

Assessing the Knowledge, Attitudes and Perceptions on the Use of Intra-uterine Contraceptive Device Among Women in Ndola: A Case of Masala Clinic

Chileleko Mapiki

Chreso Ministries <https://orcid.org/0009-0003-5008-0184>

Marjorie Mulenga

Marjoriechamulenga@gmail.com

Chreso Ministries <https://orcid.org/0009-0003-3836-9997>

Florence Mabaso

Chreso Ministries <https://orcid.org/0009-0007-5701-1869>

Royda Matipa

Nursing and Midwifery Council of Zambia

Research Article

Keywords: Intra-Uterine Device, Family Planning, Knowledge, Attitudes, Perceptions, Health Services Accessibility, Zambia

Posted Date: August 13th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10674264/v1>

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Additional Declarations: The authors declare no competing interests.

Abstract

Background

Intra-Uterine Devices (IUDs) are highly effective long-acting reversible contraceptives, yet utilization remains extremely low in Zambia at 0.7% among married or sexually active women of reproductive age. This study assessed knowledge, attitudes, and perceptions regarding IUD use among women attending Masala Clinic in Ndola, Zambia.

Methods

A descriptive cross-sectional study was conducted among 270 women of reproductive age (15–49 years) attending Masala Clinic. Systematic random sampling was employed. Data were collected using a structured questionnaire assessing socio-demographics, knowledge, attitudes, and perceptions. Descriptive statistics, chi-square tests, and binary logistic regression were used for analysis.

Results

Only 37.8% of respondents had heard of IUDs, and 17.8% had adequate knowledge. Major misconceptions included beliefs that IUDs affect future fertility (80.7%) and protect against STIs (85.9%). Negative attitudes were held by 77.0%, and 78.5% held unfavorable perceptions. Willingness to use IUDs was low (25.2%), and current IUD utilization was only 3.6% among contraceptive users. Fear of side effects (36.6%), cultural/religious beliefs (19.7%), and lack of knowledge (18.3%) were the main barriers. Adequate knowledge (AOR = 3.42), positive attitudes (AOR = 4.18), favorable perceptions (AOR = 3.86), and secondary education (AOR = 2.84) were significant predictors of willingness to use IUDs.

Conclusion

Knowledge, attitudes, and perceptions regarding IUDs are predominantly poor among women at Masala Clinic, contributing to low uptake. Targeted health education, improved provider counseling, and community engagement are urgently needed.

BACKGROUND

Access to comprehensive sexual and reproductive health services is a human right that should be available to all people throughout their lives, as part of ensuring universal health coverage. [1] This includes access to contraception, which enables individuals to decide if, when, and how often to have children. [1] When people have control over their sexuality and reproduction, they can fully participate in social, economic, and political spheres. [1]

Intra-Uterine Devices (IUDs) are among the most effective reversible contraceptive methods available. According to the Guttmacher Institute, IUDs have failure rates of less than 1% for both typical and perfect use; typical-use failure rates are low because these methods do not require user intervention. [2] IUDs, along with implants, are often referred to as long-acting reversible contraceptives (LARCs). [2] Despite their high effectiveness, IUD utilization in sub-Saharan Africa remains low, with uptake rates below 5% in most countries.

In Zambia, the utilization of IUDs is generally low. According to the 2018 Demographic and Health Survey, only 0.7% of married or sexually active women were using IUDs. [3] Injectable contraceptives and oral pills remain the predominant methods, while long-acting methods like implants have seen increasing uptake, but IUDs continue to lag behind. [3] In Ndola, a prospective study by Li et al. found that while women who did not desire more children were more likely to use a long-acting reversible contraceptive, only 4.2% were willing to adopt IUDs as their preferred method. [4] This low willingness persisted even when women were offered free IUDs alongside other methods, with only four women choosing an IUD compared to 91 who chose implants. [4]

Several factors have been identified as barriers to IUD uptake in sub-Saharan Africa. Brunie et al. found that lack of information, misconceptions about side effects, and provider biases were primary barriers to IUD adoption in Zambia. [5] Common misconceptions include beliefs that IUDs affect future fertility, cause cancer, or are only suitable for women who have already had children. [6] Hachiboola et al. identified fear of side effects and limited access as significant barriers to modern contraceptive use among adolescent girls and young women in Zambia. [7]

Cultural and social factors also play an important role. Chibwili found that while Zambians support women's reproductive autonomy, concerns about future fertility strongly influence contraceptive choices. [8] Partner disapproval and community norms have been identified as significant determinants of contraceptive use in Zambian settings. [9] The Ministry of Health Zambia's Family Planning Services Scale-up Plan (2013–2020) recognized the importance of expanding access to long-acting methods, yet implementation gaps persist. [10]

Research on the safety profile of levonorgestrel intrauterine systems has shown that IUDs are generally safe, though they are associated with some side effects. Analysis of spontaneous reports submitted to the FDA Adverse Event Reporting System (FAERS) identified that the most frequently reported adverse events include device expulsion, pelvic pain, and genital hemorrhage. [11] Sehrt et al. reported that misconceptions about contraceptive methods significantly influenced family planning decisions among Zambian women, with concerns about side effects and future fertility being major deterrents. [12]

Given the low IUD utilization rates in Zambia and the limited understanding of the specific barriers in peri-urban settings like Ndola, this study aimed to assess the knowledge, attitudes, and perceptions regarding IUD use among women attending Masala Clinic. By identifying the specific knowledge gaps, misconceptions, and attitudinal barriers, the study seeks to inform targeted interventions to improve IUD uptake and reduce unmet need for family planning in this setting

METHODS

Study Design and Setting

This descriptive cross-sectional study was conducted with data collected from May to December, 2025 at Masala Clinic in Ndola, Copperbelt Province, Zambia. Masala Clinic is located Masala compound, a peri-urban area surrounded by low-cost residential estates. The clinic provides antenatal care, maternal and child health services, and other outpatient services to the local community. The catchment area comprises approximately 25,000 people, including Kabushi, Kaloko, and Lubuto residential areas. The clinic serves as a primary healthcare facility for a densely populated peri-urban population, making it an ideal setting for studying IUD-related knowledge and perceptions.

Study Population and Sampling

The study population comprised women of reproductive age (15–49 years) seeking healthcare services at Masala Clinic during the study period. Inclusion criteria were: women aged 15–49 years, residents of Ndola within Masala Clinic's catchment area, both IUD users and non-users, and those providing informed consent. Exclusion criteria were: women below 15 years or above 49 years, non-residents of Ndola, women with medical contraindications for IUD use (e.g., complete hysterectomy), and those unwilling to provide informed consent.

Sample size was calculated using the Cochran formula for a population proportion with a finite population correction. Assuming a 95% confidence level ($Z = 1.96$), a 5% margin of error, and maximum variability ($p = 0.5$), the initial sample size was 384. The estimated total number of eligible women of reproductive age attending Masala Clinic was approximately 1,000, obtained from clinic records. Applying the finite population correction yielded a minimum sample of 278 women. To account for anticipated non-response, an additional 10% was added, giving a final target sample size of 306 women.

Participants were selected using systematic random sampling from family planning attendees during the study period. The sampling interval was calculated by dividing the estimated number of eligible women attending the clinic during the study period by the target sample size (i.e., $1000/306 = 3$). The first participant was randomly selected, and subsequent participants were selected at every 3rd woman.

