SERVICE PROVIDER KNOWLEDGE AS A FACTOR FOR FAMILY PLANNING COMMODITY AVAILABILITY IN PRIVATE CLASS C DRUG SHOPS IN SOROTI DISTRICT, UGANDA

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Abstract

Introduction: The major objective of the study was to determine the relationship between service provider knowledge and the availability of FP commodities at private Class C drug shops in Soroti District. These outlets can be a vital source of life saving FP commodities but service providers have low levels of knowledge and general biases based in myth/tradition on the effectiveness of modern FP commodities (Stanback, Otterness et al. 2011). Investigating dynamics of a possible relationship was warranted.

Methodology: The study adopted an analytical cross-sectional survey design using quantitative techniques. Probabilistic sampling methods and statistical methods of data analysis were employed to establish relationships (if any) and evaluate significance for the phenomenon under study.

Results: An average of 103 (91.96%, Max = 111/ Min = 85) of the 112 respondents had requisite FP knowledge and experience. Condoms were found to be the most numerous items, with 59 outlets (52.68%) stocking 1-30 patient packs, while 24 outlets (21.43%) stocked greater than 30 patient packs. ECPs and condoms were available in adequate volumes while COCs and POPS were only available in moderate and very low quantities respectively. POPs were the most out of stock items. Condoms were available in variety exceeding 2 brands but for only 12.5% of the subject facilities where condoms were found to be stocked. None of the facilities stocked female condoms. Lengthy stock-out days, sometimes in excess of 365 days, were reported.

Conclusions: Whereas the study found that service providers had requisite knowledge and experience, it did not establish a fundamental significant relationship between service provider knowledge on FP with level of FP commodity availability. This could be attributed to the un-investigated interplay between the dependent variable and other factors such as availability of free public sector commodity supplies, supply chain gaps, client preferences, facility specialization, facility location and perceptions of commodity quality.

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Declaration

I Makumbi Tom do hereby declare that this research report titled **"Service provider knowledge as a factor for family planning commodity availability in private class C drug shops in Soroti district, Uganda."** is my original work, is not plagiarized and has not been presented in any other institution for any other award.

Name: Makumbi Tom **Reg. No.:** RJ20M21/048

Signature: 

Date: 25th March 2024

Approval

Having supervised this dissertation, I do hereby approve it for presentation.

Supervisor's Name: Rev. Canon Evatt M. Mugarura

Signature: 

Date: 25th March 2024

Acknowledgement

I acknowledge the unwavering and exceptional support of my supervisor, Rev. Canon Mugarura Evatt, without whom this work would not be possible.

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List of abbreviations and acronyms

CME	Continuing Medical Education
COC	Combined Oral Contraceptives
DLG	District local government
ECP	Emergency contraceptive pills
FP	Family Planning
HIV	Human Immunodeficiency Virus
NDA	National Drug Authority
NDPA	National Drug Policy and Authority (Act)
PFP	Private for Profit
POP	Progesterone Only Pills
PNFP	Private not for Profit
UDHS	Uganda Demographics and Health Survey
WHO	World Health Organization

Definition of key terms

(i) Family planning

Family planning is the approach that allows persons/ couples to attain the desired number of children (if any) and to determine the spacing and timing of pregnancy (WHO 2017).

(ii) Unmet need for family planning:

Women with unmet need for family planning are those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child.

The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behavior (WHO 2021).

(iii) Private licensed Class C Drug shop:

Privately owned (as individual businesses or as corporate entities/ partnerships) human medicines distribution outlets as licensed under the provisions of the NDPA Act 1993 sections 14 and 15.

(iv) Family planning commodities:

Family planning commodities (including pharmaceuticals and devices) as provided for under the essential medicines list and the National Drug Authority medicines register, 2021.

(V) Service provider:

In the context of this study, a service provider is a member of the class C drug shop staff who is actively engaged in the provision of family planning commodities and accessory services to drug shop clientele. This includes nursing assistants, registered nurses, enrolled nurses, midwives, pharmacy technicians, clinical officers and medical doctors.

1.0 Chapter One: Introduction

1.1 Background

Family planning is the approach that allows persons/ couples to attain the desired number of children (if any); and to determine the spacing and timing of pregnancy (WHO 2017).

According to the Uganda Costed Family planning implementation plan (UCFPI) 2015-2020 (MoH 2014), Uganda's total fertility rate of 5 children per woman is relatively high compared to the continental average of 4.3, with the nation's population projected to increase to 47 million by 2025; from 34.9 million in 2014 (UBOS 2016). The aforementioned UCFPI further emphasizes that this situation is undesirable as it presents difficulties for both the families and government with respect to implementation of investments into the education and health sectors as key tools towards socio-economic transformation of the people of Uganda.

Family planning interventions, both in the private and public sector, are key tools in achieving sustainable development goals and national aspirations towards wholesome socio economic development (through transformation of the society from peasants to modernization) as captured under the Uganda Vision 2040 (NPA 2013).

Family planning is one of the most cost-effective public health interventions, especially with respect to improving overall maternal and child health, with potential to reduce maternal and child mortality by 30% and 10% respectively (Nuwasiima, Nuwamanya et al. 2017). The private sector, both as private not for profit (PNFP) and private for profit (specifically pharmacies and drug shops) play a critical role in family planning service and commodity provision, covering an estimated 40% of family planning commodity demand globally (Hardee, Wofford et al. 2017).

Despite the foregoing and the overwhelming evidence that family planning is a key transformational tool for society, gaps in the supply of family planning commodities still persist (Wanyana 2021).

In a bid to fill the gap left by the public health sector structures in the rural areas of Uganda, and as part of interventions to ensure access to pharmaceuticals such as family planning commodities at grassroots level, private drug shops were introduced in 1993 through the National Drug Policy and Authority act Cap 206 of the laws of Uganda. These private for profit facilities are regulated and licensed by the National Drug Authority (GoU 2000) to supply the most basic services and commodities as prescribed by the aforementioned applicable law and attendant regulations.

The role of these private drug shops as partners in closing supply side gaps should therefore not be underestimated and interventions targeting the sector (specifically private drug shops) to reduce existing supply side gaps are in order (WHO 2017).

1.2 Problem statement

According to the Uganda Demographic and Health survey, the total demand for family planning among married women increased from 54% in 2001 to 64% in 2022, with only 43% of aforementioned demand being satisfied by modern family planning methods (Statistics 2022).

In addition, there was a noted desire (estimated and projected at 64%) among married women to use some form of modern contraception in future, with the unmet need for family planning among married women and unmarried sexually active women standing at 28% and 32% respectively.

In the context of Uganda, 50% of family planning needs (and related commodities) are met by the public health sector (excluding Village Health teams, which capture 5% of the needs), with the remaining 45% being met by the private sector (Ministry of Health - Uganda Family Planning cost implementation Plan – Nov, 2014) (MoH 2014).

In the private sector, one of the major barriers to availability and utilization of family planning commodities is access to the family planning commodities. The issue is characterized by factors such as stock outs at facilities, high cost of commodities, long waiting times at facilities, long travel distances to facilities offering family planning commodities and limited opening hours (Nanvubya, Wanyenze et al. 2020).

In addition, many drug shop attendants are documented to lack adequate knowledge to appropriately identify illnesses and offer appropriate treatment for illnesses, and fail to stock and dispense appropriate remedies (Mayora, Kitutu et al. 2018), while majority possess limited knowledge on the full range and variety of family planning commodities and methods available for use (Akol, Chin-Quee et al. 2014).

Based on the foregoing analysis, it is clear that supply side gaps persist with respect to availability of family planning commodities in both the public and private sector; and that the private sector can be a key player in closing existing family planning commodity supply chain gaps if service provider knowledge gaps can be appropriately addressed.

This study therefore aimed to examine the relationship between availability of family planning commodities in private Class C drug shops and private facility provider knowledge within Soroti District, with a view of informing provider curriculum development and capacity building approaches towards reduction of supply side gaps in the private sector.

1.3 General objective

To determine the relationship between service provider knowledge and the availability of family planning commodities at private Class C drug shops in Soroti District.

1.3.1 Specific objectives

(i) To establish the level of service provider knowledge on family planning commodities at private Class C drug shops in Soroti District.

(ii) To find out the availability of family planning commodities at private Class C drug shops in Soroti District.

(iii) To establish the nature of the relationship between service provider knowledge and availability of FP commodities at private Class C drug shops in Soroti District.

1.4 Research questions

(i) What is the level of service provider knowledge with respect to family planning commodities at private Class C drug shops in Soroti District?

(ii) What is the prevalence of family planning commodities at private Class C shops in Soroti District?

(iii) What is the nature of the relationship between service provider knowledge and availability of family planning commodities at private Class C drug shops in Soroti District?

1.5 Scope of the study

The study focused on the dynamics of family planning commodity availability in the private sector (specifically in private drug shops) and how service provider knowledge affects commodity availability. The study was conducted in Soroti district, which is the epi-center and major economic hub of Teso sub-region. It was anticipated that the findings from the study will be generalizable to the sub-regional districts.

1.6 Justification for the study

The area of study was chosen based on various justifying factors.

Total unmet need for family planning was highest in Teso sub-region, standing at 52.2% for all fecund women. In addition, the selected sub-region ranks second at 25.9% with respect to unmet need for family planning among fecund women not in union (with West Nile taking the lead at 29.8%) as reflected in the table below;

Table 1: Justification for the study – in numbers.

No	Unmet need for FP (Married women)	Teso (%)	West Nile (%)
1	Spacing	18.9	23.2
2	Limiting	7.0	6.6
3	**Total**	25.9	**29.8**
	Unmet need for FP (All women)	Teso (%)	West Nile (%)
1	Spacing	34.6	34.2
2	Limiting	17.6	11.9
3	**Total**	**52.2**	46.1

(MoH 2014, GoU 2016, UBOS 2016)

Furthermore, average household size for the district stood at 6.1 (highest in the country) against a national average of 4.5, with the district having the highest population as well as the highest number of private drug shops in Teso sub-region (UBOS 2016).

