build a picture of what happens on either side of the counter during a contraception purchase results in a thick description of the contraception-accessing experience for young people going to pharmacies.

8.3 Future research

The need for the mixed methods study to address Objectives 2 and 3 was confirmed by the systematic review, which found minimal literature from LMICs speaking to young people's use of pharmacies. This has been noted as problematic given the recognized reliance on pharmacies in LMICs, particularly for emergency contraception (Dawson et al., 2015). This dissertation opens a variety of additional areas of research, particularly in LMICs.

1. **Assess pharmacy personnel's knowledge of contraception use, address misconceptions**

This study's findings suggest that many pharmacy personnel may have misconceptions about the appropriateness of contraception for young users (particularly nulliparous young users), shared by many other cadres of health providers. Additional research should more systematically assess pharmacy personnel's understanding about the different types of contraception available in pharmacies and who is eligible to use these. This has been done in several high-income countries; however, there is less data for LMICs. Having mystery shoppers who actively ask for advice or assistance (which, as described in Chapter 5 and 6, our shoppers did NOT do), could assess this. Intervention research to address provider myths and misconceptions around contraception should also include pharmacy personnel.

2. Understand the dual role of pharmacy personnel as health provider and business person

There is an additional need for research exploring the tension of being a business versus being a health care provider. A concern raised by participants was that pharmacy personnel's decision-making in private retail pharmacies would be primarily influenced by a desire to turn a profit, selling commodities irrespective of whether it was an appropriate/effective commodity for the situation. This has also been seen elsewhere in the pharmacy literature (Both and Samuel, 2014, Wafula and Goodman, 2010, Smith, 2009a). There is a healthy scepticism warranted towards too much task-sharing with private pharmacies. However, pharmacy personnel are still colleagues in a broader health workforce. In this study, and in other pharmacy-practice strengthening interventions (Bunyi, 2018), they expressed an interest in improving the quality of services they, as health providers, can offer. For-profit and quality-care motivations are not necessarily in conflict with each other. Additional observational research could better identify the full spectrum of motivations of trained pharmacy personnel (desire to provide care, status in community, pressure to be profitable, desire for return customers) and how these interact with each other. Any intervention research targeted at strengthening or broadening pharmacy service provision should carefully assess this as well.

3. Review quality of contraception commodities available on the local market

Pharmacy research offers an opportunity to assess the quality of commodities themselves, in addition to the quality of service and service providers. The mystery shoppers in this study collected an array of emergency contraception and condom brands between them (see Figure 8.5). In many sub-Saharan Africa countries, commodity packaging may not be in alignment with national guidelines. An ECP brand may market its product as effective for 72 hours post-sex, for example, while national guidelines indicate the same drug combination is effective for up to 120 hours. Future research may consider reviewing instructions for locally-available brands to help contextualize the advice given by pharmacy personnel: commodity mislabelling/labelling could influence the accuracy of advice given. The quality of the commodities being distributed can also be assessed, through careful review of labelling (including active ingredient name, expiry date), packing, and dosage against a reference sample (World Health Organization, 2007).

Figure 8.5 Commodities accumulated as a result of mystery shopper exercise. Quality of commodities was not a study objective; therefore packaging was not reviewed. Instead these were donated to a local, NGO-run drop-in health centre

4. Understand the role of retail shops in the 'network' of contraception outlets

Finally, as mentioned in Chapter 4, shops were the second most popular source of contraception at last sex. This study proposal initially grouped pharmacies and shops together as an alternate source of contraception, with the intent to explore them both. However, upon arrival in Kenya, it quickly became apparent that they were viewed as two distinct sources. No lower-tier outlet of 'drug shops' existed, and the generalist shops and corner kiosks which abounded were not part of the formal health system in any way (nor viewed as such by community members). Indeed, in all focus group discussions (where participants were explicitly asked to list sources of contraception), participants distinguished between pharmacies and shops. Shops were considered even more innocuous than pharmacies for obtaining condoms (the only contraception available) – they stock mostly non-health related items, making it even harder to identify 'condoms' as the reason a young person had gone to a shop. Trained pharmacy personnel, like other health workforce cadres in LMICs, stay close to urban/peri-urban areas, while rural areas have a lack of qualified pharmacy personnel (Kenya Ministry of Health, 2017). As such, young people in rural areas with similar profiles to this study's pharmacy users, may turn to shops instead. Therefore, in all areas, but particularly for rural areas, there is a need for research to better understand the role of shops as contraception providers for young users.

Shops: for IMMEDIATE contraception needs

Like pharmacies, young people reported using shops for time-sensitive contraception needs. However, the immediacy of sex was even more pronounced for pharmacies than shops. FGD participants spoke of shops being the outlet of choice when en route to visit a partner or when a partner was literally waiting for sex at home.