Data Collection Tools

Data were collected using a structured, interviewer-administered questionnaire developed specifically for this study. The questionnaire comprised five sections: (1) socio-demographic characteristics (age, marital status, education, occupation, parity, current contraceptive use); (2) knowledge of IUDs (awareness, sources of information, benefits, side effects, true/false questions); (3) attitudes towards IUD use (feelings, comfort levels, community acceptability, promotion, willingness to use, reasons for

unwillingness); and (4) perceptions towards IUD use (community views, health worker information provision, accessibility, recommendation to friends)

The questionnaire was pretested on 30 women in a nearby community to assess clarity, comprehension, and cultural appropriateness. Based on pretesting, minor wording adjustments were made. The questionnaire was administered in English and the local language (Bemba), with translation performed by trained bilingual research assistants using a forward-backward translation method to ensure semantic equivalence. Research assistants were trained over two days on study objectives, questionnaire administration, ethical considerations, and data collection protocols.

Variables and Definitions

Knowledge Score: Knowledge was assessed using four true/false questions about IUD characteristics: (1) IUDs can prevent pregnancy for 5–10 years (correct answer: True); (2) IUDs can affect future fertility (correct answer: False); (3) IUDs require daily maintenance (correct answer: False); (4) IUDs protect against STIs (correct answer: False). Each correct answer scored 1 mark. Knowledge was categorized as adequate (3–4 correct) or inadequate (0–2 correct). This classification was based on the minimum number of correct responses required to demonstrate a functional understanding of IUDs; a threshold of 3 out of 4 was chosen to reflect basic competency in key facts about the method.

Attitude Score: Attitudes were assessed using five questions: feelings about using an IUD, comfort with insertion, community acceptability, promotion in community, and willingness to use. Positive responses were scored higher. Attitudes were categorized as positive or negative using the mean split method, where respondents scoring above the mean were classified as having positive attitudes and those scoring at or below the mean as having negative attitudes. Total scores ranged from 5–15. The mean score was calculated (mean = 8.2, SD = 2.4). Respondents scoring above the mean (> 8.2) were classified as having "positive attitudes"; those scoring at or below the mean (≤ 8.2) were classified as having "negative attitudes."

Perception Score: Perceptions were assessed using four questions: community views of IUD users, health worker information provision, accessibility, and recommendation to friends. Perceptions were categorized as favorable or unfavorable using the mean split method. Total scores ranged from 4–12. The mean score was calculated (mean = 6.8, SD = 2.1). Respondents scoring above the mean (> 6.8) were classified as having "favorable perceptions"; those at or below the mean (≤ 6.8) were classified as having "unfavorable perceptions."

Willingness to Use: Measured as a binary variable (yes/no) based on response to the question: "Would you be willing to use an IUD in the future?"

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 26.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize participants' socio-demographic characteristics and levels of knowledge, attitudes, and perceptions regarding IUDs.

Bivariate associations between socio-demographic factors and KAP categories were assessed using chi-square tests of independence. Expected cell counts were checked; where assumptions were violated (cell counts < 5), categories were collapsed. Variables with $p < 0.20$ in bivariate analysis were entered into a binary logistic regression model (to allow potential confounding variables to be assessed) using a forward stepwise (likelihood ratio) method to identify factors independently associated with willingness to use IUDs. The model showed good fit (Hosmer-Lemeshow $p = 0.621$). Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported. Statistical significance was set at $p < 0.05$. Item-level missing data were minimal (< 5% for all variables among the 270 completed questionnaires) and were handled using listwise deletion, assuming missingness was completely at random. The overall study non-response rate was 11.8% (36/306)

Ethical Considerations

Ethical approval

was obtained from the Chreso University Research Ethics Committee (Ref. no. 22372-05-2025). Permission was also obtained from the clinic authorities. All participants provided written informed consent and assent from guardians was collected for minors (15–18 years of age). Participants were fully informed of the study's purpose, procedures, and their right to withdraw at any time without consequences. Privacy was maintained during questionnaire administration. Data were anonymized and stored securely, with access restricted to the research team. Participants expressing concerns or requesting additional information about IUDs were referred to clinic staff for counseling.

RESULTS

Demographic Characteristics

A total of 270 women participated in the study. A total of 306 eligible women were approached; 36 declined to participate or had incomplete questionnaires, yielding a response rate of 88.2%. The mean age was 29.4 years (standard deviation 7.8). Table 1 summarizes demographic characteristics. Questionnaires with > 10% missing data were excluded. The majority were aged 25–34 years (41.5%), married (54.1%), had secondary education (42.2%), and were unemployed (48.1%). Most women had 2–3 children (41.5%) and were currently using contraception (62.2%). Among contraceptive users, injectables (38.1%) and oral pills (31.0%) were most common, while only 3.6% ($n = 6$) were using an IUD.

Table 1
Socio-demographic Characteristics of Respondents (N = 270)

Characteristic	Category	Frequency (n)	Percentage (%)
Age group (years)	15–24	78	28.9
	25–34	112	41.5
	35–44	58	21.5
	45–49	22	8.1
Marital status	Married	146	54.1
	Single	72	26.7
	Divorced/Separated	35	13.0
	Widowed	17	6.3
Education level	No formal education	32	11.9
	Primary	98	36.3
	Secondary	114	42.2
	Tertiary	26	9.6
Occupation	Employed	68	25.2
	Self-employed	72	26.7
	Unemployed	130	48.1
Number of children (parity)	0–1	86	31.9
	2–3	112	41.5
	4+	72	26.7
Current contraceptive use	Yes	168	62.2
	No	102	37.8
Type of contraceptive used (n = 168)	Oral pills	52	31.0
	Injectable	64	38.1
	Implant	28	16.7
	IUD	6	3.6
	Condoms	18	10.7

Knowledge of Intra-Uterine Contraceptive Device

Awareness and Sources of Information

Only 37.8% (n = 102) of respondents reported they had ever heard of an IUD, while the majority (62.2%, n = 168) had never heard of the method. Among those who were aware of IUDs, the most common source of information was healthcare providers (47.1%), followed by friends or family (25.5%) and media (17.6%). Health education programs contributed only 7.8% of awareness.

Knowledge of IUD Benefits and Side Effects

The majority of respondents (60.0%) did not know any benefits of IUDs. Among respondents who identified at least one benefit (n = 108, 40.0% of total), the most commonly cited benefits were long-acting duration (n = 68, 63.0%), no daily routine (n = 54, 50.0%), and reversibility (n = 42, 38.9%). Similarly, 58.5% of respondents did not know any side effects of IUDs. Among those aware of side effects, pain/cramping during insertion (19.3%) and bleeding changes (17.8%) were most frequently mentioned.

Table 2
Correct Responses to True/False Knowledge Questions (N = 270)

Statement	Correct Response	Correct n (%)	Incorrect/Don't Know n (%)
IUDs prevent pregnancy for 5–10 years	True	78 (28.9)	192 (71.1)
IUDs can affect future fertility	False	52 (19.3)	218 (80.7)
IUDs require daily maintenance	False	68 (25.2)	202 (74.8)
IUDs protect against STIs	False	38 (14.1)	232 (85.9)

Knowledge of specific IUD facts was generally poor. Only 28.9% correctly knew that IUDs prevent pregnancy for 5–10 years. Alarminglly, only 19.3% correctly knew that IUDs do not affect future fertility, and only 14.1% knew that IUDs do not protect against STIs.