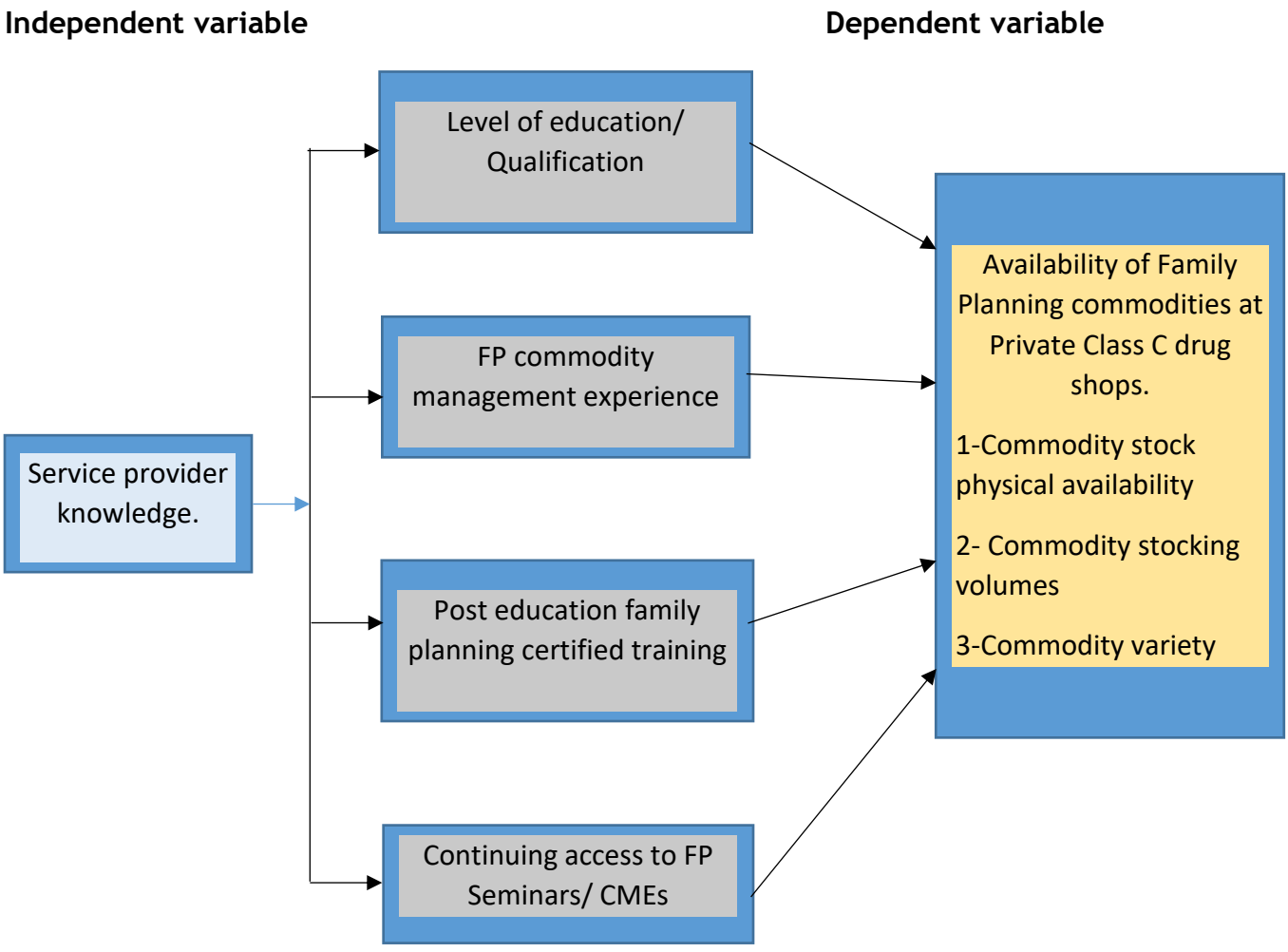
1.7 Significance of the study

This study is important as it examined in-depth the existing relationship between family planning service provider knowledge and family planning commodity availability at private drug shops, with a view of informing capacity building approaches towards plugging identified gaps both at policy and training institution level.

Whereas knowledge gaps among health service providers in the private sector have been consistently identified as major contributors to health commodity supply gaps in the sector (Nuwasiima, Nuwamanya et al. 2017, Mayora, Kitutu et al. 2018, Solo and Festin 2019), a district based study of this kind was yet to be undertaken to evaluate the extent of the problem with respect to its effects on the health commodity supply chain.

1.8 Conceptual Framework

Fig 1: Conceptual Framework to evaluate the relationship between service provider knowledge and FP commodity availability.



NOTE: Detailed narrative on the concept framework as presented above and how it was used to inform the study is presented in subsequent pages.

1.8.1 Independent variable

The study evaluated the knowledge of the service provider on provision of family planning services and family planning commodities as the independent variable. The study was carried out under the assumption that the greater the service provider's knowledge, the more likely the service provider is to stock the required FP commodities in optimum quantities and variety at the private class C drug shop to service client needs.

The independent variable was evaluated based on four (4) key areas as follows;

i. **Level of service provider education**
   This evaluated the level of service provider formal education (certificate, diploma, degree, post graduate or a combination thereof) with a focus on medical training and/or certification (as applicable). Where possible, evidence of the same was retrieved/ required.
ii. **Provider family planning service provision and commodity management experience**
   This was evaluated based on number of years of family planning service and family planning commodity management experience as reported by the respondent.
iii. **Post education family planning certified training received**
   The study established whether the service provider had attended any post education/ in-service training on family planning in the previous 2 years (in addition to formal training and experience); and where possible, provide evidence of attained certification.
iv. **Continuing access to family planning capacity building (seminars/ CMEs)**
   The study also evaluated current service provider access to family planning CMEs as a means towards continually updating service provider knowledge on FP commodities and service provision.

1.8.2 Dependent variable

The study evaluated family planning commodity availability as the dependent variable to determine whether changes in service provider knowledge resulted in changes in family planning commodity availability at the service point and (if applicable) the nature and level of significance of this relationship.

The evaluation of commodity availability was carried out based on three metrics as detailed below;

i. **Family planning commodity stock availability**

   Under this metric, the interviewer established (through observation and inquiry) the physical availability of the various types of family planning commodities at the Class C shop and documented the same.

ii. **Commodity stocking volumes**

   This metric established the volume of stocked items (through observation and inquiry) in terms of number of available doses of family planning commodities, if established to be available from (i) above.

iii. **Commodity variety**

   This metric established the variety of family planning commodity items (through observation and inquiry) in terms of available brands and commodity classification (combined oral contraceptives, progestin only pills and emergency contraceptive pills) to cater to the various client needs.

2.0 Chapter Two: Literature review

2.1 Introduction of literature review

The specific goals of family planning as a global scale tool are to reduce annual global maternal death by 30%, save the lives of 1.4 million children (from deaths associated with maternal and child health problems) and to achieve the sustainable development goals (USAID, 2021). Family planning is also a key strategy for control of perinatal transmission of HIV for women living with HIV/AIDS and as means for the promotion of maternal and child health (Atukunda, Mugyenyi et al. 2019).

According to a 2017 UN World family planning report, only 63% of fecund women were enrolled onto some form of family planning. Whereas family planning usage in Europe, Latin America and the Caribbean stood above 70%, the situation is quite different in Africa and the Middle East, where usage stands at or less than 25%.

Family planning use among women of reproductive age in sub-Saharan Africa has been steadily increasing from 13% in 1990 to 29% in 2019. This was made up of 44% modern contraception and accounted for 91% of all contraceptive usage (with the other 9% usage comprising of traditional/ non-conventional methods of contraception) (UN 2020).

Uganda's maternal mortality ratio (189 per 100,000 live births), infant mortality rate (34 per 1,000 live births) and total fertility rate (5 children per woman); and prevailing statistics on unmet need for family planning paint a grim image of the Ugandan status quo despite multiple sectoral interventions (Statistics 2022)

In Uganda, uptake of family planning services remains lower than the observed average for sub-Saharan Africa, especially for minority groups and rural communities (Nanvubya, Wanyenze et al. 2020), resulting into unwanted pregnancies and unsafe abortions as a consequence of the former (Nalwadda, Namutebi et al. 2019).

Modern family planning utilization has been found to stand at a dismal 9.4% among female adolescents of reproductive age and was adversely affected by socio-demographic factors including poverty and geography, with adolescents in rural settings being less likely to take up family planning interventions. (Sserwanja, Musaba et al. 2021).

In order to address overall medical commodities supply chain gaps (including family planning commodities), private drug shops were established under the control and provisions of the National drug policy and Authority act cap 206 under section 15 as a stop gap measure (in anticipation of future service expansion and diversification) to facilitate access to aforementioned commodities in underserved areas (GoU 2000).

The role of private sector service points, specifically drug shops; in closing family planning supply chain gaps is well documented. These service points and embedded providers are not only drug distributors, but can be a key tool towards improving access to these critical commodities, especially in rural, hard to reach areas where public facilities may not exist, or to compliment efforts of the public facilities in the semi-urban setting.

These facilities offer comparative advantages as they are conveniently located closer to the service recipient communities and are a more viable source of a variety of short acting modern family planning commodities in comparison to Pharmacies, clinics and public health facilities (Chin-Quee, Stanback et al. 2018).

2.2 Private sector family planning service provider knowledge

It is adequately documented that the private sector, specifically private drug shops, can be a very important source of family planning commodities, plugging supply gaps left by the public sector supply. These facilities are more readily available in rural and peri-urban areas and service scale up through capacity building can be quickly achieved (Akol, Chin-Quee et al. 2014) (Chin-Quee, Stanback et al. 2018).

African continent-based studies emphasize the possible linkages between service provider knowledge/ skills and the quantities of family planning commodities stocked in the private sector, as well as the critical role of provider capacity building in addressing such gaps, thereby improving family planning commodity access at this level (Aliyu 2018). In fact, a Nakivale refugee settlement based study (Tanabe, Myers et al. 2017) on family planning commodity utilization highlighted the need for family planning service providers to continually access knowledge and skills on the subject matter to adequately inform their decisions on modern family planning commodity choices.

Indeed, it has been shown in previous studies outside the scope of the proposed study that provider knowledge and attitudes play significant roles and are important predictors for family planning commodity availability and uptake (Nuwasiima, Nuwamanya et al. 2017, Solo and Festin 2019) (Mayora, Kitutu et al. 2018).

In the evaluation of the foregoing literature, it is clear that the above studies stopped short of delving into the nature of the above described phenomenon. It is therefore important to analyze this relationship further with the aim of acquiring further insight into the relationship for purposes of drawing useful conclusions.

2.3 Family planning commodity unavailability and related complications

Whereas family planning usage in Uganda increased from 14% to 35% between 2000 and 2016 and total demand rose from 54% to 67% over the same period, unmet need for family planning still stood at 28% for married women and 32% for unmarried sexually active women over the same period (UDHS, 2016).

Furthermore, only 52% demand for modern family planning was being met, with 62% of married women not enrolled on family planning expressing a desire to use family planning in future.

Among the maternal and child health problems Uganda still faces (with respect to family planning commodity supply chain gaps) is teenage pregnancy, with 25% of 15-19 year-olds having had a child or being pregnant prior to their 20th birthday.

The distribution of the problem varies by region, but it is most prevalent in the sub-regions of Tooro, Bukedi and Teso, where it averages 31% across aforementioned sub-regions. Teenage pregnancy (as a consequence of family planning commodity supply chain gaps) is associated with higher than average maternal and infant mortality for the respective sub-regions (GoU 2016).

The association between teenage pregnancy (and its associated complications, especially in rural settings) and inadequate access to family planning commodities in Uganda is well documented (Manzi, Ogwang et al. 2018) (Kyakunda 2021).

Assessment of possible interventions towards reduction of sectoral family planning commodity supply chain gaps is therefore crucial to addressing aforementioned problems.

2.4 Provider knowledge and family planning commodity availability

Family planning service providers in Uganda, both in the private and public sector, indicated that their knowledge (or lack thereof) on the subject matter was a critical factor in delivering optimal quality family planning services (Mugisha and Reynolds 2008). This concept can also be extrapolated to family planning commodity availability as a component of family planning service availability and quality.