"Sometimes the young man has found himself with a young lady while the mother is not around… it will force him run to the shop to pick [condoms]." – Young male FGD participant

"The shops are the only places a person can quickly go… the person they are expecting to have sex with may decide to [leave], so he will quickly go to the shop to get condoms then get back home to have sex with his/her partner." – Young female FGD participant

'Shops' were the go-to if an unexpected or unscheduled sexual encounter arose.

8.4 Policy and programming considerations for Kenya

This study was observational in nature, with the understanding that – given broader global trends towards 'self-care' in SRH and popularity of task-sharing contraception services to pharmacies – future SRH interventions which might seek to develop youth-targeted, pharmacy-based interventions, could draw upon this work. The study has focused almost exclusively on pharmacies as contraception outlets, and the considerations presented below will do the same. However, any pharmacy-focused programming should not attempt to view pharmacies as *the* solution to increasing youth access to contraception. Instead, pharmacies should be viewed as one outlet in a broader network of contraception sources for young people: programming should aim to strengthen quality and increase connectivity between other outlets.

Policy and programming considerations are divided into two: the first section provides suggestions as to how *existing* contraception provision can be strengthened while maintaining the status quo. The second section proposes more medium- to long-term opportunities that would require greater changes to pharmacy practice and administration.

8.4.1 Improving the status quo: strengthening existing contraception services

Kwale County's (and Kenya's, more broadly) private pharmacies' existing practice selling emergency contraception, condoms, and even daily hormonal contraception is not perfect, but does minimal harm. Young people's reliance on these short acting forms of contraception (and emergency contraception, in particular) is certainly less ideal than these young people being able to obtain and appropriately use more effective forms of contraception. However, for the young person trying to avoid pregnancy or HIV/STIs, it is better than them not accessing contraception at all.

Existing contraception services can be strengthened with minimal resource investment in health and pharmacy infrastructure. These investments should be multi-level and are presented below in line with

four approaches for strengthening youth-friendly services, as first outlined in Chapter 2.6 (Chandra-Mouli et al., 2015):

1. **Train and support providers to be non-judgmental and friendly to young clients**

Using short-courses and/or existing Continuing Professional Development (CPD) requirements – that is, in-service training – for registered pharmacists and pharmaceutical technologists could help to dispel lingering concerns around the safety and appropriateness of young people's use of contraception. This may increase comfort with recommending more effective forms of contraception (pharmacy-available or not), particularly to young ECP purchasers. This study's participants and the broader literature indicated that the commercial pharmaceutical sector and development partners have already begun to rely on short-courses – the effect of these interventions needs evaluating (Dawson et al., 2015).

2. **Make health facilities welcoming and appealing**

Pharmacies have existing premises guidelines which, if enforced, provide all clients with a clean and welcoming facility (Kenya Ministry of Health - Pharmacy and Poisons Board, 2019). Additionally, youth participants in this study requested easy ways for clients to identify a registered provider. Enforcement of existing regulations which require the name and registration certificate of the person controlling the pharmacy to be visibly displayed (National Council for Law Reporting, 1957 (revised 2012)) can help with this, as can more recent PPB initiatives to make properly registered facilities easier to identify via SMS services (Chapter 6).

3. **Include communication and outreach activities (alerting young people to available services and encouraging to use them)**

As identified in Chapter 5, health education campaigns highlighting important messages about popular contraception types could be based in pharmacies. Prominently-displayed promotional materials could

serve to reinforce pharmacy personnel's knowledge, educate young purchasers, and encourage dialogue between the two groups. Easy-to-read leaflets in a bag, and broader digital health campaigns can also provide instructions on use and even referrals for further information or services. The young client can review these in private, on their own time.

4. **Ensure the community is supportive and recognizes the importance of young people being able to access services.**

Outside of the four walls of the pharmacy, broader A/YSRH programming in health and education sectors (through comprehensive sexuality education, broader community sensitization) must continue efforts to normalize, destigmatize, and empower youth use of contraception. Young people, providers, and communities must be knowledgeable about and comfortable with young people's eligibility to access and safely use all forms of modern, reversible contraception. This would contribute to an enabling environment where a young person's choice of a contraception outlet can (eventually) be more informed by additional factors like convenience or desired commodity, rather than an effort to avoid stigma or embarrassment at all costs.