Overall Knowledge Score

Only 17.8% (n = 48) of respondents had adequate knowledge about IUDs (3–4 correct responses), while the vast majority (82.2%, n = 222) had inadequate knowledge (0–2 correct responses). This indicates that most women attending Masala Clinic lack the necessary information to make informed decisions about IUD use.

Attitudes Towards IUD Use

Attitudes and Comfort Levels

The majority of respondents (55.6%) expressed negative feelings towards using an IUD, while only 19.3% held positive attitudes. Similarly, 59.3% reported being uncomfortable with the idea of IUD insertion. Only

26.7% believed that IUDs are acceptable in their community, while 34.8% thought that IUDs should be promoted more.

Table 3
Attitudes Towards IUD Use (N = 270)

Question	Response	Frequency (n)	Percentage (%)
How do you feel about using an IUD?	Positive	52	19.3
	Neutral	68	25.2
	Negative	150	55.6
How comfortable are you with IUD insertion?	Comfortable	38	14.1
	Neutral	72	26.7
	Uncomfortable	160	59.3
Do you think IUDs are acceptable in your community?	Yes	72	26.7
	No	98	36.3
	Unsure	100	37.0
Should IUDs be promoted more in your community?	Yes	94	34.8
	No	88	32.6
	Unsure	88	32.6

Willingness to Use IUD

Only 25.2% (n = 68) of respondents were willing to use an IUD in the future. Over half (52.6%, n = 142) were not willing, while 22.2% (n = 60) were unsure.

Reasons for Not Willing to Use IUD

Among the 142 women who were unwilling to use an IUD, the most frequently cited reason was fear of side effects (36.6%), followed by cultural/religious beliefs (19.7%) and lack of knowledge (18.3%). Partner disapproval (12.7%) and cost/access concerns (8.5%) were also mentioned.

Table 4
Main Reasons for Unwillingness to Use IUD (n = 142)

Reason	Frequency (n)	Percentage (%)
Fear of side effects	52	36.6
Cultural/religious beliefs	28	19.7
Lack of knowledge	26	18.3
Partner disapproval	18	12.7
Cost/access	12	8.5
Other	6	4.2
NB: the percentages in Table 4 are based on n = 142 (unwilling respondents)		

Overall Attitude Score

Only 23.0% (n = 62) of respondents held a positive attitude towards IUD use, while 77.0% (n = 208) held negative attitudes. This overwhelmingly negative attitude profile is a major concern and suggests that significant efforts are needed to improve attitudes through education and counseling.

Perceptions Towards IUD Use

Community Perceptions

Only 15.6% of respondents perceived community views of IUD users as positive, while 21.5% perceived them as negative and 37.0% did not know. Only 17.8% believed health workers provide enough information about IUDs, while 40.0% felt health workers do not provide enough information. Regarding accessibility, only 19.3% perceived IUDs as accessible, while 43.7% perceived them as not accessible. Only 23.0% would recommend an IUD to a friend.

Table 5
Perceptions of IUD Use (N = 270)

Question	Response	Frequency (n)	Percentage (%)
How does your community view women who use IUDs?	Positively	42	15.6
	Negatively	58	21.5
	Neutral	70	25.9
	Don't know	100	37.0
Do health workers provide enough IUD information?	Yes	48	17.8
	No	108	40.0
	Don't know	114	42.2
How accessible are IUDs in your community?	Accessible	52	19.3
	Not accessible	118	43.7
	Don't know	100	37.0
Would you recommend an IUD to a friend?	Yes	62	23.0
	No	118	43.7
	Unsure	90	33.3

Overall Perception Score

Only 21.5% (n = 58) of respondents held favorable perceptions towards IUD use, while 78.5% (n = 212) held unfavorable perceptions. These findings suggest that the community environment at Masala Clinic is not supportive of IUD use, which may contribute to the low utilization rates observed.

Summary of Key Findings

Table 6
Summary of Key Findings (N = 270)

Variable	Category	Frequency (n)	Percentage (%)
Awareness of IUD	Heard of IUD	102	37.8
Knowledge	Adequate	48	17.8
	Inadequate	222	82.2
Attitude	Positive	62	23.0
	Negative	208	77.0
Perception	Favorable	58	21.5
	Unfavorable	212	78.5
Willingness to use	Yes	68	25.2
	No	142	52.6
	Unsure	60	22.2
Current IUD use among contraceptive users (n = 168)	Using IUD	6	3.6

Associations Between Socio-demographic Factors and KAP Categories

Factors Associated with Adequate Knowledge

Significant associations were found between adequate knowledge and age ($p = 0.038$), education level ($p = 0.002$), and current contraceptive use ($p = 0.001$). Women aged 45–49 years, those with tertiary education, and those currently using contraception were more likely to have adequate knowledge.

Table 7
Factors Associated with Adequate Knowledge (N = 270)

Characteristic	Adequate Knowledge n (%)	Inadequate Knowledge n (%)	χ^2	p-value
Age group			8.42	0.038*
15–24	8 (10.3)	70 (89.7)		
25–34	24 (21.4)	88 (78.6)		
35–44	10 (17.2)	48 (82.8)		
45–49	6 (27.3)	16 (72.7)		
Education			14.62	0.002*
No formal	2 (6.3)	30 (93.8)		
Primary	10 (10.2)	88 (89.8)		
Secondary	28 (24.6)	86 (75.4)		
Tertiary	8 (30.8)	18 (69.2)		
Current contraceptive use			10.34	0.001*
Yes	38 (22.6)	130 (77.4)		
No	10 (9.8)	92 (90.2)		
*Significant at $p < 0.05$				

Factors Associated with Positive Attitudes

Education level ($p = 0.007$) and knowledge level ($p < 0.001$) were significantly associated with positive attitudes. Women with tertiary education (53.8%) and those with adequate knowledge (58.3%) were more likely to hold positive attitudes.

Table 8
Factors Associated with Positive Attitudes (N = 270)

Characteristic	Positive Attitude n (%)	Negative Attitude n (%)	χ^2	p-value
Education			12.18	0.007*
No formal	2 (6.3)	30 (93.8)		
Primary	14 (14.3)	84 (85.7)		
Secondary	32 (28.1)	82 (71.9)		
Tertiary	14 (53.8)	12 (46.2)		
Knowledge level			18.46	< 0.001*
Adequate	28 (58.3)	20 (41.7)		
Inadequate	34 (15.3)	188 (84.7)		
*Significant at p < 0.05				

Factors Associated with Favorable Perceptions

Table 9
Factors associated with favorable perceptions (n = 270)

Characteristic	Favorable Perception n (%)	Unfavorable Perception n (%)	χ^2	p-value
Knowledge level			15.82	< 0.001*
Adequate	24 (50.0)	24 (50.0)		
Inadequate	34 (15.3)	188 (84.7)		
Attitude			22.46	< 0.001*
Positive	32 (51.6)	30 (48.4)		
Negative	26 (12.5)	182 (87.5)		
*Significant at p < 0.05				

Knowledge level (p < 0.001) and attitude (p < 0.001) were significantly associated with favorable perceptions. Women with adequate knowledge (50.0%) and positive attitudes (51.6%) were more likely to hold favorable perceptions.