Whereas drug shops can be a vital source of life saving family planning commodities as earlier elaborated, previous studies reflected low levels of knowledge and the existence of general biases based in myth and tradition on the effectiveness of modern family planning commodities among service providers at these private facilities (Stanback, Otterness et al. 2011)

Therefore, in light of the foregoing submissions, it is important to investigate the role played by the level of service provider knowledge with respect to family planning commodity availability in the private sector, with specific reference to private class C drug shops.

It was hoped that the ultimate output of the study shall be strategies for fine-tuning curricula and capacity building approaches towards achieving optimal availability of family planning commodities, with respect to both quantity and variety, within these private sector service points.

3.0 Chapter Three: Methodology/Research methods

3.1 Research design

The study adopted an analytical cross-sectional survey design using quantitative techniques. Probabilistic sampling methods and statistical methods of data analysis were employed to evaluate significance for the phenomenon under study. This design was chosen to understand if a cause and effect relationship existed between the independent and dependent variables, based on statistical evaluation of historical data.

3.2 Area of study

Soroti District is located in the Eastern part of Uganda in the Teso sub-region, approximately 293 Km from Kampala District. It is the most populated district in the sub-region, with a population of 193,310, comprising of 99,624 (51.5%) females and 93,686 (48.5%) males. The district is made up of 10 sub-counties (UBOS 2016) (UNDP 2014), and shares district borders with the districts of Serere, Amuria, Katakwi, Ngora and Kaberamaido.

3.3 Population and sample

3.3.1 Study Population

The study focused on the private licensed (by the National Drug Authority) human drug shops in Soroti District and the principal drug shop operators as defined under key terms. Licensing statistics from the National drug Authority indicated that 128 human Class C drug shops were licensed in 2021 in Soroti District.

3.3.2 Sampling technique and sample size

Owing to the small size of the population under study (128 facilities and respective service providers only), census sampling was used. Census sampling requires that entire population is considered as sample for generalizability as population is small (128).

The entire study population was therefore selected and considered as the sample for the study to enhance data reliability and ensure generalizability of the findings.

On obtaining relevant institutional approvals, one person as found at the facility and in-charge of dispensing and (preferably) procurement of family planning commodities at the time of the study was interviewed using the research assistant administered tool as presented in appendix 2. In addition, the research assistants observed quantities and variety of family planning commodities and documented the same.

The table below illustrates sample selection versus population under study for the considered area under study.

Table 2A: Illustration of sample selection technique.

No	Parameter	Sample Number	% of Population
1	Class C Drug shops	128	100
2	Service providers	128	100

Table 2B: Facility numbers per sub-county and service providers:

No	Sub-county	Population	% of Total Population	Drug shops	Providers
1	Arapai	25,314	13.1%	18	18
2	Asuret	24,727	12.7%	13	13
3	Gweri	31,899	16.5%	08	08
4	Kamuda	22,902	11.8%	09	09
5	Katine	20,650	10.7%	07	07
6	Soroti	11,697	6.1%	47	47
7	Tubur	14,410	7.5%	05	05
8	Western Div.	9,848	5.1%	05	05
9	Eastern Div.	15,766	8.2%	16	16
10	Northern Div.	16,097	8.3%	0	0
	Totals	193,310	100	**128**	**128**

In addition, health commodity stock documents spanning the previous 3 months (focusing on the subject family planning commodities) were reviewed for triangulation of established and observed findings as documented.

3.3.3 Sampling assumption:

It was assumed that all service providers as found at the facility possessed relevant competence and directly influenced commodity procurement choices at the Class C drug shops. Where possible, data was preferably obtained from service providers who were engaged in commodity procurement decisions for the subject facilities.

3.3.4 Inclusion and Exclusion criteria

3.3.4.1 Inclusion criteria

All human private drug shops that were licensed by National Drug Authority at the time of the study and were reported to have been in operation within the last 24 months were included in the study.

3.3.4.2 Exclusion criteria

All human private drug shops that were licensed by National Drug Authority where it was established on site that the service provider provides services above and beyond those prescribed under the conditions of the license as issued or where a direct conflict of interest existed; were excluded from the study.

3.3.5 Ethical considerations

The research proposal was submitted to the Uganda Christian University research ethics committee and the Uganda National council for science and technology for relevant approvals.

All respondents underwent informed consent procedure prior to being engaged in the research and their identities were masked through respondent coding. Evidence of informed consent was obtained. Confidentiality with respect to obtained data/ findings and respondent identity were maintained throughout the research process.

3.4 Study variables

The study investigated the relationship between facility service provider knowledge (as the exposure/ independent variable) and family planning commodity availability in private licensed drug shops (as the expected outcome/ dependent variable).

Service provider knowledge was assessed based on 4 major indicators. These were level of technical medical education, experience (in years) on family planning commodity management/ distribution in the private healthcare setting, access to certified post education training on family planning commodity management in the private sector and continuing access to family planning seminars/ medical education (CMEs).

Availability of family planning commodities was assessed based on observations made by research assistants at the private facilities. These were physical FP commodity availability (or stock-out in number of days), stock volumes for available items and stock variety (with respect to available brands).

3.5 Data collection procedure

Data was collected using pre-tested electronic Kobo Collect based data collection tools developed using web-based Kobo Toolbox software. Tools were administered by trained research assistants in the English language as it was assumed that all service providers met minimum training and qualification requirements and understood the English language.

The data was collected using mobile tablets onto a pre-configured password protected Kobo Toolbox server (as a central repository) for ease of collation and storage for further analysis. Collected data was uploaded to aforementioned central repository on a daily basis (to prevent mobile device-based data loss) for the entire duration of the data collection exercise and the study.

It was the responsibility of the principal researcher to ensure research assistants were adequately trained and facilitated to undertake the research on behalf of the principal researcher. The principal researcher also ensured that tools were pre-tested before use and that relevant institutional approvals were obtained prior to implementing research protocols; in addition to providing required logistics.

3.6 Data collection methods and tools

With the assistance of research assistants, the researcher interviewed service providers using electronic structured interview guides using Kobo Collect version v2022.4.4. Observations regarding stock quantities and variety were made using electronic structured observation checklists, while document review for stock purchase records was carried out using electronic structured document review guides.

3.7 Data processing, analysis and presentation plan

Collected and collated data was exported to MS Excel, cleaned, coded and subjected to univariate, bivariate and multivariate (multiple regression analysis using Pearson Chi square) statistical evaluation using SPSS Version 24 to draw conclusions on significance of relationships therein, if any.

3.7.1 Measurement of provider knowledge

Provider knowledge was rated and scored based on a dichotomous scale for each of the major requirements as outlined in 3.4. The major requirements were further broken down into requirement sub-categories to further specify level of attainment for a given requirement and scored from lowest to highest based on a Likert scale.

For example, level of technical medical education was further categorized into certificate, diploma, degree and post graduate.

3.7.2 Measurement of family planning commodity availability:

Assessment of commodity availability was carried out for each of the major categories of family planning methods, namely; barrier methods (male and female condoms), combined oral contraceptives, progestin only pills and emergency contraceptive pills. Available brands and volumes (in number of doses/ user packets) were recorded and where applicable, stock out times in days recorded. Reports were presented as tables and graphs with respective interpretations and conclusions.

3.8 Research timelines and work plan

The research was carried out over a period of 6 weeks during the months of March and April 2023, starting March 6th 2023.

Week 1 was used for tool pre-testing and research assistant training, while weeks 2 to 4 were used for data collection and collation (including upload to the central database). Week 5 was used to clean up data and carry out data analysis to generate reports, in preparation for report interpretation and presentation during week 6.

Chapter Four: Data analysis, presentation and results interpretation

This chapter presents analyzed data with interpretation of obtained results based on a facility/ respondent sample of 112. Data is presented as per the study objectives. Whereas a total of 128 facilities/ respondents (private drug shop operators) had been targeted for the cross-sectional survey, 11 facility operators declined participation in the survey, while 6 facilities could not be physically located.

4.1 Univariate analysis, presentation and interpretation of obtained data

4.1.1 Socio-demographic characteristics of respondents

The table below summarizes the socio-demographic characteristics of the respondents as interviewed during the district-based data collection exercise in Soroti;

Table 4: Summary of socio-demographic characteristics of respondents.

Socio-demographic characteristics - n=112	
Respondent age – Years (Statistics)	
Mean	31.12
Median	29.00
Mode	28.00
Standard Deviation	08.10
Minimum	20
Maximum	66
Variable	Frequency (%)
Sex	
Male	38 (33.93)
Female	74 (66.07)
Marital Status	
Married	74 (66.07)
Single	36 (32.14)
Divorced/ Separated	02 (1.79)

Level of Education	
Nursing – Certificate	65 (58.04)
Nursing – Diploma	19 (16.96)
Midwifery	14 (12.50)
UCE or lower	9 (8.04)
Clinical Officer/ Senior Clinical Officer	4 (3.57)
UACE	1 (0.89)
Respondent/ Facility location – Sub county	
Arapai	14 (12.50)
Eastern Division	12 (11.61)
Gweri	3 (2.68)
Kamuda	6 (5.36)
Katine	6 (5.36)
Northern Division	6 (5.36)
Soroti	46 (41.07)
Tubur	3 (2.68)
Western Division	15 (13.39)
Engagement in commodity stocking decisions	
Yes	105 (93.75)
No	7 (6.25)

***Source**: Primary data as obtained from the field.*

Soroti subcounty accounted for the majority of respondent/ facility locations, with 46 facilities found fully operational in that sub-county. This accounted for 41.07% of the total number of facilities visited. Based on univariate analysis of data as reflected in Table 4 above, majority of respondents (n=74, 66.07%) were female. Mean respondent age was 31 years as at the time of data collection. An overwhelming majority of respondents (n=105, 93.75%,) were involved in making family planning commodity stocking decisions at the subject outlets. This metric was desirable as it meant that respondent data on stocking patterns was directly traceable to these respondents.

In addition, a combined total of 102 respondents (91.07%) possessed the minimum academic qualification requirements (Nursing certification) for operation of a private Class C Drug shop as required by NDA for purposes of facility licensing.

4.1.2 Respondent knowledge on family planning

The table below presents a summary of the data with respect to the various parameters as used to evaluate service provider knowledge on family planning;

Table 5: Summary of findings with respect to service provider knowledge.