8.4.2 Envisioning medium- to long-term change: quality improvements must come first

As mentioned in the Introduction, in 2018, Kenya's Family Planning Guidelines were updated (Kenya Ministry of Health, 2018). The update, as it pertained to pharmacy provision of contraception reflected WHO Task Sharing recommendations (World Health Organization, 2017c) and broader global trends towards increased 'self-care' in SRH: pharmacists were authorized to administer injectable contraception, *provided they were*

> ***Expanding access can be deceptively difficult***
> *The results of this dissertation were presented to Ministry of Health officials from local, County, and National levels, as well as partners from NGOs at a June 2019 meeting. In the discussion, Ministry of Health officials indicated that they were exploring the introduction of self-administered injectable contraception to pharmacies. However, they had a major obstacle - how could they guarantee that poorly-regulated pharmacies would responsibly and reliably deal with safe sharps disposal?*

appropriately trained. This, coupled with the introduction of self-administered injectable contraception described in Chapter 6, has the potential to further benefit young users who rely on pharmacies as their contraception outlet. However, given Kenya's well-documented and persistent issues with illegal pharmacy activity (Monja, 2018, Oketch, 2019, Thiong'o, 2019), any expansion of contraceptive services at this stage can only responsibly be undertaken with a corresponding investment in improving the quality of services delivered. In this regard, Kenya has two immediate issues that require attention: a need for consistent, regulation-compliant services, and improved data.

8.4.2.1 Pharmacies must reliably provide regulation-compliant services

Private pharmacies do not consistently provide quality services. Chapter 6 described in detail the multi-pronged efforts required to holistically and sustainably raise the quality of all pharmacy services. These involve a combination of carrot and stick measures, from improving regulators ability to enforce existing quality standards to providing trainings and special accreditations which target the dual interests of private pharmacies, running a profitable business and delivery good quality health services. These should be coupled with community-targeted efforts to raise awareness of and demand for quality services. At present, the Pharmacy and Poisons Board has too few human and financial resources to adequately enforce its regulation mission. In its current state, it will need to rely on strategic collaborations with professional associations, and private entities (for example, drug manufacturers, importers and wholesalers). Two example strategies are proposed below:

1. **Regulatory responsibility-sharing**

Regulation within the health system traditionally focuses on the setting and enforcing of standards to ensure that services are delivered with a certain level of quality and safety (Kumaranayake et al., 2000). Groups involved in regulation can include parliaments, ministries of health or other specialized government agencies, local authorities, as well as professional associations (Kumaranayake et al., 2000, Europe., 2019).

In Kenya, the PPB currently regulates the entirety of pharmaceutical practice, the individuals (pharmacist/pharmaceutical technologists), the commodities, as well as the premises (retail pharmacies). A government-based regulation system is not unique to Kenya, nor to pharmacy practice. However, it is also not the only possible regulatory structure. In 2009-2010, the World Health Professions Alliance (WPHA), which serves as a global umbrella organization for international associations for dentists, medical doctors, nurses, pharmacists, and physiotherapists, conducted a global survey to understand how the five professions were regulated in various countries (Besançon et al., 2012). Of the 29 systems reported in WHO's African Region (not including Kenya), 52% regulation systems were government-based (like Kenya's pharmacy sector), 34% were self-regulated through professional bodies, while an additional 10% involved some combination of government and self-regulation (Besançon et al., 2012).

Basic regulatory systems include registration, while those more complex (such as Kenya's pharmacy practice regulation, in theory if not in practice) include oversight over renewals, continuing professional development, defining and enforcing standards of practice. In general, as regulatory systems grow more complex (that is, take on more functions) the regulatory role for professional associations also increases. Additionally, certain functions (including discipline and investigations) appear to take place more frequently when professional associations join with governmental regulatory bodies (Besançon et al., 2012, Europe., 2019). Standards are often still set by government regulatory entities like the PPB, but professional association can step in to enforce these among their members, bringing 'self-regulation' to pharmacists and pharmaceutical technologists.

Kenya's PPB has had ties with its professional associations for decades. The regulatory power given to these associations has fluctuated in this period. Under the PPB's current continuing professional development (CPD) guidelines, professional associations like Pharmaceutical Society of Kenya and the Kenya Pharmaceutical Association (KPA) for pharmaceutical technologists, take responsibility for

administering CPD activities to their members (Kenya Ministry of Health - Pharmacy and Poisons Board, 2013). During data collection, the PSK participant implied that relations with the PPB were on the upswing (with the potential for responsibility-sharing) after a few difficult years. Should membership in a relevant professional association become a prerequisite for obtaining and renewing licenses (it has been in the past, but did not appear to be at the time of data collection), these professional associations could take pressure of the PPB's Registrar and Inspectorate, by verifying formal and continuing education requirements, and holding its members accountable to government-set practicing standards.