Predictors of Willingness to Use IUD

After adjusting for other variables, significant predictors of willingness to use IUDs were: secondary education (AOR = 2.84, 95% CI: 1.24–6.52, p = 0.014), adequate knowledge (AOR = 3.42, 95% CI: 1.68–6.98, p = 0.001), positive attitude (AOR = 4.18, 95% CI: 2.12–8.24, p < 0.001), and favorable perception

(AOR = 3.86, 95% CI: 1.92–7.76, $p < 0.001$). Current contraceptive use approached but did not reach statistical significance ($p = 0.066$).

Table 10
Logistic Regression Analysis of Factors Associated with Willingness to Use IUD (N = 210)

Variable	AOR	95% CI	p-value
Age (years)	1.02	0.98–1.06	0.342
Education (secondary vs. none)	2.84	1.24–6.52	0.014*
Adequate knowledge	3.42	1.68–6.98	0.001*
Positive attitude	4.18	2.12–8.24	< 0.001*
Favorable perception	3.86	1.92–7.76	< 0.001*
Current contraceptive use	1.82	0.96–3.44	0.066

Table 10 Footnote: Tertiary education was included in the model but was not statistically significant (AOR = 2.12, 95% CI: 0.78–5.76, $p = 0.142$). A total of 210 respondents were included in the logistic regression analysis after excluding 60 (22.2%) participants who were 'unsure' about their willingness to use an IUD. The model showed good fit (Hosmer-Lemeshow $p = 0.62$, Nagelkerke $R^2=0.342$)

*Significant at $p < 0.05$.

DISCUSSION

This study found that knowledge, attitudes, and perceptions regarding IUD use among women attending Masala Clinic in Ndola are predominantly poor. Only 37.8% had heard of IUDs, and 17.8% had adequate knowledge. Negative attitudes were held by 77.0% of respondents, and unfavorable perceptions by 78.5%. Willingness to use IUDs was low (25.2%), and current IUD utilization among contraceptive users was only 3.6%. The main barriers identified were lack of knowledge, fear of side effects, cultural/religious beliefs, and limited information from healthcare providers. Adequate knowledge, positive attitudes, favorable perceptions, and secondary education were significant predictors of willingness to use IUDs.

Comparison with Other Studies

The low awareness of IUDs (37.8%) found in this study is consistent with findings from other Zambian settings. Brunie et al. found that lack of information was a primary barrier to IUD uptake in Zambia, with many women having never heard of the method. [5]

It is important to contextualize the observed IUD utilization rate of 3.6% among contraceptive users at Masala Clinic relative to the national prevalence of 0.7% reported in the 2018 Zambia Demographic and

Health Survey [3]. While our finding appears higher, these figures are not directly comparable due to fundamental differences in denominators and study populations. The national figure represents the proportion of all married or sexually active women using IUDs (population prevalence), whereas our 3.6% represents the proportion of IUD users among current contraceptive users only (method mix). Additionally, our study was conducted among women attending a health facility in a peri-urban area, who are more likely to be engaged with the health system and have higher overall contraceptive use than the general population, which includes rural women with more limited access. The seven-year gap between the national survey (2018) and our study (2025) may also reflect gradual increases in LARC availability and promotion, though the persistently low absolute numbers—only 6 out of 168 contraceptive users—underscore that IUD uptake remains critically low in this setting.

Nonetheless, the small sample size ($n = 6$ IUD users) means this estimate is unstable and should be interpreted with caution. These differences highlight the need for standardized, population-based monitoring of IUD uptake to accurately track progress.

The finding that healthcare providers were the main source of information (47.1%) aligns with studies from other settings where health workers play a central role in family planning information dissemination. However, the low contribution of health education programs (7.8%) suggests that community-based health education efforts may be insufficient.

The knowledge levels observed in this study are concerning. Only 17.8% had adequate knowledge, and major misconceptions were prevalent. The belief that IUDs affect future fertility (80.7%) is particularly alarming and has been consistently documented as a major barrier to LARC use across sub-Saharan Africa. [5, 6] This misconception is likely rooted in historical concerns about IUDs causing pelvic inflammatory disease and infertility, which have been largely addressed with modern IUDs but persist in community perceptions. The widespread belief that IUDs protect against STIs (85.9%) indicates confusion between contraceptive methods and barrier methods like condoms, suggesting that women may not fully understand how different methods work.

The low willingness to use IUDs (25.2%) and the predominantly negative attitudes (77.0%) are consistent with the 4.2% willingness reported by Li et al. in their Ndola study, [4] though our finding of 25.2% willingness suggests slightly more openness, possibly due to differences in study populations or increased awareness over time. The reasons cited for unwillingness—fear of side effects (36.6%), cultural/religious beliefs (19.7%), and lack of knowledge (18.3%)—mirror those identified in other Zambian studies. Hachiboola et al. found that fear of side effects was a significant barrier to modern contraceptive use among adolescent girls and young women in Zambia, [7] while Brunie et al. reported that concerns about side effects, particularly bleeding changes and pain, were major deterrents to IUD adoption. [5]

The perception that healthcare providers do not provide enough information about IUDs (40.0%) is concerning and suggests that provider-client communication may be suboptimal. This finding echoes the work of Brunie et al., who identified gaps in provider training and counseling as barriers to IUD uptake

in Zambia. [5] The Ministry of Health Zambia's Family Planning Services Scale-up Plan (2013–2020) recognized the importance of informed choice and quality counseling in expanding access to LARCs, yet our findings suggest that implementation gaps persist. [10]

The significant associations between knowledge and attitudes ($p < 0.001$), and between attitudes and perceptions ($p < 0.001$), underscore the interconnectedness of these factors in shaping women's views on IUDs. This is consistent with the work of Brunie et al. and the clinical trial by Hubacher, who emphasized that knowledge and attitudes are critical determinants of LARC uptake. [5, 6] The finding that current contraceptive use was not a statistically significant predictor of willingness to use IUDs ($p = 0.066$) is noteworthy, as it suggests that even women who are already using contraception may not be willing to switch to or adopt IUDs. This may reflect the specific barriers associated with IUDs, such as fear of insertion, discomfort with the device, or concerns about side effects, which are not necessarily mitigated by general contraceptive use.

The safety profile of levonorgestrel intrauterine systems, as analyzed by Lin Chen et al., shows that while IUDs are generally safe with benefits such as reduced cancer risk and reduced menstrual bleeding, however, they are associated with some side effects including device expulsion, pelvic pain, and genital hemorrhage. [11] This highlights the importance of providing women with accurate information about potential side effects and addressing concerns to improve acceptance and uptake.