Variable	Frequency (%)
Service provider experience in family planning – Years	
Less than or equal to 1	7 (6.25)
1 to 3	49 (43.75)
3 to 5	28 (25.00)
Greater than 5 years	28 (25.00)
Post qualification training on family planning – Past 2 years	
Yes	38 (33.93)
No	74 (66.07)
Future access to family planning training and CMEs	
Yes	45 (40.18)
No	67 (59.82)
Could define Family planning	
Yes	111 (99.11)
No	1 (0.89)
Had knowledge on Family planning target age group	
Yes	108 (96.43)
No	4 (3.57)
Had knowledge on Family planning commodity categories	
2 or more correct responses	99 (88.39)
1 correct response	12 (10.71)
Incorrect responses/ No response	1 (0.89)

Had knowledge on specific Family planning methods	
Yes	111 (99.11)
No	1 (0.89)
Had knowledge on Family planning as relates to HIV/ STI protection	
Yes	109 (97.32)
No	3 (2.68)
Had knowledge on Family planning myths and misconceptions	
2 or more correct responses	85 (75.89)
1 correct response	24 (21.43)
Incorrect responses/ No response	3 (2.68)

***Source**: Primary data as obtained from the field*

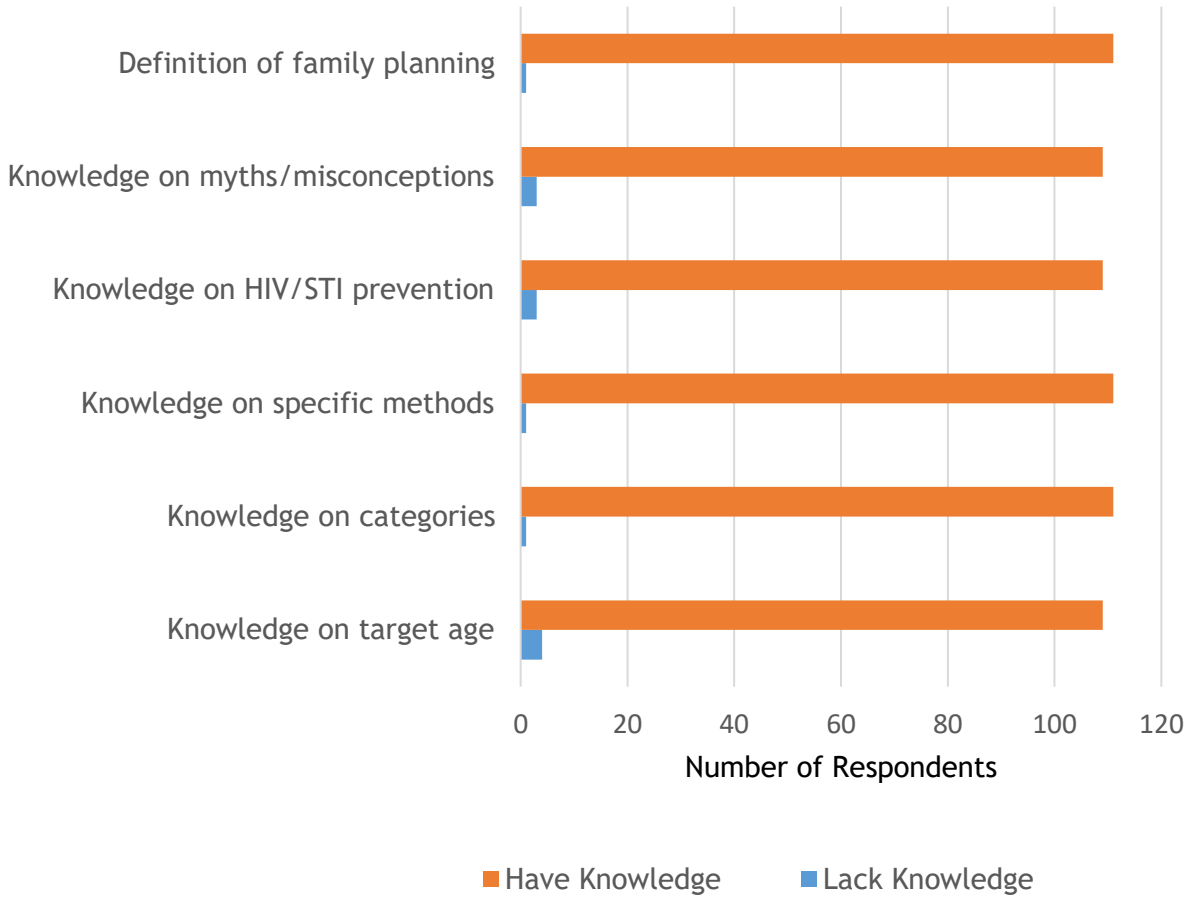
Based on univariate analysis of data as reflected in Table 5 above, 105 of the 112 respondents (93.75%) possessed more than 1 year of family planning service provision experience, with 56 of these (53.33%) bearing more than 3 years of family planning service provision experience.

Evaluation of respondent FP knowledge metrics indicated that 111 (99.11%), 108 (96.43%) and 99 (88.39) possessed knowledge of FP definition, FP target age group and standard FP commodity categories respectively.

A similar trend was observed with respect to specific FP methods, FP as relates to HIV/STI prevention and FP myths/ misconceptions where 111 (99.11%), 109 (97.32) and 85 (75.89) respondents respectively were found to possess required knowledge.

Figure 2 below presents a summary of evaluation of knowledge of respondents across the evaluated knowledge metrics.

Fig 2: Summary of evaluation of Knowledge on Family Planning across knowledge metrics



***Source**: Primary data as obtained from the field.*

4.1.3 Availability of family planning commodities

The table below presents field findings with respect to FP commodity availability across the category spectrum;

Table 6: Summary of findings with respect to availability of FP commodities.

Variable	Frequency (%)
Availability of combined Oral Contraceptives – COCs	
Available	52 (46.43)
Not available	60 (53.57)
Availability of Progesterone Only Pills – POPs	
Available	9 (8.04)
Not available	103 (91.96)
Availability of Emergency Contraceptive Pills – ECPs	
Available	70 (62.50)
Not available	42 (37.50)
Availability of Condoms	
Available	83 (74.11)
Not available	29 (25.89)

***Source**: Primary data as obtained from the field*

Based on univariate analysis of data as reflected in Table 6 above, FP commodity availability at the private Class C Drug shops for COCs, ECPs and condoms stood at 46.43% (n=52), 62.5% (n=70) and 74.11% (n=83) respectively.

Availability of POPs was found to be at a dismal 8.04%. Only 9 of the 112 facilities were found to have POP stocks available at the time of the survey.

Condoms were found to be the most readily available form of modern family planning at the private Class C drug shops as at the time of the survey.

4.1.4 Quantity of family planning commodities

Table 7: Summary of findings with respect to quantities of FP commodities.

Variable (No. of Doses/ Patient packs)	Frequency (%)
Quantity of Combined Oral Contraceptives – COCs	
0	64 (57.14)
1 to 10	41 (36.61)
> 10	7 (6.25)
Quantity of Progesterone Only Pills – POPs	
0	103 (91.96)
1 to 10	9 (8.04)
> 10	0 (0.00)
Quantity of Emergency Contraceptive Pills – ECPs	
0	43 (38.39)
1 to 30	67 (59.82)
> 30	2 (1.79)
Quantity of Condoms	
0	29 (25.89)
1 to 30	59 (52.68)
> 30	24 (21.43)

***Source**: Primary data as obtained from the field.*

FP commodity quantity was evaluated for the private Class C Drug shops where these items were found to be available as previously indicated in Table 6. Based on univariate analysis of data as reflected in Table 7 above, the following was observed;

For COCs, 41 facilities (36.61%) were found to possess 1-10 doses, while 7 facilities (6.25%) were found to possess greater than 10 patient doses. For ECPs, 67 facilities (59.82%) were found to possess 1-30 doses, while 2 facilities (1.79%) were found to possess greater than 30 patient doses.

In line with previous findings with respect to item availability as highlighted under table 6, review of the data as presented in table 7 indicated that Condoms were found to be the most numerous items with respect to available modern family planning methods at the private Class C drug shops. As at the time of the survey, 59 outlets (52.68%) stocked 1-30 patient packs and 24 outlets (21.43%) stocked greater than 30 patient packs.

With respect to quantity of POPs, only 9 of the 112 facilities were found to have POP physical stocks available at the time of the survey, with available stock ranging from 1 to 10 patient packs.

4.1.5 Variety of family planning commodities

Table 8: Summary of findings with respect to variety and stock-out of FP commodities

Variable (No. of Brands)	Frequency (%)
Variety of Combined Oral Contraceptives (COCs) – by brand	
None	60 (53.57)
1 to 2 brands	52 (46.43)
More than 2 brands	0 (0.00)
Variety of Progesterone only Pills (POPs) – by brand	
None	103 (91.96)
1 to 2 brands	9 (8.04)
More than 2 brands	0 (0.00)
Variety of Emergency contraceptive pills (ECPs) – by brand	
None	44 (39.28)
1 to 2 brands	68 (60.72)
More than 2 brands	0 (0.00)
Variety of condoms – by brand	
None	29 (25.89)
1 to 2 brands	69 (61.61)
More than 2 brands	14 (12.50)

Stock out for COCs – Days n=60	
0 to 1	20 (33.33)
1 to 30	21 (35.00)
30 to 370	17 (28.33)
> 370	02 (3.33)
Stock out for POPs – Days n=108	
0 to 1	92 (85.19)
1 to 30	10 (9.26)
> 30	06 (5.56)
Stock out for ECPs – Days n=42	
0 to 1	15 (35.71)
1 to 30	15 (35.71)
30 to 370	11 (26.19)
> 370	01 (2.38)
Stock out for Condoms – Days n=29	
0 to 1	11 (37.93)
1 to 30	05 (17.24)
30 to 370	11 (37.93)
> 370	02 (6.90)

Source: *Primary data as obtained from the field.*

Review of the data as presented in Table 8 above revealed that all 52 facilities (46.43%) which stocked COCs did not stock more than 2 brands of these items. Similarly, the 68 facilities (60.72%) that were found to have stocks of ECPs only stocked between 1 and 2 brands of the subject items.

In contrast, condom variety beyond 2 brands was observed in 14 (12.5%) of the 83 facilities where condoms were found to be available. The 9 facilities (8.04%) that stocked POPs only stocked 1 to 2 brands of these items. 103 (91.96%) outlets did not stock POPs as noted earlier under table 6.

For the 60 facilities where COCs were found to be out of stock, stock out days ranged between 0 to 1, 1 to 30 and 30 to 70 in 20 (33.33%), 21 (35.0%) and 17 (28.33%) facilities respectively. COC stock-out beyond a year was observed in 2 (3.33%) facilities.

Out of the 108 facilities where stock-out of POPs was found, stock out days ranged between 0 to 1 and 1 to 30 for 92 (85.19%) and 10 (9.26%) facilities respectively. POP stock out for more than a month was observed in 6 (5.56%) facilities.

Review of stock-out data for 42 facilities where ECPs were out of stock revealed that stock-out days for these items ranged between 0 to 1, 1 to 30 and 30 to 370 days for 15 (35.71%), 15 (35.71%) and 11 (26.19%) facilities respectively. ECP stock out for greater than 370 days was discovered in 1 facility.

Review of stock-out data for the 29 facilities where Condoms were out of stock revealed that stock-out days for these items ranged between 0 to 1, 1 to 30 and 30 to 370 days for 11 (37.93%), 05 (17.24%) and 11 (37.93%) facilities respectively. Condom stock-out beyond a year was reported in 02 facilities (6.90%).

4.2 Bivariate analysis, presentation and interpretation of obtained data

The table below presents summary findings for bivariate analysis relating knowledge on family planning to family planning commodity availability at the subject facilities.