2. Franchising or accreditation systems

Another opportunity to responsibility-share (touched on in Chapter 6) comes through franchising. Franchising links up various private sector providers under a common brand. The resulting network, with its accompanying quality and service standards, is theorized to be able to improve standardization and self-regulation among disparate independent private sector providers (Beyeler et al., 2013). Private providers are incentivized by access to trainings, high-quality commodities, pooled procurement, and access to a recognizable brand. Demand among clients is generated through marketing and the brand becoming associated with 'high-quality care' (Nijmeijer et al., 2014). In LMICs, the term 'social franchising' is more commonly used, as franchising efforts have traditionally been set up with social good objectives (health improvement) in addition to, or instead of, profit-generating objectives (Nijmeijer et al., 2014, Qureshi, 2010). Non-governmental organizations have initiated some of the initial large social franchising networks (e.g. the Green Star Franchise Network in Pakistan)(Qureshi, 2010), but private sector entities can do so as well. Governments have also initiated similar accreditation schemes, such as the Tanzania Food and Drugs Authority's accredited drug dispensing outlet (ADDO) program, described in Chapter 6. Two systematic reviews found that in LMICs, social franchising has primarily been tried to improve SRH or maternal and child health services among private providers (not pharmacists) (Nijmeijer et al., 2014, Beyeler et al., 2013). Evidence is limited and contraception service-

related findings (related to quality of service provided, service utilization, and client satisfaction) have been mixed.

Kenya has had social franchising in place for nearly 20 years. Major NGOs (Marie Stopes International, Population Services Kenya, FHI360, etc) have developed franchise networks, many of which were developed to promote uptake of modern contraception. One evaluation of Population Services Kenya's franchise, Tunza, found that while overall current use of contraception did not change, respondents in a franchise catchment area were more likely to be using a LARC or permanent contraception method than those in a non-franchise catchment area (Chakraborty et al., 2016). This held true for young women age 18-24 specifically, a notable finding given the tendency for women in this age group to be dissuaded from these methods. This may be attributed to successful provider training, full service readiness, as well as perceived higher quality (Chakraborty et al., 2016).

A social franchising effort solely targeting private *pharmacies* as a strategy to improve contraception uptake has not been extensively explored. This may be because previous efforts have focused on increasing method mix, specifically uptake of LARC and permanent methods (Chakraborty et al., 2016), the administration of which is not appropriate for pharmacy settings. However, for-profit franchising for private pharmacies is already working its way into Kenya's pharmaceutical sector, purporting to bring with it improvements in commodity procurement, information management, and client experience (Adegoke, 2019). In Chapter 6, this study's participant from the Pharmaceutical Society of Kenya highlighted franchising (a 'chaining and branding initiative') as a forward-looking, multi-stakeholder opportunity to help the pharmacy sector self-regulate. Under this scenario, the Pharmacy and Poisons Board sets the standards (and enforces to the best of its limited ability), the professional association (PSK) develops a quality mark against these standards and provides training and oversight to pharmacies who choose to join the brand (as well as the hope for increased brand awareness within communities and scrutiny of those pharmacies that do not have the mark of quality). PSK's 'Green Cross' brand has

attempted to start this[1] (Aywak et al., 2017, Pharmaceutical Society of Kenya). Finally, if appropriate, private franchisors/investment could offer increased brand recognition as well as pooled procurement options and improvements in pharmacy operating procedures. In conclusion, social franchising would offer an interesting opportunity for multiple stakeholders to play to their strengths and capacities and introduce additional self-regulation into an unregulated sector.

8.4.2.2 Health systems require better data from pharmacies

Finally, this research highlighted that there is very little data coming from private pharmacies, leaving a void of information related to who uses these popular outlets and how. Findings from this study captured in Chapter 5, as well as previous reviews of Kenya's DHS data (Radovich et al., 2018) indicate that a noticeable percentage of contraception for young women is obtained from pharmacies, based on self-reporting. However, for pharmacy contraception services, self-report data - be they nationally representative (as in the DHS), or from community-based studies like this one - cannot be compared against routinely-collected data from the health system. Unlike public health facilities, the private sector (including private pharmacies and drug shops) in many LMICs do not feed into health management information systems (HMIS). Kenya's HMIS is the District Health Information Software 2 (DHIS 2), an open source software system which the Ministry uses to regularly capture service delivery and product information in its public health facilities (Bunyi, 2018). These indicators are aggregated from sub-County level upwards. Including pharmacies into the DHIS 2 could provide needed insight into what products and services are being used.

The USAID-funded SHOPS Plus Project attempted this in a 2017-2018 pilot project in several dozen pharmacies in Nairobi County (Bunyi, 2018). The project involved extensive consultation with national level stakeholders at the PPB, MoH, and professional associations, as well as consultation with private pharmacists and commodity importers. Pharmacies volunteered to participate, incentivized by access to

[1] However, a look at the 'Green Cross' members list online found only 22 members, nationwide.

aggregated DHIS 2 data, training on DHIS 2 system use, as well as broader skills-building on business operations. The project team designed a data capture tool that was reflective of pharmacy operations and commodity naming conventions – this was then later transcribed into an adapted DHIS 2 tool designed to capture contraception commodity dispensing by facilities. Data collection techniques were dynamic – again, reflective of the diversity in operating procedures across various retail pharmacies - and included in-person visit, soft copy and hard copy data entry.