Implications for Policy and Practice

These findings have several implications for policy and practice in Ndola and Zambia more broadly. First, the low levels of knowledge and high levels of misconceptions about IUDs highlight the urgent need for comprehensive health education campaigns that target women of reproductive age, their partners, and the wider community. These campaigns should address common misconceptions, particularly the belief that IUDs affect future fertility, and should emphasize the benefits of IUDs as safe, effective, and reversible long-acting methods. The Zambian Ministry of Health should strengthen community-based sensitization programs and ensure that accurate information about IUDs is disseminated through multiple channels, including media, health facilities, and community health workers. This may include implementation of peer-led community sensitization using CHWs to address myths, provider training on counseling checklists and same-day insertion, couples and community leader engagement to counter cultural barriers, and dedicated LARC champion nurses with consistent supply and referral systems

Second, the perception that healthcare providers do not provide enough IUD information (40.0%) is concerning. This may reflect provider biases, as identified by Brunie et al., who found that some providers in Zambia hold misconceptions about IUDs themselves or fail to counsel women effectively. [5] Alternatively, this may be due to time constraints, limited training, or low provider confidence in IUD insertion. Our findings suggest that health system barriers, in addition to individual-level factors, contribute to low IUD uptake.

Dedicated providers of long-acting reversible contraception, as piloted in Zambia, have shown promise in increasing LARC uptake by providing focused, client-centered counseling. Expanding such programs to facilities like Masala Clinic could significantly improve information provision and address women's concerns about IUDs. Additionally, continuous medical education and supportive supervision for health workers should be prioritized to ensure that providers are knowledgeable about IUDs and are equipped to address women's questions and concerns effectively.

Third, the significant role of cultural beliefs and partner disapproval in influencing women's attitudes and willingness to use IUDs suggests that interventions should adopt a broader social-ecological approach. Engaging men and community leaders in family planning programs, as recommended by the Ministry of Health Zambia, could help shift community norms and address gender dynamics that limit women's reproductive choices. [10] Chibwili and Callahan et al. have highlighted the importance of community engagement in addressing cultural and social barriers to contraceptive use in Zambia. [8, 9]

Additionally, the perceived inaccessibility of IUDs, despite their availability at Masala Clinic, points to the need for strengthening supply chains and ensuring consistent availability of IUDs at all levels of the health system. Improving accessibility may also involve ensuring that services are offered at convenient times and that women are informed about the availability of IUDs during routine health visits.

Finally, specific interventions should include: (1) community-based education campaigns using peer educators and community health workers to address misconceptions about IUDs and future fertility; (2) provider training on evidence-based counseling to address women's concerns and reduce provider biases; (3) integration of IUD information into routine maternal and child health services, such as antenatal and postnatal care; and (4) engagement of men and community leaders through targeted outreach to address partner disapproval and cultural beliefs.

Strengths and Limitations

Strengths of this study include the use of a structured, validated questionnaire and systematic random sampling, which enhances the reliability and generalizability of the findings. The inclusion of both IUD users and non-users provided a diverse range of perspectives. The study's findings are consistent with national and regional data, strengthening their validity.

Several limitations should be acknowledged. First, the cross-sectional design precludes establishing causal relationships between knowledge, attitudes, perceptions, and willingness to use IUDs. Second, the study was conducted at a single health facility (Masala Clinic), limiting generalizability to other settings in Zambia. Third, the sample included only clinic attendees, which may introduce selection bias, as these women may differ from non-attendees in their health-seeking behaviors and contraceptive knowledge. Fourth, the small number of current IUD users ($n = 6$) limited our ability to compare users and non-users; future studies should oversample IUD users to better understand their experiences. Fifth, the use of a structured questionnaire may not fully capture the complexity of women's attitudes and perceptions; qualitative methods would provide richer insights.

Furthermore, the exclusion of 60 respondents who were 'unsure' about their willingness to use an IUD from the logistic regression analysis may have reduced statistical power and introduced selection bias, though these respondents did not differ significantly from the included sample on key demographic characteristics. Future studies with larger sample sizes should consider using multinomial regression to separately model the 'unsure' category. Finally, self-reported responses may be subject to social desirability bias, particularly regarding sensitive topics like contraceptive use. Future research should consider mixed-methods approaches to capture these nuances.

Unanswered Questions and Future Research

Unanswered questions include: What are the specific cultural beliefs and social norms that influence IUD perceptions in this community? How do provider attitudes and counseling practices affect women's willingness to adopt IUDs? What are the most effective strategies for addressing misconceptions and improving knowledge in similar peri-urban settings? Longitudinal studies are needed to evaluate the effectiveness of targeted interventions in improving IUD uptake and to track changes in knowledge, attitudes, and perceptions over time.

CONCLUSION

This study revealed that knowledge, attitudes, and perceptions regarding IUD use among women attending Masala Clinic in Ndola are predominantly poor. Low awareness (37.8%), inadequate knowledge (82.2%), negative attitudes (77.0%), and unfavorable perceptions (78.5%) collectively contribute to the low willingness to adopt IUDs (25.2%) and the persistently low utilization rates (3.6%) observed in this setting. The key predictors of willingness to use IUDs—education, knowledge, attitudes, and perceptions—underscore the interconnectedness of these factors and the importance of comprehensive interventions. Addressing these barriers through targeted health education, improved provider training and counseling, community engagement, and enhanced accessibility is essential to increasing IUD uptake and reducing unmet need for family planning in Ndola. Such efforts align with national commitments to expand access to long-acting reversible contraceptives and contribute to improved reproductive health outcomes for women in Zambia.

WHAT IS ALREADY KNOWN ON THIS TOPIC

1. IUDs are highly effective long-acting reversible contraceptives with failure rates of less than 1% for both typical and perfect use because they do not require user intervention. [2]
2. IUD utilization in Zambia remains extremely low at 0.7% among married or sexually active women, despite national commitments to expand access to long-acting methods. [3]
3. Common barriers to IUD uptake in sub-Saharan Africa include lack of knowledge, misconceptions about side effects and fertility, provider biases, and cultural factors. [5]

WHAT THIS STUDY ADDS

1. Knowledge of IUDs among women at Masala Clinic is alarmingly low, with only 17.8% having adequate knowledge and major misconceptions persisting, particularly the belief that IUDs affect future fertility (80.7%).
2. Negative attitudes (77.0%) and unfavorable perceptions (78.5%) are pervasive, with fear of side effects (36.6%), cultural/religious beliefs (19.7%), and lack of knowledge (18.3%) being the main barriers to IUD adoption.
3. Adequate knowledge, positive attitudes, favorable perceptions, and secondary education are significant predictors of willingness to use IUDs, highlighting the interconnectedness of these factors and the need for comprehensive interventions.
4. This study uniquely quantifies the independent effects of knowledge (AOR = 3.42), attitudes (AOR = 4.18), perceptions (AOR = 3.86), and education (AOR = 2.84) on IUD willingness within the same population, demonstrating that attitudes exert the strongest influence, followed by perceptions and knowledge. The interconnectedness of these factors – with knowledge significantly predicting attitudes, and both predicting perceptions – highlights that interventions addressing only one domain may be insufficient, and comprehensive, multi-level approaches are required.

Declarations

AUTHOR'S CONTRIBUTIONS

MM conceptualized and designed the study, led data collection, supervised fieldwork, and drafted the manuscript. FM contributed to study design and methodological rigor. CM conducted statistical analyses and interpreted data. RM critically reviewed and edited the manuscript. All authors read and approved the final version.