Table 9: Knowledge on family planning versus family planning commodity availability

Independent Variable	Availability of Contraceptives	Pearson Chi	Sig (0.05)
Knowledge on Target age group	COCs	**0.02**	**0.8**
	POPs	**0.11**	**0.7**
	ECPs	**0.27**	**0.6**
	Condoms	**1.256**	**0.26**
Knowledge on commodity categories	COCs	**1.99**	**0.37**
	POPs	**0.66**	**0.43**
	ECPs	**0.69**	**0.71**
	Condoms	**0.72**	**0.70**
Knowledge on Specific methods used	COCs	**1.16**	**0.28**
	POPs	**0.03**	**0.87**
	ECPs	**0.61**	**0.44**
	Condoms	**0.35**	**0.55**
Knowledge on HIV/STI prevention	COCs	**3.56**	**0.06**
	POPs	**0.08**	**0.77**
	ECPs	**1.85**	**0.17**
	Condoms	**1.08**	**0.30**
Knowledge on myths and misconceptions about FP	COCs	**0.72**	**0.69**
	POPs	**0.98**	**0.61**
	ECPs	**2.04**	**0.36**
	Condoms	**4.1**	**0.12**
Provider experience in years	COCs	**0.47**	**0.90**
	POPs	**1.41**	**0.74**
	ECPs	**0.63**	**0.89**
	Condoms	**1.77**	**0.75**
Post qualification training in the last 2 years	COCs	**1.80**	**0.18**
	POPs	**0.00**	**0.98**
	ECPs	**0.86**	**0.35**
	Condoms	**0.15**	**0.70**

Source: *Analyzed primary data as obtained from the field.*

Table 9 above evaluated service provider knowledge as the independent variable against availability of COCs, ECPs and Condoms to determine whether a statistically significant relationship exists between them using Pearson chi at a significance level (p-value) of 0.05.According to data as presented in the above table, comparison of all the metrics with respect to service provider knowledge on family planning (as the independent variable) with availability of the specific family planning methods (as the dependent variable) did not reveal the existence of any statistically significant relationships, based on the established level of significance.

The table below presents summary findings for bivariate analysis (according to Pearson Chi) for knowledge on family planning versus specific family planning commodity quantities at the subject private facilities.

Table 10: Knowledge of family planning versus quantity of FP commodities.

Independent Variable	Quantities of Contraceptives	Pearson Chi	Sig (0.05)
Knowledge on Target age group	COCs	**3.2**	**0.2**
	ECPs	**3.5**	**0.17**
	Condoms	**1.16**	**0.56**
Knowledge on commodity categories	COCs	**6.5**	**0.16**
	ECPs	**13.9**	**0.00**
	Condoms	**2.77**	**0.60**
Knowledge on Specific methods used	COCs	**3.7**	**0.16**
	ECPs	**1.56**	**0.46**
	Condoms	**0.63**	**0.73**
Knowledge on HIV/ STI prevention	COCs	**11.3**	**0.00**
	ECPs	**4.7**	**0.09**
	Condoms	**1.9**	**0.38**
Knowledge on Myths about Family planning	COCs	**7.1**	**0.13**
	ECPs	**4.7**	**0.39**
	Condoms	**5.3**	**0.25**
Experience in years	COCs	**4.1**	**0.66**
	ECPs	**4.58**	**0.60**
	Condoms	**3.97**	**0.68**

Post qualification training in the last 2 years	COCs	**0.50**	**0.78**
	ECPs	**0.87**	**0.65**
	Condoms	**0.67**	**0.71**

Source: *Primary data as obtained from the field.*

The table above evaluates service provider knowledge as the independent variable against quantities of COCs, ECPs and Condoms to determine whether a statistically significant relationship exists between them using Pearson chi at a significance level (p-value) of 0.05.

The analyzed data revealed that a statistically significant relationship exists between knowledge on commodity categories among the service providers and quantities of ECPs as observed for the surveyed facilities with a Pearson chi value of 13.9 at 0.00 level of significance.

In addition, the data revealed that a statistically significant relationship exists between knowledge on HIV/STI prevention among the service providers and quantities of COCs as observed for the surveyed facilities with a Pearson chi value of 11.3 at 0.00 level of significance.

According to data as presented in table 10, comparison of all the other knowledge metrics with respect to service provider knowledge on family planning (as the independent variable) with quantity of the specific family planning methods (as the dependent variable) did not reveal the existence of statistically significant relationships, based on the established level of significance.

Bivariate analysis of knowledge metrics versus commodity quantity with respect to the specific family planning commodity POPs was not carried out as the item was not available at majority of surveyed facilities as earlier noted.

Table 11: Knowledge of family planning versus FP commodity variety.

Independent Variable	Variety of Contraceptives	Pearson Chi	Sig (0.05)
Knowledge on target age group for FP	COCs	5.5	0.06
	POPs	0.1	0.73
	ECPs	1.1	0.50
	CDs	3.6	0.45
Knowledge on FP categories	COCs	29.4	0.00
	POPs	1.6	0.44
	ECPs	2.2	0.69
	CDs	3.13	0.93
Knowledge on Specific FP methods	COCs	27.2	0.00
	POPs	0.03	0.87
	ECPs	1.08	0.58
	CDs	1.56	0.81
Knowledge on HIV/STI prevention	COCs	9.99	0.07
	POPs	0.09	0.77
	ECPs	3.3	0.19
	CDs	3.9	0.41
Knowledge on Myths about FP	COCs	8.79	0.06
	POPs	0.99	0.61
	ECPs	11.9	0.01
	CDs	19.7	0.01
Experience in years	COCs	15.48	0.02
	POPs	1.44	0.69
	ECPs	8.05	0.23
	CDs	4.27	0.98
Post qualification training in the last 2 years	COCs	0.78	0.68
	POPs	0.00	1.00
	ECPs	4.24	0.12
	CDs	2.23	0.68

Source: *Primary data as obtained from the field.*

Table 11 above evaluates service provider knowledge as the independent variable against variety of COCs, ECPs and Condoms to determine whether a statistically significant relationship exists between them using Pearson chi at a significance level of 0.05 (p-value).

The analyzed data revealed that a statistically significant relationship exists between knowledge on commodity categories among the service providers and variety with respect to COCs as observed for the surveyed facilities with a Pearson chi value of 29.4 at 0.00 level of significance.

In addition, the data revealed that a statistically significant relationship exists between knowledge on specific family planning methods among the service providers and variety of COCs as observed for the surveyed facilities with a Pearson chi value of 27.2 at 0.00 level of significance.

Furthermore, the data revealed that a statistically significant relationship existed between service provider experience on family planning (in years) and variety of COCs as observed for the surveyed facilities with a Pearson chi value of 15.48 at 0.00 level of significance.

According to data as presented in the above table, comparison of all the other knowledge metrics with respect to service provider knowledge on family planning (as the independent variable) with variety of the specific family planning methods (as the dependent variable) did not reveal the existence of statistically significant relationships, based on the established level of significance.

4.3 Multiple regression analysis and interpretation of obtained data

In addition to univariate and bivariate analysis as earlier executed, multiple regression analysis was also carried out to further understand how the various independent variables as used to evaluate service provider knowledge interact with the various individual dependent variables (with other dependent variables held constant) as possible predictors.

Level of significance was set at p=0.05 with a 95% CI.

Applicable variables of interest were coded as follows;

Categorical Variables Coding

		Frequency	Parameter coding	
			(1)	(2)
1.Knowledge on myths/misconceptions	2 or more correct responses	85	1.000	.000
	Incorrect responses/ No response	3	.000	1.000
	Less than 2 correct responses	24	.000	.000
2.Knowledge on categories	2 or more correct responses	99	1.000	.000
	Incorrect responses/ No response	1	.000	1.000
	Less than 2 correct responses	12	.000	.000
3.Knowledge on specific methods	Correct response	111	1.000	
	Incorrect response/ No response	1	.000	
4.Knowledge on HIV/STI protection	Correct response	109	1.000	
	Incorrect response/ No response	3	.000	
5.Knowledge on target age group	Correct response	108	1.000	
	Incorrect response/ No response.	4	.000	

NOTE:

Multiple regression analysis with respect to the knowledge sub-variables and POP quantity/ variety was not carried out as these quantities were not found to be available at majority of the private Class C drug shops. In addition, at facilities where these were found to be available, they did not occur in sufficient quantities to constitute statistical significance at established thresholds.

4.3.1 Knowledge variables versus commodity quantity

Table 12: Knowledge variables versus ECP commodity quantity

Parameter Estimates

ECPquantity recoded[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
.00	Intercept	.737	963.747	.000	1	.999			
	[Knowledge2=1]	2.107	1.004	4.407	1	.036	8.222	1.150	58.783
	[Knowledge2=3]	1.796	3868.344	.000	1	1.000	6.026	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	-.653	1.716	.145	1	.704	.521	.018	15.046
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	.466	963.746	.000	1	1.000	1.594	.000	.[b]
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-.311	.992	.098	1	.754	.733	.105	5.120
	[Knowledge5=6]	-1.930	1.833	1.109	1	.292	.145	.004	5.269
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.
1.00	Intercept	.271	765.250	.000	1	1.000			
	[Knowledge2=1]	2.453	1.152	4.531	1	.033	11.623	1.215	111.227
	[Knowledge2=3]	2.645	3489.652	.000	1	.999	14.077	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	13.399	765.249	.000	1	.986	659444.756	.000	.[b]
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.

Dependent Variable coding

Original Value	Internal Value
ECPs – Available	0
ECPs - Not Available	1

a. The reference category is: 2.00.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

Source: *Primary data as obtained from the field.*

Table 12 above presents multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the quantity of ECPs at the private Class C Drug shops. Review of data as presented therein indicated that knowledge variable 2 (provider knowledge on categories of FP) had a statistically significant relationship with respect to ECP stock quantity as found at the subject facilities (p = 0.036, CI=1.150 – 58.73).

The same was true for facilities where these commodities were not found to be available with an observed p-value of 0.033 (CI = 1.215 – 111.227).

Evaluation of other knowledge variables in relation to ECP quantity (for both facilities where items were available and for those where items were not available) did not yield results that met the established significance threshold.

Table 13: Knowledge variables versus COC commodity quantity

Parameter Estimates

COCquantity recoded[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
.00	Intercept	.366	997.694	.000	1	1.000			
	[Knowledge2=1]	.454	1.189	.146	1	.702	1.575	.153	16.192
	[Knowledge2=3]	1.681	5101.209	.000	1	1.000	5.369	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	.401	1.690	.056	1	.812	1.494	.054	41.042
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	.642	997.693	.000	1	.999	1.900	.000	.[b]
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	1.226	.956	1.645	1	.200	3.409	.523	22.215
	[Knowledge5=6]	-1.436	1.717	.699	1	.403	.238	.008	6.887
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.
1.00	Intercept	1.570	681.735	.000	1	.998			
	[Knowledge2=1]	-.457	1.333	.117	1	.732	.633	.046	8.635
	[Knowledge2=3]	1.046	4799.601	.000	1	1.000	2.847	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	14.337	681.736	.000	1	.983	1683941.629	.000	.[b]
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	-15.261	.000	.	1	.	2.357E-007	2.357E-007	2.357E-007
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	1.503	1.114	1.820	1	.177	4.495	.506	39.927
	[Knowledge5=6]	.741	1.922	.149	1	.700	2.098	.049	90.654
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.

a. The reference category is: 2.00.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

Dependent Variable coding

Original Value	Internal Value
COCs - Not Available	0
COCs – Available	1

Source: *Primary data as obtained from the field.*

Table 13 above presents multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the quantity of COCs at the private Class C Drug shops. Review of data as presented therein indicated that none of the evaluated knowledge variables yielded results that met the significance threshold.