Findings from this project indicated that private pharmacies could participate in national reporting structures (Bunyi, 2018). That said, participants also indicated that reporting requirements could be burdensome over time, and while pharmacies appreciated access to data (to get insight on their local markets), they would require a sustained business case or incentive to stay engaged in the long term. Flexible data collection and dedicated tools designed for pharmacy providers would also be necessary, as would strong leadership from public sector Ministry official tasked with DHIS 2 implementation.

Incorporating private pharmacies (and other private sector providers) into Kenya's DHIS 2 reporting structure would provide the Ministry of Health with better data. For contraception services, this would result in the Ministry building a more complete understanding of how different contraceptive outlets in a complex web of public and private health care providers are used. However, like broader quality-improvement efforts, efforts to incorporate data collection into private pharmacies will require a combination of better incentives and better regulation.

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10 Appendices

10.1 Appendix 1: Study Instruments

10.1.1 Focus Group Discussion Guide

Today we're going to discuss what young people in this community think about contraceptives and where they go when they need it.

Warm-up

- Tell me what "contraceptive" means to you?
    - Tell me the kinds of contraceptives you've heard of

Myths and misinformation around contraception

Vignette: XXX [name determined by FGD participants] is 21 and her boyfriend YYY [name determined by FGD participants] is 23. They have been dating for a while and are thinking about using contraceptives. However, there are things about contraceptives that they have heard from friends and family members which make them uncertain.

What are some of the things which they may have heard?

Ask participants to write down on sticky notes at least three things that XX and YY may have heard which would make them nervous. Notetaker and Facilitator 3 will post these on the board, grouping together the similar ones. After they are all posted, moderator can ask:

- *[read out the reasons listed on the board]:* Are there any additional reasons XX and YY may feel uncertain that you can think of?
- *[also probe on certain reasons that are vague or broad]*

Where young people get contraceptives

- Tell me about all the places in _____ (study site town), where a young person can get contraceptives? *(Facilitator 3 writes out a list)*
- Describe all the different kinds of young people you could find in your community. *(keep this short)*

For each listed contraception source:

- Describe the kind of young person who would go to a _____ if he/she needed contraceptives? *(Draw stick figure under each source name, probe on and label with identifiers: gender, marital status, etc)*
  Facilitator 3 stops drawing after question above
- When would a young person choose to go to a _____ to get contraceptives?
    - [Note]: what kind of contraceptives are they getting
- Why would this young person choose to go to a _____ to get contraceptives over another source?
    - [Probe] What are the best qualities about _____ as a resource for contraceptives?

- What might other young people *dislike* about _____ as a resource for contraceptives?

<u>Qualities of ideal FP-dispensing in *non-service sources*</u>

- What are the most important qualities a chemist or a shop needs to have for a young person to be comfortable obtaining contraceptives? [*Probe on person working vs the shop itself]*
- What could be some reasons why young people would not be comfortable going to chemists or shops?
    - What could be done to increase the comfort of young people who might not be comfortable going to chemists or shops?
- What **other** information and services would a young person needing contraceptives from a chemist or a shop also need?
    - [*be sure to probe on information AND services separately]*
- What could be done to make sure that young people can get the extra information and services (*that group mentioned in previous question*) that they need from chemists and shops without being uncomfortable and without sacrificing their privacy and speed (*or whatever is mentioned as an important quality)*.

Close and thank people for their time

10.1.2 In-depth interview guide for young contraception purchasers

Warm-up

- Tell me about what life is like for young people (people your age) in this community.
- What are some of the challenges that young people face?

As you told us earlier, you recently purchased family planning from a chemist shop nearby. I want to ask you about this experience

- Tell me about what your experience was like when purchasing FP from the chemist – how did it go, from beginning to end? *[looking for information on environment, interaction with chemists, how they were treated]*
    - How did you feel at each step?
    - What was the most difficult part of the experience?
    - What was the easiest part of the experience?
- Describe your interaction with the chemist attendant *[probe on: how were you treated?]*
    - How did he/she react to your request
- Tell me about the information you were given by the chemist *[probe on: counselling, life advice, side effects, referrals other FP]*
- Tell me about what else was going on in the chemist shop while you were purchasing FP.
- How did you feel after you left the shop?
- Given the experience you've just described to me, how did that compare with what you *thought* would happen when you first walked in the chemist shop? *

Thinking about the time that you purchased family planning at the chemist, help me understand how you made that decision:

- What situation made you decide that you needed family planning? *[Probe on whether others were involved in this decision]*
- How did you decide what kind of family planning you wanted?
- Why did you decide to go to a chemist for family planning instead of other places?
    - Why did you select that particular chemist?
- How did this experience compare with other times you have bought family planning?