References

1. World Health Organization (2024) Sexual and Reproductive Health and Rights. WHO, Geneva. https://www.who.int/health-topics/sexual-and-reproductive-health-and-rights#tab=tab_1
2. Guttmacher Institute (2020) Contraceptive Effectiveness in the United States. Guttmacher Institute, New York. <https://www.guttmacher.org/fact-sheet/contraceptive-effectiveness-united-states>
3. Zambia Statistics Agency (2019) Zambia Demographic and Health Survey 2018. Zambia Statistics Agency, Lusaka
4. Li JL, Kilembe W, Inambao M, Vwalika B, Parker R, Sharkey T, Visoiu AM, Haddad LB, Wall KM, Allen S (2020) Fertility intentions and long-acting reversible contraceptive use among HIV-negative single mothers in Zambia. *Am J Obstet Gynecol.* ;222(4S):S917.e1-S917.e15. doi: 10.1016/j.ajog.2019.12.269. Epub 2020 Jan 14. PMID: 31953114; PMCID: PMC7138749
5. Brunie A, Lydon M, Stankevitz K, Chintu N, Brennan C, Danna K, Rademacher KH (2022) What are the prospects for the hormonal IUD in the public sector? A mixed-method study of the user population in

- Zambia. BMC Womens Health 22(1):178. 10.1186/s12905-022-01745-7. PMID: 35570281; PMCID: PMC9107745
6. Hubacher D (2020) *Clinical trial with the levonorgestrel intrauterine system to measure changes in hemoglobin and serum ferritin among anemic women in Kenya*. Project Number 5R01HD100497-05. Eunice Kennedy Shriver National Institute of Child Health and Human Development. Available at: <https://reporter.nih.gov/search/CcSXanz1g0uVoXhpb2BU9w/project-details/10895565> (Accessed: 12 August 2026)
 7. Hachiboola F, Lemba M, Simona S, Phiri M (2025) A multilevel analysis of barriers to utilization of modern contraceptive methods among adolescent girls and young women in Zambia based on demographic and health survey data. Discover Public Health 22(1). 10.1186/s12982-025-01282-2
 8. Chibwili E (2024) Zambians support women's autonomy in marriage and reproduction decisions, but strongly oppose abortion. Afrobarometer Dispatch No. AD1148. 2024. Available at: <https://www.afrobarometer.org/>
 9. Callahan RL, Cartwright AF, Beksinska M, Kasaro M, Tang JH, Milford C, Wong C, Velarde M, Maphumulo V, Fawzy M, Chinyama M, Chabu E, Mudenda M, Smit J (2024) Contraceptive access and use before and during the COVID-19 pandemic: a mixed-methods study in South Africa and Zambia. Gates Open Res 7:61. 10.12688/gatesopenres.14590.2. PMID: 39086400; PMCID: PMC11290906
 10. Ministry of Health Zambia. Family Planning Services Scale-up Plan 2013–2020. Lusaka: Ministry of Health, Community Development Mother and Child Health (2013) https://knowledgecommons.popcouncil.org/cgi/viewcontent.cgi?article=1689&context=departments_sbsr-rh
 11. Chen L, Bao R, Tian X Safety profile of levonorgestrel intrauterine system: Analysis of spontaneous reports submitted to FAERS, Heliyon, 10, Issue 17, 2024, e37112, ISSN 2405–8440, <https://doi.org/10.1016/j.heliyon.2024.e37112>
 12. Sehrt M, Nayame L, Masten M, Thorne J, Mumbula I, Mulawa MJ, Hamoonga TE, Mweemba O, Hampanda K (2026) Affordable, convenient and discreet: why emergency contraception is the family planning method of choice among female university students in Zambia. Cult Health Sex 28(5):643–652 Epub 2025 Sep 18. PMID: 40965971