Table 14: Knowledge variables versus Condom quantity

Parameter Estimates

CONDOMquantity recoded[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
.00	Intercept	-14.927	1.151	168.157	1	.000			
	[Knowledge2=1]	.199	.738	.073	1	.787	1.220	.287	5.186
	[Knowledge2=3]	-.829	3977.303	.000	1	1.000	.436	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	-.820	1.113	.543	1	.461	.440	.050	3.899
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	15.584	.000	.	1	.	5862710.048	5862710.048	5862710.048
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-1.029	.555	3.434	1	.064	.357	.120	1.061
	[Knowledge5=6]	-.950	1.360	.487	1	.485	.387	.027	5.562
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.
1.00	Intercept	-46.987	3051.686	.000	1	.988			
	[Knowledge2=1]	14.837	1655.000	.000	1	.993	2778590.217	.000	.[b]
	[Knowledge2=3]	15.164	6982.675	.000	1	.998	3849690.881	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	14.179	2563.935	.000	1	.996	1438966.225	.000	.[b]
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	16.043	.000	.	1	.	9275569.796	9275569.796	9275569.796
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	.326	1.120	.085	1	.771	1.385	.154	12.443
	[Knowledge5=6]	-14.433	2987.502	.000	1	.996	5.396E-007	.000	.[b]
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.

a. The reference category is: 2.00.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

Dependent Variable Encoding

Original Value	Internal Value
Condoms – Available	0
Condoms - Not available	1

Source: *Primary data as obtained from the field.*

Table 14 above presents multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the quantity of Condoms at the private Class C Drug shops. Review of data as presented therein indicated that none of the evaluated knowledge variables yielded results that met the significance threshold.

4.3.2 Knowledge variables versus commodity variety

Table 15: Knowledge variables versus ECP commodity variety.

Parameter Estimates

ECPvariety[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
0	Intercept	2.677	1255.482	.000	1	.998			
	[Knowledge2=1]	.740	1.142	.420	1	.517	2.095	.224	19.628
	[Knowledge2=3]	-1.102	3825.758	.000	1	1.000	.332	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	-.430	1.698	.064	1	.800	.651	.023	18.148
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	-.117	1255.480	.000	1	1.000	.890	.000	.[b]
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-1.841	1.209	2.321	1	.128	.159	.015	1.695
	[Knowledge5=6]	-3.463	1.698	4.159	1	.041	.031	.001	.874
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.
1	Intercept	16.195	2.096	59.726	1	.000			
	[Knowledge2=1]	.906	1.161	.609	1	.435	2.474	.254	24.084
	[Knowledge2=3]	-.290	3147.655	.000	1	1.000	.748	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	.204	1.897	.012	1	.914	1.227	.030	50.490
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	-14.723	.000	.	1	.	4.036E-007	4.036E-007	4.036E-007
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-1.196	1.218	.963	1	.326	.302	.028	3.294
	[Knowledge5=6]	-20.513	6344.415	.000	1	.997	1.234E-009	.000	.[b]
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.

a. The reference category is: 2.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

Source: *Primary data as obtained from the field.*

Table 15 above presents multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the variety of ECPs at the private Class C Drug shops. Review of data as presented therein indicated that none of the evaluated knowledge variables yielded results that met the significance threshold.

Table 16: Knowledge variables versus COC commodity variety

Parameter Estimates

COCvariety[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
0	Intercept	7.114	207.170	.001	1	.973			
	[Knowledge2=1]	1.639	1.991	.678	1	.410	5.152	.104	255.253
	[Knowledge2=3]	-27.008	9081.400	.000	1	.998	1.864E-012	.000	.[b]
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	1.667	2.026	.677	1	.411	5.297	.100	281.062
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	.667	203.084	.000	1	.997	1.949	2.656E-173	1.430E+173
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-7.648	40.957	.035	1	.852	.000	6.541E-039	3.481E+31
	[Knowledge5=6]	-9.717	40.975	.056	1	.813	6.024E-005	7.984E-040	4.546E+30
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.
1	Intercept	15.900	201.230	.006	1	.937			
	[Knowledge2=1]	1.068	1.996	.286	1	.593	2.909	.058	145.519
	[Knowledge2=3]	-36.720	.000	.	1	.	1.129E-016	1.129E-016	1.129E-016
	[Knowledge2=7]	0[c]	.	.	0	.	.	.	.
	[Knowledge1=2]	2.218	2.168	1.046	1	.306	9.187	.131	643.965
	[Knowledge1=5]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=2]	0[c]	.	.	0	.	.	.	.
	[Knowledge3=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge4=2]	-8.360	197.020	.002	1	.966	.000	4.629E-172	1.183E+164
	[Knowledge4=4]	0[c]	.	.	0	.	.	.	.
	[Knowledge5=1]	-7.926	40.958	.037	1	.847	.000	4.951E-039	2.636E+31
	[Knowledge5=6]	-9.457	40.975	.053	1	.817	7.811E-005	1.035E-039	5.896E+30
	[Knowledge5=7]	0[c]	.	.	0	.	.	.	.

a. The reference category is: 2.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

***Source**: Primary data as obtained from the field.*

Table 16 above presents multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the variety of COCs at the private Class C Drug shops. Review of data therein indicated that none of the evaluated knowledge variables yielded results that met the significance threshold.

Chapter Five: Discussion of results

This chapter presents a detailed discussion of the key results as presented in the previous chapter, based on the established study objectives.

5.1 Level of service provider knowledge on family planning commodities.

The study established the following findings with respect to service provider knowledge at the subject facilities;

5.1.1 Level of service provider education.

Overall, majority of respondents (91%) were found to have the required minimum level of medical background education to facilitate management of FP commodities. These findings were in agreement with a 2021 study assessing service provider knowledge and perceptions on modern family planning commodity usage in South Africa (Hlongwa, Tlou et al. 2021). In addition, 94% respondents (n=105) were found to be involved in making family planning commodity stocking decisions at the subject outlets. This finding was favorable as it meant that findings on stocking patterns were traceable to respondents.

5.1.2 Provider FP experience and knowledge.

The study established that 105 (93.75%) of the 112 respondents possessed the requisite minimum number of years of experience related to management of FP commodities. Provider experience in FP commodity management (in years) ranged from greater than 1 year to greater than 5, with 49 (43.75%), 28 (25.00%) and 28 (25.00%) respondents bearing 1 to 3 years, 3 to 5 years and >5 years of relevant experience respectively.

In-depth evaluation of service provider knowledge with specific emphasis on the theoretical and practical aspects of FP commodity management and usage revealed that an average of 103 of the 112 respondents (91.96%, Max = 111/ Min = 85) had the requisite knowledge.

These findings were in consonance with established findings by Mutisya (Mutisya, Wambua et al. 2019) and related findings by Hlongwa et.al (Hlongwa, Tlou et al. 2021).

5.1.3 Provider post-education FP training and access to future capacity building

The study established gaps in service provider capacity building with respect to the subject matter as data on historical access to post-education FP training and future access to FP capacity building revealed that only 38 (33.93%) and 45 (40.18%) of the 112 respondents self-reported having access respectively. Inadequate and inconsistent access to continuing FP education (by service providers) is well established as one of the barriers to ensuring ready access to FP commodities based on research by Dehlendorf (Dehlendorf, Levy et al. 2010). Report findings agreed with these findings.

5.2 Availability of FP commodities at private Class C drug shops

The study established the following findings with respect to availability of FP commodities at the subject facilities, as per the following sub-variables;

5.2.1 Overall physical availability of FP commodities

FP commodity availability at the private Class C Drug shops for COCs, ECPs and condoms stood at 46.43% (n=52), 62.5% (n=70) and 74.11% (n=83) respectively. Availability of POPs was found to be at a dismal 8.04% (only 9 of the 112 facilities). Condoms were found to be the most readily available form of modern family planning at the private Class C drug shops as at the time of the survey. Overall, only Condoms and ECPs met the availability threshold of 50%, with POPs being the least available item. These findings are in consonance with findings by Githinji (Githinji, Maru et al. 2022)

5.2.2 Quantities of FP commodities

Overall, ECPs and condoms were established to be available in adequate volumes, exceeding the 50% threshold (59.82% and 52.68% respectively); while COCs and POPS were only available in low (36.61%) and very low (3.5%) quantities respectively. These findings (with regard to low quantities of long acting FP commodities in preference for short term methods) at FP commodity sources are also in agreement with findings by Githinji (Githinji, Maru et al. 2022).

5.2.3 FP commodity variety

The data revealed that all 52 facilities (46.43%) which stocked COCs did not stock more than 2 brands of these items. The 68 facilities (60.72%) that were found to have stocks of ECPs only stocked between 1 and 2 brands of the subject items. Condom variety beyond 2 brands was observed in 14 (12.5%) of the 83 facilities where condoms were found to be available. The 9 facilities (8.04%) that stocked POPs only stocked 1 to 2 brands of these items. This latter finding agreed with a research report by Zuniga et.al (Zuniga, Blanchard et al. 2022) regarding low POP uptake and related low stock volume.

5.2.4 FP commodity stock-out days

Mean commodity stock out days were 47, 03, 46 and 82 for COCs, POPs, ECPs and condoms respectively. While evaluating maximum number of stock-out days per commodity category, all commodities except POPs were noted to have been out of stock beyond a year. Whereas condoms were the most numerous items with the greatest variety, these items were found out of stock for the greatest average number of days. Inversely, whereas POPs were the least available and least numerous items as noted above, these commodities registered the least number of average stock-out days.

5.3 Relationship between service provider knowledge and availability of FP commodities

5.3.1 Bivariate analysis

Bivariate analysis, specifically focusing on evaluation service provider knowledge against quantities of COCs, ECPs and Condoms to determine whether a statistically significant relationship existed between them using Pearson chi at a significance level (p-value) of 0.05 revealed that a statistically significant relationship existed between;

Knowledge on commodity categories and quantities of ECPs (p=0.00).

Knowledge on HIV/STI prevention and quantities of COCs (p=0.00).

However, comparison of all the other knowledge metrics with respect to service provider knowledge on family planning with quantity of the specific FP commodities did not reveal statistically significant relationships.

Additionally, bivariate analysis for available data where comparison of all the metrics with respect to service provider knowledge on family planning with availability of the specific family planning methods did not reveal statistically significant relationships.

Evaluation of service provider knowledge against variety of COCs, ECPs and Condoms to determine whether a statistically significant relationship existed between them using Pearson chi at a significance level (p-value) of 0.05 revealed that a statistically significant relationship existed between;

Knowledge on commodity categories and variety with respect to COCs (p=0.00).

Knowledge on specific family planning methods and variety of COCs (p=0.00)

Provider experience on family planning (in years) and variety of COCs (p=0.00)

However, in contrast with the above findings, comparison of all the other knowledge metrics with respect to service provider knowledge on family planning with variety of the specific family planning commodities did not reveal relationships of statistical significance.

5.3.2 Multiple regression analysis

Multiple regression analysis for the variables as used to assess knowledge among service providers with respect to the quantity of ECPs at the private Class C Drug shops indicated that provider knowledge on categories of FP had a statistically significant relationship with respect to ECP stock quantity as found at the subject facilities (p = 0.036). The same was found to be true (negatively significant) for facilities where these commodities were not found to be available (p= 0.033).