As a young person who has purchased FP from a chemist, I am interested to hear your ideas for how chemist shops could be improved for young people:

- Were there any parts of your experience that you liked?
- Based on your experience, was there anything you would've liked to happen that didn't?
    - *Probe (if necessary):* Based on these, is there any part of the experience that you want changed?
- If you worked at the chemist, what would you do to make young clients buying family planning feel comfortable?
- If you worked at the chemist, how could you improve the shop to be friendlier to young people needing family planning?
- What else do young people need to feel comfortable getting FP from chemists?

10.1.3 Key Informant Interview guide (for a person working in a pharmacy)

Group 1 (Background – Personal)

- Tell me about yourself and how you came to work in the chemist?
    - Probe if they are from the area
    - What is their current title?
- Tell me about the roles and responsibilities of your job - describe a typical day of work
- What are the things that you enjoy about your job?
- What are the things you do not enjoy about your job?

Group 2 (Background – Shop)

- Tell me about who else works at this chemist
    - Probe: what are their roles and how are they different from yours?
- Describe how the chemist shop is organized?
- When are you busiest?
    - Probe: opening hours

Group 3 (Family planning)

- Tell me about the family planning in this chemist shop
    - Probe: what kinds are available, most popular, price
- Tell me about the kinds of people from the community who buy these family planning
    - Probe: Describe them, what they are looking for
- Why are chemist shops like yours important in providing family planning to the community?
    - Probe: How is this job different from health facilities that also have family planning?
- If a young person comes in asking for family planning, what are some of things you look at that help you decide what to recommend?
- What are the rules for dispensing family planning?
    - Probe: are there any exceptions to these rules?
- Describe the kinds training (either from your boss or from previous training) you received about family planning?

Group 4 (Feelings about selling family planning to young people)

- Think about the last time that a young person (18-24) came to this chemist for family planning. Can you describe the interaction, from beginning to end?
    - Probe: what happens, what would they say, what would you say, what do you give them?
- How do young customers feel coming to ask for family planning (Probe: what do they say)?
- What could chemist shops like this one do to improve the comfort of young people in the community who need family planning?
- When a young customer comes in asking for family planning, how do you feel?
    - Are things you would like to tell them?
- If you had the power, what would you do to improve the confidence of chemists to provide family planning to young people?

10.1.4 Mystery Shopper Checklist (injection shopper)

Please select today's date
yyyy-mm-dd

What time did you enter the chemist?
hh:mm

What time did you exit the chemist?
hh:mm

What is the name of this chemist shop?
[Selects from drop-down list of mapped pharmacies]

Were you offered the chance to buy the injection?
Yes
No

If no, why were you refused?
Didn't have FP card/prescription
Didn't have injection in stock
Other
If other, describe:

Were you told by the person who helped you that it was possible that HE/SHE could inject you in the shop?
Yes
No

If you were told injection in the chemist shop was impossible, what were you told? [can select more than one]
Person said they were not allowed to give injection themselves
Referred to another individual qualified to give injections
Referred to a clinic/office qualified to give injections
Other
If other, describe:

Describe the person who helped you and the environment of the chemist
1a. What was their gender?
Female
Male

1b. What was their approximate age?
Aged 20 or younger
21-30
31-40
41-50
Aged 50+

2. Where in the chemist shop were you helped?
_____

3. Did that location provide privacy for your interaction?
Yes
No

4. Were there other people working in the chemist when you visited?
Yes
No

5. Were there other customers in the chemist when you visited?
Yes
No

5b. Do you feel like you had privacy from the other chemists or customers during your interaction?
Yes
No

Describe the interaction

6. Were you asked any questions about your use of injection?
Yes
No

7. Did they ask these questions before or after you were offered the injection?
before
after

8. Did they ask:
a. to see your TCA?
Yes
No

b. whether you had used injection before?
Yes
No

c. the date of your last injection?
Yes
No

d. where you received your previous injection
Yes
No

e. whether you had experienced (or were experiencing) any side effects?
Yes

No

9. Were you asked any questions about YOURSELF or YOUR HUSBAND?
Yes
No

9b. Did they ask these questions before or after you were offered the injection?
before
after

10. Did they ask:
a. Your age?
Yes
No

b. Your marital/relationship status?
Yes
No

c. Whether you had discussed use with your husband?
Yes
No

d. Whether you had any children?
Yes
No

11. Did the person react (do or say something) to any of the information you told him/her?
Did he/she make you feel that something you said affected the way s/he treated you?
Yes
No
If yes, describe the reaction:
How did he/she react? What did he/she do or say? Were you lectured?