Figures

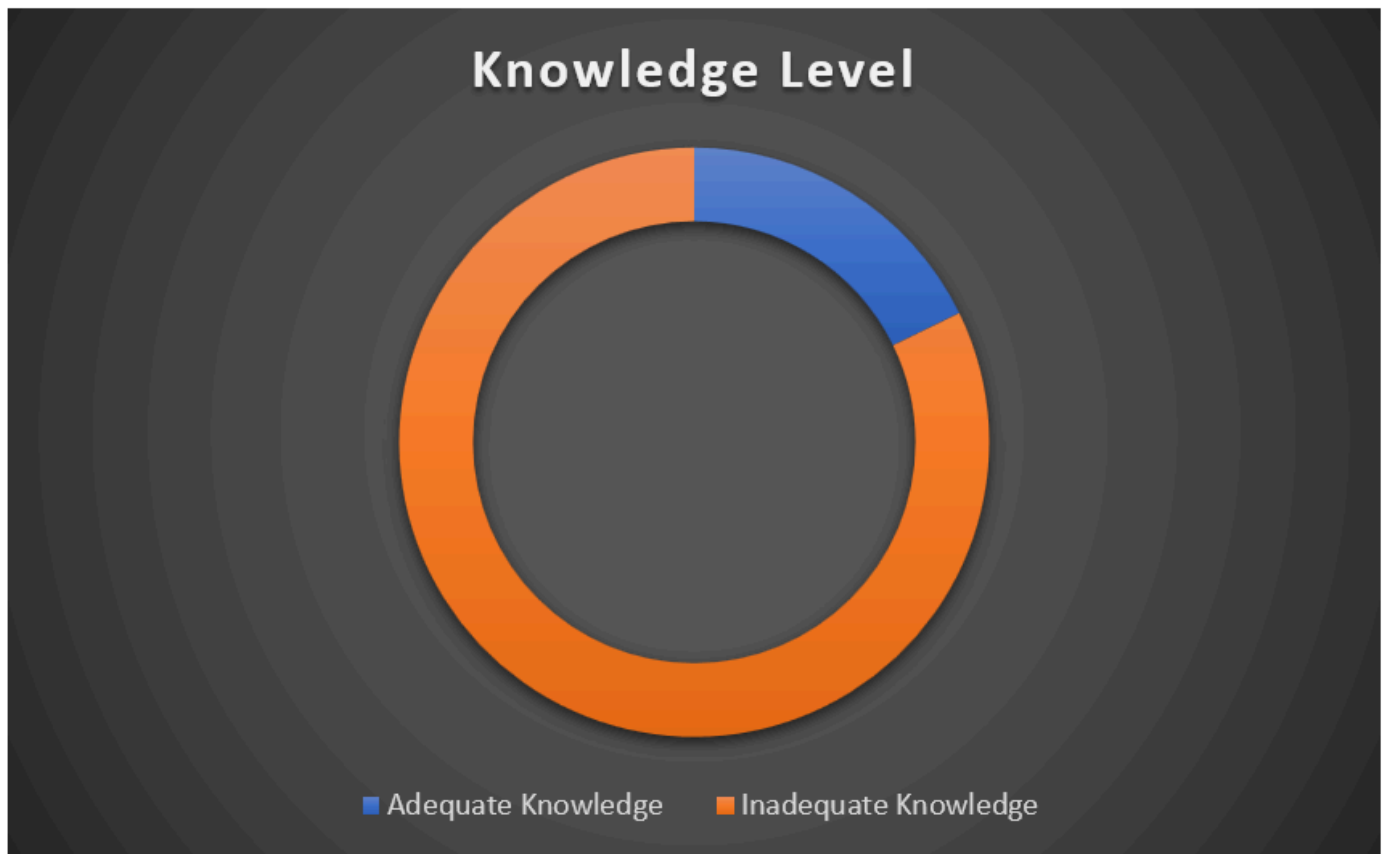


Figure 1

Knowledge adequacy level

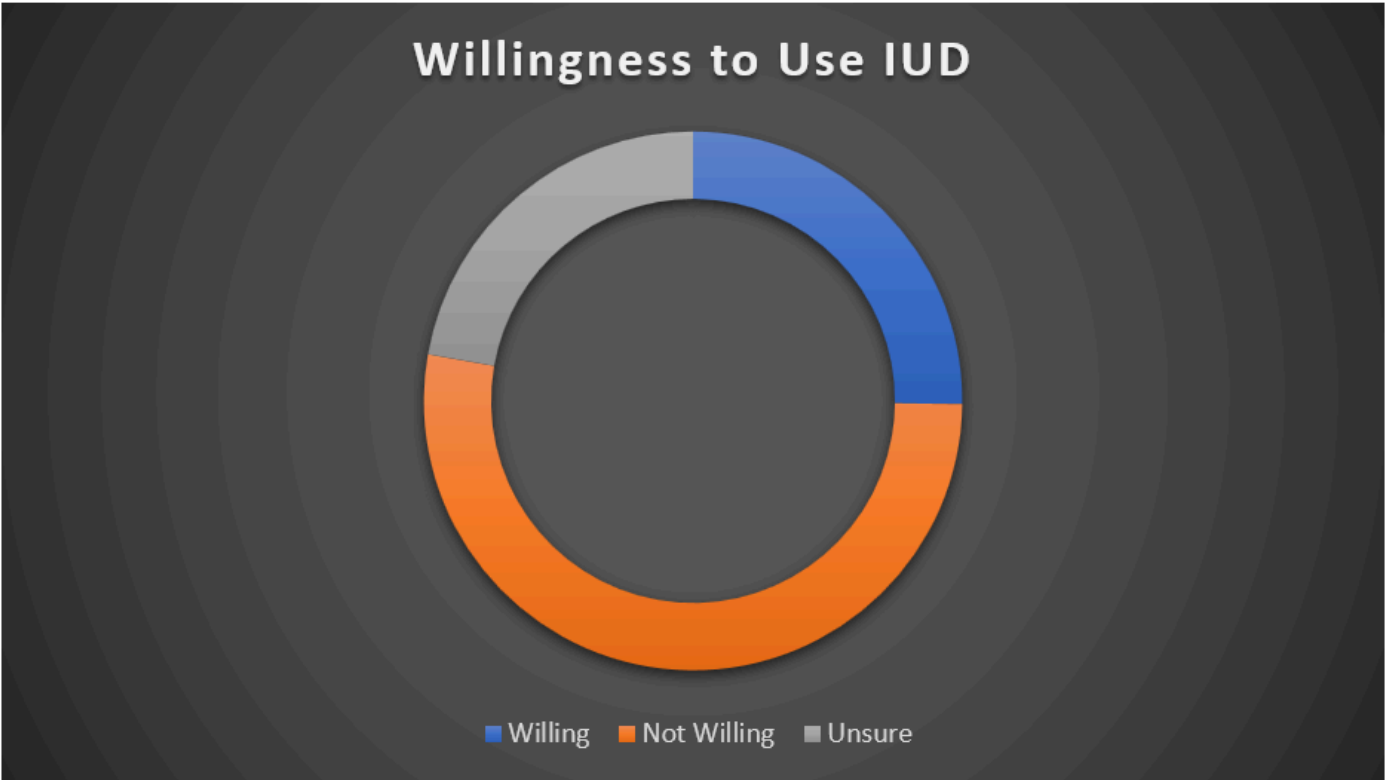


Figure 2

Willingness to Use IUD

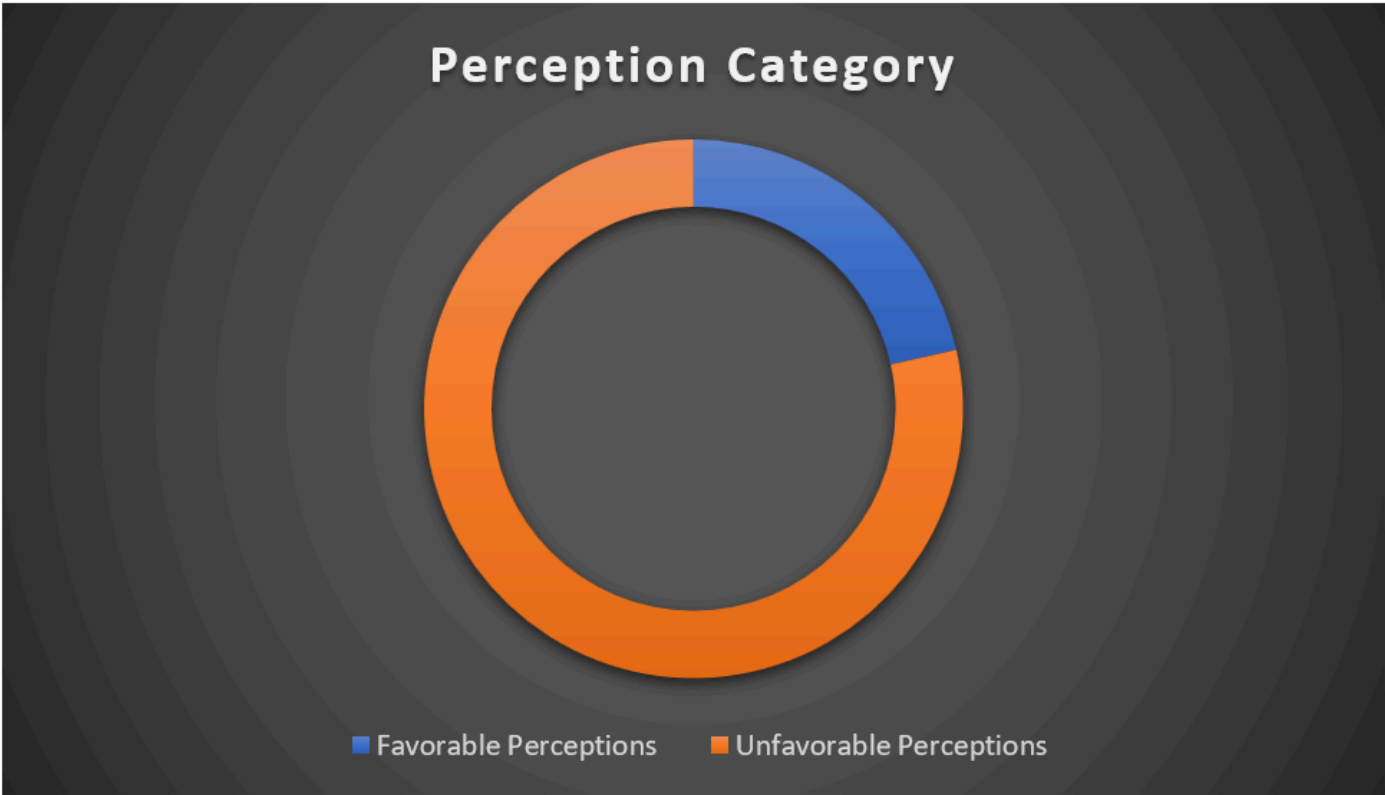


Figure 3