However, evaluation of other knowledge variables in relation to ECP quantity did not yield results that met the established significance threshold.

In addition, multiple regression analysis relating knowledge variables to COC and Condom quantity; as well as ECP, COC and Condom variety did not yield results that met the established significance threshold.

Chapter Six: Conclusions and recommendations

This chapter presents conclusions and recommendations as drawn from the presented results in chapter four and the ensuing discussion of the same as presented under chapter five. These are presented in line with established study objectives.

6.1 Conclusions

6.1.1 Level of service provider knowledge and experience on FP commodities

The study revealed that majority of respondents possessed adequate knowledge and experience on FP commodity management and usage. In addition, majority of respondents possessed the requisite minimum number of years of experience related to management of FP commodities. In depth evaluation of service provider knowledge with specific emphasis on the theoretical and practical aspects of FP commodity management and usage revealed adequacy of respondent knowledge on FP definitions, FP target age group, FP commodity categories, specific FP methods/ commodities used and FP as relates to HIV/ STI prevention.

6.1.2 FP commodity availability, quantity and variety.

The study revealed that majority of surveyed facilities stocked moderate to low variety of relatively ample quantities of subject FP commodities, with the exception of POPs. Condoms were the most stocked commodity, while POPs were the least stocked commodity. Overall, whereas product quantities were acceptable, product variety for POPs, COCs and ECPs did not meet established variety expectations.

Only condoms were found to be available in variety exceeding two brands and for only 12.5% of the subject facilities where condoms were found to be stocked.

None of the facilities surveyed stocked female condoms. This latter finding mirrors findings by LK Fasehun et.al in his 2022 study where it was discovered that female condoms only constituted 1.6% of available modern FP commodities in low and middle income countries (Fasehun, Lewinger et al. 2022).

6.1.3 Relationship between service provider knowledge and commodity availability

Whereas the study, through bivariate analysis, revealed positive statistically significant relationships with respect to knowledge on commodity categories when individually compared to ECP quantity and COC variety; as well as positive statistically significant relationships with respect to knowledge on HIV/ STI prevention and knowledge on specific FP methods with COC quantity and COC variety respectively; overall, the analysis did not reveal the existence of a fundamental relationship between the established dependent and independent variables. This finding is further reinforced by the findings from multiple regression analysis.

Therefore, the study did not reveal the existence of a fundamentally significant relationship between service provider knowledge on FP with level of FP commodity availability. Whereas reviewed literature indicated a possible link between the dependent and independent variables, this was not found to be the case based on statistical evaluation of obtained data.

This could be attributed to the un-investigated interplay between the dependent variable and other uninvestigated factors such as availability of free public sector commodity supplies, supply chain gaps, patient/ client preferences, facility specialization, facility location and perceptions of commodity quality as reflected in a Tanzania based study by Elewonibi (Elewonibi, Sato et al. 2020).

6.2 Recommendations

The following recommendations, in line with study findings, are hereby proposed;

6.2.1 Establishment of National systems for monitoring of commodity availability.

To improve commodity availability in private health facilities, it is essential to establish a robust national level system for continuous regular monitoring of FP commodity stock levels at all levels. This can help to promptly identify and address FP commodity stock-outs and ensure clients have access to the FP commodities they need most.

6.2.2 Diversification of FP commodity variety.

The study revealed that commodity variety for majority of FP commodities did not meet the established expectations. Efforts should therefore be made to diversify the available product offerings through national level FP commodity supply chain partnerships. Encouraging facilities to diversify stocking, supply of multiple brands and types of family planning commodities, especially for COCs and POPs, should be able to widen client choice and increase FP commodity coverage and uptake.

6.2.3 Implementation of facility stock management systems to curb stock-outs.

The study identified that some facilities experienced lengthy stock-out periods, some in excess of 356 days. Implementing efficient facility-based inventory management systems to enhance capacity to forecast and satisfy client FP commodity demand while ensuring timely replenishment of stock can help reduce commodity stock-outs.

6.2.4 Promotion of female condom stocking and use.

None of the facilities surveyed stocked female condoms. Private sector efforts to understand why this was the case, to address discovered barriers to female condom use and to promote an increase in the availability of female condoms could be beneficial in providing more modern contraceptive options for fecund women.

The above recommendations can contribute to improving family planning commodity availability in private health facilities and enhance the quality of FP services provided.

6.3 Areas for further research

6.3.1 Evaluation of specific knowledge-commodity relationships

Whereas the study did not reveal a fundamental relationship between service provider knowledge and commodity availability, it may be worthwhile to conduct further research to explore specific knowledge-commodity relationships. Identifying more targeted relationships can help tailor interventions and training programs to areas that shall have the most significant impact on commodity availability.

6.3.2 Exploring female condom acceptability as predictor of availability

The study revealed a complete absence of female condoms in all the Class C facilities visited. It is worth exploring the reasons why this was the case in this specific setting, as female condoms have long been presented as one of the modern FP commodities that can place family planning in the control of female sexual partners, especially in low and middle income countries (Fasehun, Lewinger et al. 2022).This is especially crucial in the fight against HIV/ AIDS.

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Appendices

Appendix 1: Consent Form

Provider knowledge and availability of family planning commodities at private drug shops in Soroti District.

INFORMED CONSENT FORM FOR RESPONDENT INTERVIEW

Facility code: _____

Respondent code: _____

Location: (Sub-county/Village): _____

Principal investigator: Makumbi Tom Contact: 0774505694

Supervisor: Rev. Canon Evatt M. Mugarura (Uganda Christian University)

Study Site: Soroti District, Eastern Uganda.

Part I: Information Sheet

Introduction and purpose of the study:

Good day. My name is *(insert own name)* and I am a student of Uganda Christian University pursuing a Master of Public Health. I am conducting a study to determine the relationship between service provider knowledge and the availability of family planning commodities at private Class C drug shops in Soroti District. The purpose of this study is to establish the level of private health care service provider knowledge on family planning commodities, find out the availability of family planning commodities in this setting and establish the nature of the relationship between service provider knowledge and family planning commodity availability in Soroti district. You are kindly requested to take part in this study as a respondent today.

What will happen if you take part in this study?

The questions as administered by the research team will be about:

i) Service provider knowledge and experiences on family planning commodities.
ii) Family planning commodity physical availability (quantity and product range).
iii) Review of historical stock records to ascertain stocking levels.

There are NO wrong answers to the questions the team will ask. This is not a test. If you agree to take part in the study, you will be requested to complete the interview. The interview will take approximately 15-20 minutes.

Why are you being asked to take part in this research?
You have been selected to participate in this study due to your knowledge and background on the subject matter. The study is strictly for academic purposes only and your participation is voluntary but crucial for its successful completion. Please spare some time to respond to a few questions as presented by the research assistant as honestly as possible.

Are there any possible risks to you?
We think that there are no major risks to you if you participate in this study. However, we will not tell anyone about your participation in this interview. Confidentiality for both you and the information you provide will be maintained throughout the research process.

There is a chance that you may feel embarrassed or uncomfortable by some of the questions in the interview. You can decide which information you would like to share with us. You can skip any question you do not want to answer. You can stop the interview at any time. We will not tell anyone that you were in the study or what you told us, but there is a chance that other people might find out that you were involved in the study.

Are there any possible benefits to you?
There are no direct benefits to you for being in this study. However, the information you provide shall be useful in addressing knowledge and supply side gaps for family planning commodities in your community as a tool for improving overall community health outcomes.

What if you decide you do not want to participate in this study?
Participation is voluntary. You are free to decline/ refuse participation in this research study at any time, either before or after providing consent. There will be no penalty to you if you choose not to take part in the research. Participation or refusal to participate in the study will not affect any services you currently receive. However, your participation is critical for us to compile a more informative report on the subject matter. It will enable us draw evidence-based recommendations that may help to inform future interventions for health worker capacity building approaches as a means to plugging family planning commodity supply chain gaps.

Confidentiality:
We will do our best to protect information about you and your participation. We will interview you in private. We will use a participant number for the interview, instead of your name. We will remove any reference to your name. We will not use your name in any reports. We will ensure that any information we include in reports does not identify you. The data collection tools may be reviewed by other researchers and the ethics review committees. I may share the information you provide with other people, but I will not share your name or anything that identifies you.

Compensation:
There are no costs to you for participating in this study other than the time you will spend in the interview. All participants will be found at their private facilities to avoid the participants incurring travel related costs.

What if you have a concern, problem or have questions?
If you have questions about the research, please contact the Principal Investigator, Mr. Makumbi Tom on telephone ***0774505694*** or via email on ***mak82t@gmail.com***

What are your rights as a participant?
This research proposal has been reviewed and approved by Uganda Christian University REC, which is a committee whose task it is to make sure that research participants are protected from harm. You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

Part II: Certificate of Consent
I have read the foregoing information (or it has been read to me). I have had the opportunity to ask questions about it and any questions I have asked, have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

[Participant should tick appropriate boxes below]

I consent voluntarily to be a participant in this study: YES □ NO □
I consent voluntarily to have the interview audio-recorded: YES □ NO □

Name of participant: _____
Thumbprint/ Signature of participant: _____
Date: _____

Statement by the researcher/ person taking consent
I certify that the nature and purpose, the procedures, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual, and she/ he has provided verbal consent to take part in the interview.

Name of Researcher/ person taking the consent: _____
Signature of Researcher / person taking the consent:
_____
Date: _____

>>Proceed to appendix 2A

UGANDA CHRISTIAN UNIVERSITY
FACULTY OF PUBLIC HEALTH, NURSING AND MIDWIFERY.

Appendix 2A: Data collection questionnaire.
Appendix 2B: Observation checklist.
Appendix 2C: Document review guide.

APPENDICES 2A, 2B and 2C:

Provider knowledge as a factor for family planning commodity availability in private Class C drug shops at Soroti District, Uganda.

Data Collection Questionnaire.

Date:_____ **Start Time:**_____ **End Time:**_____

Interviewer Name:_____ **Telephone:**_____

Facility/ Respondent code: _____

Location: (Sub-county):_ _____

Location (Village): _____

UGANDA CHRISTIAN UNIVERSITY
FACULTY OF PUBLIC HEALTH, NURSING AND MIDWIFERY.

1.0 Information and consent request confirmation:

<table>
<tr><td rowspan="2">Dear respondent:

In fulfilment of the requirement for the award of Master of public health of Uganda Christian University, the student is required to undertake empirical research and submit research findings.

This research study seeks to establish whether drug shop service provider knowledge is a factor in the availability of family planning commodities at private drug shops. The findings of the study will be useful in addressing knowledge and existing supply side gaps for family planning commodities in your community.