_____

12. Did the chemist give you any information about the injection?
Yes
No

12b. Did they give you this information before or after you were offered the injection?
before
after

13. Did they tell you:
a. instructions on when you needed to return for another injection?
Yes
No

b. side effects you might expect?
Yes
No
c. that this did not protect you against HIV/STIs?
Yes
No
d. Any differences between injection brands?
For example, differences in costs, how long injection lasts, etc
Yes
No

Briefly describe any key differences
_____

14. Did they recommend another FP method, or that you go to a health centre?
Yes
No

If yes, what method/where were you referred?
_____

Describe the QUALITY of the interaction
15. Approximately how many minutes did you speak with the person who helped you?
_____

16. Did the person who helped you seem like they were in a hurry to finish with you?
Did they seem rushed or give you their undivided attention?
Yes
No

17. How friendly or approachable was the person who helped you?
1 very unfriendly 2 3 4 5 very friendly

Briefly describe
_____

18. How knowledgeable did the person who helped you appear to be about family planning?
1 not knowledgeable at all 2 3 4 5 extremely knowledgeable
Briefly describe
_____

19. How private was the interaction?
1 not private at all 2 3 4 5 very private
Briefly describe
_____

20. How comfortable did the person who helped you seem?
1 very uncomfortable 2 3 4 5 very comfortable

Briefly describe

_____

21. Did the person who helped you do or say anything that was particularly helpful or nice?

_____

22. Did the person who helped you say or do anything that was particularly NOT helpful or NOT nice?

_____

23. How satisfied are you with the overall service?
1 very unsatisfied 2 3 4 5 very satisfied
Briefly describe

_____

10.1.5 Survey Instrument (Excerpt)

SOCIO-DEMOGRAPHIC INFORMATION. First, we're going to talk about who you are.

1. What is your sex? Mark ONLY ONE.

   0 Male
   1 Female

2. What is your birthdate?

   Day |__|__| Month |__|__| Year |__|__|__|__|

3. What is the highest level of school you attended? Mark ONLY ONE.

   0 I've never gone to school
   1 Primary school
   2 Secondary school
   3 Post-secondary education **– GO TO 5**

4. What is the highest grade you completed at that level?

   |__|__| grade/form/level **– GO TO 6**

5. What type of post-secondary education did you attend/are you attending? Mark ONLY ONE.

   1 Technical post-secondary education
   2 University education

6. Who do you currently live with? Mark ALL possible options.

   0 I live alone
   1 Father/stepfather
   2 Mother/stepmother
   3 Siblings
   4 Grandparents
   5 Other relatives
   6 Husband or wife ***– NOTE: Be sure to ask whether husband/wife or cohabiting partner.***
   7 Cohabiting partner
   8 In-laws
   9 Children
   10 Friends

7. What is your current relationship status?

   0 Single
   1 Friends with benefits
   2 Dating
   3 Cohabiting
   4 Engaged

5 Married
6 Other (specify)

8. How many children do you have?
   0 I have no children **– GO TO 10**
   |__|__| child/children

9. How old were you when you had your first child?
   |__|__| years old

…
[SURVEY CONTINUES]

Now we're going to talk about sexual activity to gain a better understanding of some important life issues. Let me assure you again that your answers are completely confidential and will not be told to anyone.

29. How old were you when you had sexual intercourse for the very first time?
    |__|__| years old

    0 I have never had sexual intercourse **– GO TO 46**

30. Have you ever used any method to prevent pregnancy? By use, I mean that either you, yourself, have used the method or that a partner of yours used the method when having sex with you.
    YES 1
    NO.....0
    DON'T KNOW.....8
    REFUSED 9

31. When was the last time you had sex?

    |__|__| days ago

    |__|__| weeks ago

    |__|__| months ago

    |__|__| years ago

32. The last time you had sex, what was your relationship to this person with whom you had sexual intercourse?

1 Boyfriend not living with respondent
2 Girlfriend not living with respondent
3 Male cohabiting partner
4 Female cohabiting partner
5 Husband
6 Wife
7 Male casual acquaintance
8 Female casual acquaintance
9 Male sex worker
10 Female sex worker
11 Female client (respondent is male sex worker)
12 Male client (respondent is female sex worker)
13 Male relative
14 Female relative