Perception Category

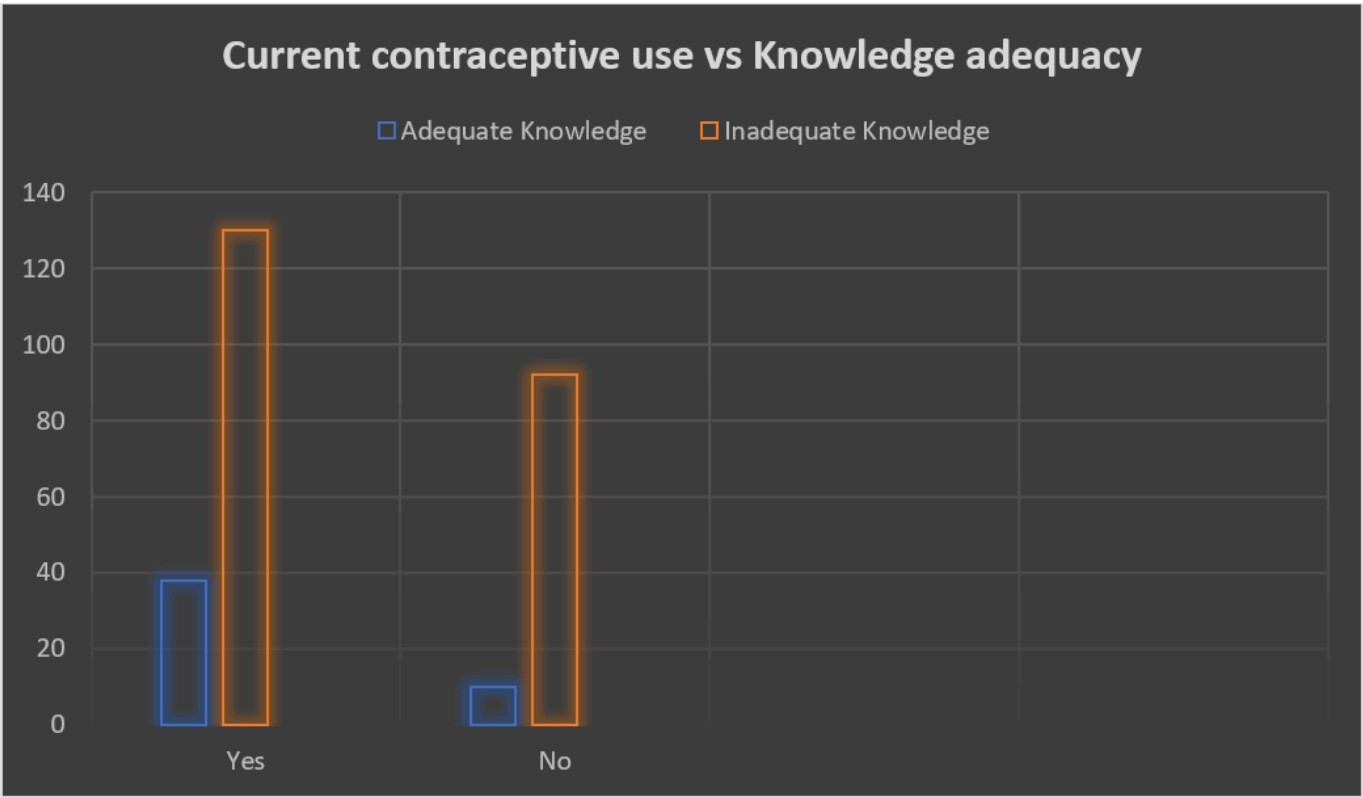


Figure 4

Current contraceptive use vs Knowledge adequacy

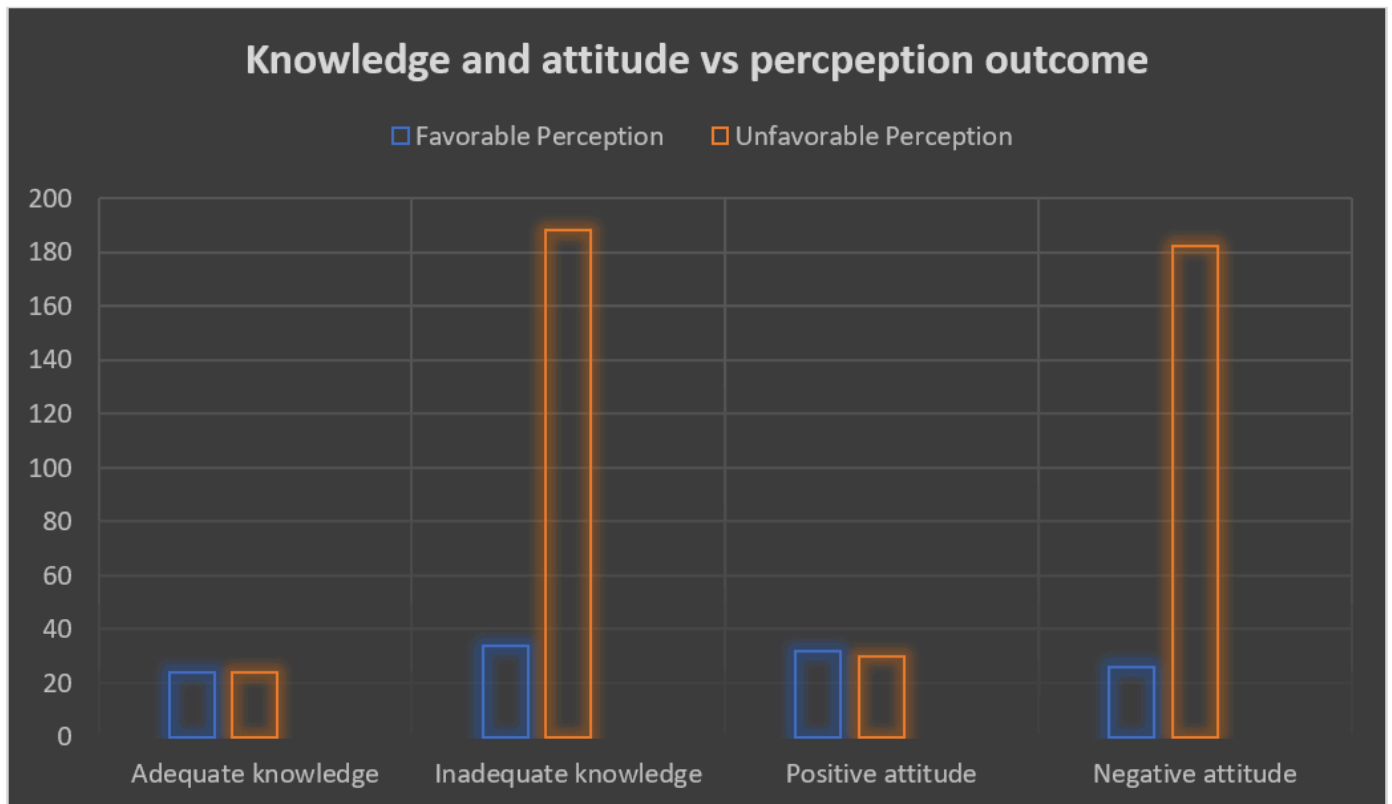


Figure 5

Knowledge and attitude vs perception outcome