You have been selected to participate in this study due to your knowledge and background on the subject matter. The study is strictly for academic purposes only and your participation is voluntary but crucial for its successful completion. Please spare some time to respond to a few questions as presented by the research assistant as honestly as possible. Confidentiality will be maintained throughout the research process.</td><td>Consent received?</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="3" rowspan="2"></td></tr>
<tr><td>Please:

Confirm consent to participate in the research (with a “YES”)

OR

Decline (with a “NO”)</td><td colspan="3">If response is “No” after presenting 1.0;

>>Thank respondent and

END HERE.</td></tr>
</table>

2.0 Biodata:

Tick as Applicable

2.1	Age (Insert number in Years)		
2.2	Sex	Male	
		Female	
2.3	Marital Status	Married	
		Separated	
		Single	
2.4	Highest level of Education/ Medical certification attained (Retrieve evidence if available)	UCE or lower	
		UACE	
		Nursing – Certificate	
		Nursing – Diploma	
		Clinical Officer	
		Medical Doctor/ Specialist	
		None	

3.0 Family Planning commodity procurement decisions:

	Are you engaged in decisions to buy medicines at this Drug shop?	Yes	No

4.0 Provider experience and knowledge: **Tick as Applicable**

4.1	Provider experience in family planning (Years)	>or =1	1-3	3-5	<5	Input
4.2	Have you attended any post education certified training sessions/ CMEs on family planning in the past 2 years? If **"Yes",** insert number of CMEs.	YES (Insert number) [ ]				
		NO				
4.3	For training attended in 4.2, list training institute/ Organization and Year attended. **Confirm:** Retrieve evidence of certified training if available	Institute/ Organization				Year
4.4	Do you have future access to continuing medical education on family planning (CMEs)?	YES (Identify sources)				
		NO				
4.5	What is family planning?**					
4.6	What is the target age group for family planning?	All females and males of reproductive age (14-49 Yrs).				
4.7	List at least 2 major categories of family planning methods	Hormonal methods				
		Barrier methods				
		Natural methods				
		Surgical methods				
4.8	For each of the categories listed above, provide at least 2 examples of the specific methods used:	**Tick below**				
4.8.1	Hormonal methods	COCs				
		POPs				
		ECPs				
		Injectable Hormones				
		Patch				

		Implants		
4.8.2	Barrier methods	Male condom		
		Female condom		
		Diaphragm		
		Cap		
		Sponge		
4.8.3	Natural methods	Lactational Amenorrhea		
		Calendar method/ Moon beads		
		Abstinence		
		Symptoms based method		
4.8.4	Surgical methods	Vasectomy		
		Tubaligation		
4.8.5	Which method protects against HIV and STIs?			
4.9	State at least 3 myths/ misconceptions about Family planning usage. 1-Male condom can disappear inside the woman. 2-The emergency pill is the same as the abortion pill. 3-Tubaligation negatively impacts sex life 4-Vasectomy decreases sex drive and leads to impotence. 5-Family planning pills cause cancer when taken for long periods 6-Family planning pills cause infertility when taken for long 7-Family planning pills protect against HIV and STDs	> or = 3 correct responses	Yes	
		< 3 responses or no correct response.	No	

5.0 Family planning commodity physical availability:

Observe commodity availability for items under categories 4.8.1 and 4.82 and carry out physical count for available items.

5.1	Hormonal methods	Available		List applicable Brands	Quantity of Doses
5.1.1	COCs	Yes			
		No		Number of stock out days	
5.1.2	POPs	Yes			
		No		Number of stock out days	
5.1.3	ECPs	Yes			
		No		Number of stock out days	
5.2	Barrier methods	Available		List Brands	Quantity of Packs
5.2.1	Male condoms	Yes			

		No		Number of stock-out days	
5.2.2	Female condoms	Yes			
		No		Number of stock-out days	

6.0 Document Review:

Review purchase records (if available) for triangulation (past 90 Days only)

Records **NOT** available				**Tick**	
6.1	Hormonal methods	Purchased		List Brands or Tick **No**	Quantity of Doses
6.1.1	COCs	Yes			
		No			
6.1.2	POPs	Yes			
		No			
6.1.3	ECPs	Yes			

		No			
6.2	Barrier methods	Purchased		List Brands or Tick **No**	Quantity of Packs
6.2.1	Male condoms	Yes			
		No			
5.2.2	Female condoms	Yes			
		No			

Key:

COC Combined oral contraceptives.

POP Progestin only pills.

ECP Emergency contraceptive pills.

** Evaluate as per standard definitions in Training of Data collection assistants.

Thank respondent and save data.

Appendix 3: Research approval Letter (REC – UCU)

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

23/11/2022

To: Makumbi Tom

Uganda Christian University
0774505694

Type: Initial Review

Re: UCUREC-2022-383: PRIVATE HEALTH SERVICE PROVIDER KNOWLEDGE AS A FACTOR FOR FAMILY PLANNING COMMODITY AVAILABILITY IN PRIVATE CLASS C DRUG SHOPS IN SOROTI DISTRICT, UGANDA., 1, 2022-09-10

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on **17/11/2022** approved the above referenced study.
Approval of the research is for the period of **23/11/2022** to **23/11/2023.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **23/11/2023** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

No.	Document Title	Language	Version Number	Version Date
1	Data collection tools	English	1	2022-09-10
2	Informed Consent forms	English	1	2022-09-10
3	Protocol	English	1	2022-09-10

Yours Sincerely

Peter Waiswa
For: Uganda Christian University REC

UGANDA CHRISTIAN UNIVERSITY
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UGANDA CHRISTIAN UNIVERSITY

SCHOOL OF RESEARCH & POSTGRADUATE STUDIES

DISSERTATION CORRECTION COMPLIANCE REPORT BY THE CANDIDATE (POST VIVA FORM)

Date: 25th March 2024

Name of Candidate: Makumbi Tom **Reg. No:** RJ20M21/048.

Title of Dissertation: SERVICE PROVIDER KNOWLEDGE AS A FACTOR FOR FAMILY PLANNING COMMODITY AVAILABILITY IN PRIVATE CLASS C DRUGSHOPS IN SOROTI DISTRICT, UGANDA.

SN	COMMENTS BY EXTERNAL EXAMINER	ACTION TAKEN	INDICATOR
1	Title page: Make title more precise and focused on service provider knowledge.	Report title tweaked to focus first and foremost on service provider knowledge. Deleted wording before the words "Service provider knowledge".	Changes captured as recommended and reflected on title page.
2	Literature review: Provide a better summary of reviewed literature with a focus on highlighting the gap(s), using more recent literature.	Changes made to include more recent data on Maternal Mortality Ratio (MMR), Infant Mortality Rate (IMR) and fertility rate for Uganda as adopted from the most recent UDHS publication. This data was not available at time of report submission	Changes adopted as required and reflected in body of literature review as per page 10.

3	Research design: Further description of research/ study design and explanation for choice required.	Section 3.1 modified to include write up reflecting reason for choice of study design.	Report modified according to evaluation recommendations. Pease refer to page 15.
4	Concept framework: Further simplification of the framework required.	Definitive guidance on required concept framework modifications not provided by external examiner assessment report. However, further simplification of framework done.	Changes captured in detailed report under page 7 and slide 7 of the presentation.
5	Presentation of results: Lack of referencing of tables containing results obtained from data analysis.	All tables have now been referenced. These were generated from the analysis of obtained primary data as reflected in Table titles.	Changes captured in detailed report.

SN	COMMENTS BY VIVA VOCE PANEL	ACTION TAKEN	INDICATOR
1	Comments on power point presentation:		
	Acknowledge the sources of the photos in the presentation.	3 human subject photos copied from WHO global photo repository. Source has now been referenced in the presentation. No human subject photography used in main report.	Changes reflected in PPTX presentation.
	Align problem statement, literature review and background.	Modifications made to slides 4 and 5 (summary literature review and problem statement respectively) to improve alignment.	Changes reflected in presentation, with minor changes in detailed report.

	Revise referenced statistics and use more recent data sources. Used sources are outdated.	Referenced data sources reviewed and changed. Adopted MMR and IMR values as reflected in the latest UDHS 2022. This data was not available at time of initial reporting.	Changes adopted both in main report (page 10) and presentation (slide 4).
	Review definitions for key concepts and provide clarity (Knowledge vs Capacity)	The word ***Capacity*** has been removed from the problem statement. The problem statement is now focused on the word ***Knowledge*** as defined in the main report.	Changes reflected in presentation on slide 5 and majorly under pages 12, 13 and 18 of report.
	The problem should come out clearly and immediately. Which gap are you trying to close? This should be clear.	Problem statement modified in line panel recommendations, including changes to descriptive wording.	Changes reflected on slide 5. Minor changes made to report under pages 3 and 4.
	Justify choice of study area	Added slide on justification for choice of study area. This was already embedded in report under page 6	Please refer to slide 9.
	Avoid distractions such as photographs on the slides where results are presented.	Changes made to the presentation to remove images adjacent to statistical data tables to avoid distractions for slide viewers	Please refer to slides 10 through 17.
	General comments		
2	<u>Concept framework:</u> Clearly link the service provider knowledge metrics as outlined in the concept framework with the results. Show how the framework guided the study.	Detailed write up regarding the concept frame and how it guided data collection with respect to the phenomenon under study is presented under section 1.8 of the detailed report (pages 8 and 9). Admittedly, this did not come out clearly in the presentation, but is now well presented in the report.	Kindly refer to the detailed report; Section 1.8 (Fig 1) Pages 7, 8 and 9

3	<u>Literature review:</u> Properly link the literature, the problem statement and the presented results.	This comment generally applied to the presentation. Alignment was made in the PPTX. The linkage between literature, problem statement and presented results comes out clearly in the detailed report. Literature is discussed based on specific objectives and summary provided under each sub-heading. Results are also presented under same sub-headings in relation to the literature, problem, summary findings and the discussion of results.	Kindly refer to detailed report under sections 2.2, 2.3 and 2.4 and related sections under chapters 5 and 6.
4	<u>Problem statement:</u> Clearly identify the problem in relation to the topic and ensure this relationship stands out well.	Minor changes made to both the detailed report and the presentation to quickly show the specific problem in relation to the topic (Service provider knowledge versus commodity availability).	Proposed changes adopted both in slide show and detailed report under the sub-heading "***Problem statement***"
5	<u>Discussion of results:</u> Avoid the use of the word "Capacity" as it is fully loaded and broad. Focus only on what you provided as study guidance in the concept framework.	Write up modified in both presentation and report to focus only on aspects as reflected in the concept framework. Emphasis placed on service provider knowledge as a predictor of FP commodity stocking volumes and stock variety.	Applicable changes made in the report and slide show.
6	<u>Conclusions of the study:</u> Relate reviewed literature to the study conclusions and point out contradictions and anomalies if any.	Modifications made to section 6.1.3 of the detailed report to link literature and the conclusion (based on statistical evaluation of obtained data).	Please refer to page 47.

	Could the contradictions between literature and findings/ conclusions be associated with a problem in the deployed data collection tool?	The data collection tool closely matches the concept framework and evaluates only knowledge metrics and aspects of FP commodity availability, quantity and variety. This was extensively pre-tested and administered electronically to avoid transcription errors. Data was uploaded to a central server in real time. Data was evaluated using SPSS for statistical significance between the two. Data tables were simply copied and pasted in the detailed report without modifications, and elaborately explained.	To date, not a single major problem has been raised regarding data collection tool and data analysis mechanisms. The noted differences between reviewed literature and report conclusions could be to other factors as noted under section 6.1.3.

Makumbi Tom — Candidate's Name — Signature

Rev. Canon Evatt M. Mugarura — Supervisor's Name — Signature