33. The last time you had sex, did you or your partner use a contraceptive method?
    0 No **– GO TO 45**
    1 Yes

34. The last time you had sex, which contraceptive method did you or your partner use?
    1 Male condom
    2 Female condom
    3 Birth control pill
    4 Injectable
    5 Implant
    6 Intrauterine device (IUD)
    7 Emergency contraception (the morning after pill)
    8 Female sterilization
    9 Male sterilization (vasectomy)
    a. Withdrawal **– GO TO 44**
    10 Rhythm method **– GO TO 44**

35. The last time you had sex, where did you or your partner obtain the contraceptive method you used?
    1 A pharmacy or chemist
    2 County Hospital
    3 Health centres
    4 A NGO
    5 A private doctor or clinic
    6 A shop/market
    7 A community-based distributor
    8 A peer educator
    9 A traditional healer **– GO TO 44**
    10 A friend or relative **– GO TO 44**
    11 A partner **– GO TO 44**
    12 Other **– GO TO 44**

36. When you obtained your [MOST RECENT CONTRACEPTIVE METHOD], were you told by the provider about side effects of problems you might have with a method to delay or avoid getting pregnant?
    1 Yes
    2 No
37. Were you told what to do if you experienced side effects or problems?
    1 Yes
    2 No

38. At that time, were you told by the family planning provider about methods of family planning other than [MOST RECENT CONTRACEPTIVE METHOD] that you could use?
    1 Yes
    2 No

39. During that visit did you obtain the method you wanted to delay or avoid getting pregnant?
    1 Yes **– GO TO 42**
    2 No

40. Why didn't you obtain the method you wanted?
    1 Method out of stock that day
    2 Method not available at all
    3 Provider not trained to provide the method
    4 Provider recommended a different method
    5 Not eligible for method
    6 Decided not to adopt a method
    7 Too costly
    8 Other

41. During that visit who made the final decision about what method you got?
    1 You alone
    2 Provider
    3 Partner
    4 You and provider
    5 You and partner
    6 Other

42. Would you return to this provider?
    1 Yes
    2 No

43. Would you refer your relative or friend to this provider/facility?
    1 Yes
    2 No

44. How important were each of the following characteristics to you in deciding which birth control method to use? *(read item, asking)* Would you say: not at all important, slightly important, quite important or extremely important to you in choosing a method?

	Not at all important	Slightly important	Quite important	Extremely important
A. It is very effective at preventing pregnancy				
B. It has a low cost.				
C. It is easy to use.				
D. It doesn't contain hormones.				
E. It is acceptable to my partner F. It doesn't interrupt sex.				
G. It is effective at preventing HIV or STIs.				

10.2 Appendix 2: Mystery Shopper Personas

Script for mystery shoppers in pharmacy study in Kenya (adapted from Dawn Quin-Chee(Chin-Quee et al., 2006))

There will be two male and two female mystery shoppers. One male and one female will present as youth in need of emergency contraception (epills). One female will present as a married young person in need of an injection refill. One male will purchase a condom.

Mystery shoppers will always dress in the same manner when visiting various pharmacies. They should not wear, for example, work apparel on one occasion and casual wear on the next. The idea is to present the same information to all pharmacists, keeping visual characteristics consistent. In that manner, preconceived notions or first-impression biases should not vary across pharmacists due solely to inconsistent appearance or demeanour of mystery shoppers.

The chemist - if s/he decides to provide assistance – may ask the mystery shopper questions. The mystery shopper can respond based on their profile.

Mystery Shopper Profiles

1. **ECP shopper female**

Asha, 22 years old, student. Had sex with boyfriend two days ago. They used a condom, but it burst. This is her first time using ECP. She does not know her boyfriend's HIV status, but is only worried about pregnancy, not HIV/STIs. Has 100 Kenyan shillings to purchase ECP (if more expensive, she will 'return later with more money').

2. **Injection – female**

Natsha, 24 years old, newly married. She is timid: her husband and family do not know she is using injection. She does not have children, but wants them in future. She is using contraception because she thinks her husband can't provide for a family, financially. She received her first injection from a health clinic three months ago, is overdue but within the bounds to get Depo-Provera shot again. She will inquire as to the cost of the injection and promise to 'return later with money'

3. **ECP shopper – male**

Kevin, 21 years old, student. Has a girlfriend but doesn't use a condom during sex because 'he trusts her'. They use ECP instead. He is purchasing ECP on his girlfriend's behalf and does not know the instructions for use. He has 100 Kenyan shillings to purchase ECP (if more expensive, he will 'return later with more money').

4. **Condom – male**

Swaleh, 19 years old, secondary school graduate. Single, known as a 'hit and run' (someone who has sex with many women, but does not date them). He is going to a party in the evening, and wants to purchase condoms in advance. Knows about HIV/STIs but more worried about pregnancy. Has 50 Kenyan shillings to purchase condoms (if more expensive, he will 'return later with more money').