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Uptake of Long-Acting Reversible Contraceptives among Women of Childbearing Age Accessing Family Planning Services in Mwansabombwe District, Zambia

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Abstract

Introduction: Family planning remains a critical component of reproductive health and a key strategy for improving maternal and child health outcomes. In Zambia, efforts to expand access to modern contraceptive methods have contributed to increased utilization; however, disparities persist in the use of highly effective methods among women of reproductive age. This study assessed the factors influencing the uptake of long-acting reversible contraceptives (LARC) among women of reproductive age in Mwansabombwe District, Zambia. **Method:** An analytical cross-sectional study design was employed, involving 200 women aged 15 - 49 years who were accessing family planning services at selected health facilities. Data were collected using a structured questionnaire and analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize variables, while inferential statistics, including Chi-square tests and binary logistic regression, were used to determine associations and predictors of LARC uptake. **Results:** The findings revealed that 51.5% of respondents were using LARC methods, with implants being the most commonly utilized method (68.9%), followed by intrauterine contraceptive devices (31.1%). Overall, 88.5% of respondents had adequate knowledge about LARC; however, detailed knowledge of specific methods was limited. Despite adequate knowledge levels, 66.0% of respondents exhibited negative attitudes towards LARC, largely due to misconceptions such as fear of infertility, pain, and side effects. Inferential analysis showed that

knowledge ($p < 0.001$) and attitude ($p < 0.001$) were significantly associated with LARC uptake. Multivariable logistic regression analysis identified knowledge (AOR = 12.4; $p < 0.001$) and positive attitude (AOR = 3.1; $p = 0.011$) as independent predictors of LARC utilization. Socio-demographic factors and distance to health facilities were not significant predictors after adjustment. **Conclusion:** The study concludes that LARC uptake in Mwansabombwe District is moderate and is primarily influenced by knowledge and attitudes. Interventions aimed at improving comprehensive knowledge and addressing misconceptions about LARC are essential to enhance utilization. Strengthening community education and counseling services is recommended to promote informed decision-making and increase uptake of long-acting contraceptive methods.

Subject Areas

Gynecology, Obstetrics

Keywords

Uptake of LARC, Knowledge, Attitude

1. Introduction

Long-acting reversible contraceptives (LARC), including intrauterine devices (IUDs) and contraceptive implants, are among the most effective methods of preventing unintended pregnancies due to their high efficacy, safety, and prolonged duration of action. Globally, uptake of LARC remains relatively low despite strong evidence of their effectiveness in preventing unintended pregnancies. Although the use of modern contraceptive methods has increased, the method mix continues to be dominated by short-term methods, particularly in low- and middle-income countries [1]-[3]. Intrauterine devices and implants account for a relatively modest proportion of contraceptive use globally, estimated at approximately 14%, with considerable variation across region [4] [5]. This imbalance contributes to persistent unmet need for effective contraception and ongoing reproductive health challenges. LARC methods, including IUDs and subdermal implants, provide long-term, reversible protection with minimal user dependence and have failure rates of less than 1%, making them among the most effective contraceptive options available [3] [6]. These methods offer protection for periods ranging from three to ten years depending on the type and require minimal follow-up, making them particularly suitable for women in resource-limited and rural settings. More recent evidence indicates that increased access to LARC is associated with significant reductions in unintended pregnancies, repeat births, and unsafe abortions, particularly among adolescents and young women [7] [8].

Despite these advantages, utilization of LARC remains particularly low in sub-Saharan Africa, where uptake is often below 10% in many settings, with

some countries reporting levels as low as 2 - 5% [7] [8]. This low utilization is influenced by a combination of individual, socio-cultural, and health system factors. Recent evidence highlights barriers such as limited knowledge, misconceptions about side effects, fear of infertility, partner influence, and prevailing cultural norms as key determinants of contraceptive choice [1] [2]. In addition, provider-related challenges, including inadequate counselling, limited technical capacity, and provider bias, continue to affect LARC provision and uptake [9] [10]. Health system constraints such as stock-outs, shortages of trained personnel, and geographical barriers further restrict access to LARC services, particularly in rural areas [1] [2].

In Zambia, although the modern contraceptive prevalence rate has improved to approximately 52%, the method mix remains skewed towards short-term methods, particularly injectables [11]. LARC utilization remains comparatively low, with implants accounting for about 8% and intrauterine devices less than 2% of contraceptive use [12]. Other studies conducted in Zambia report LARC uptake ranging between 6% and 12% among women of reproductive age [9] [10] [13]. These findings indicate that increased contraceptive coverage has not translated into proportional uptake of more effective long-term methods.

To address this gap, the Government of Zambia has implemented several strategies under the Zambia Integrated Family Planning Costed Implementation Plan (2021-2026) aimed at increasing access to and utilization of LARC. These include scaling up training of healthcare providers in LARC service delivery, strengthening supply chain systems to ensure consistent availability of commodities, expanding outreach services to rural and underserved communities, and integrating family planning services into maternal and child health programs [14]. Additional interventions include community-based distribution of contraceptives, behaviour change communication to address misconceptions, and promoting male involvement in reproductive health decision-making [1] [10]. Despite these efforts, uptake of LARC remains comparatively low, and short-term methods continue to dominate contraceptive use [1] [12]. In rural districts such as Mwansabombwe, geographical barriers, limited access to accurate information, and socio-cultural influences further constrain the utilization of LARC. Although services are available within the public health system, utilization remains suboptimal, suggesting that availability alone does not guarantee uptake. There is therefore a need to generate context-specific evidence to better understand the factors influencing LARC utilization and to inform targeted interventions aimed at improving uptake in such settings.

2. Materials and Methods

2.1. Study Design, Setting, and Participants

A cross-sectional study design was used to assess the uptake of LARC among women of childbearing age accessing family planning services. The study was conducted at Mwansabombwe district health facilities, Luapula Province. It is a rural

area with people of different characteristics and education levels. It is densely populated with lots of women. The health facilities in Mwansabombwe district were chosen on the basis that they are all in a rural setup where women often face limited access to healthcare services and reproductive health information. Sociocultural beliefs, low awareness, and healthcare barriers may also influence the use of LARC methods. Studying these communities provides valuable evidence for improving family planning services and maternal health outcomes. The facilities included Kazembe, Mukamba, Salanga and Chipunka. The selected health facilities are all situated in rural areas with one common referral center being Mbereshi General Hospital. These are also facilities providing FP services as well as other maternal and child health services. Only study respondents living in Mwansabombwe district for a period of 2 months and above accessing family planning services were included in the study. Consent was obtained from respondents who were 18 years and above before the commencement of the study and only those who agreed to participate in the study were included. For participants aged 15 - 17 years, written assent was obtained from the adolescents in addition to written permission from a parent or legal guardian, in accordance with the requirements approved by the University of Zambia Biomedical Research Ethics Committee (UNZABREC REF. No. 6753-2025). Respondents were within the recommended age group (15 to 49 years). Respondents who were enrolled in other clinical studies or interventions that might have influenced contraceptive use or bias the results, were not allowed to participate in the study. The sampling frame was generated from the Family Planning SmartCare registers, which provided a comprehensive list of eligible women receiving family planning services. Each eligible individual was assigned a unique identification number, and respondents were selected using a computer-generated random number sequence, ensuring that every member of the population had an equal probability of selection. Proportionate stratified sampling was used to distribute the total sample size of 227 respondents across the four selected study sites in Mwansabombwe District. The allocation was based on the proportion of women utilizing family planning services in each site relative to the total population (N = 8,294), as obtained from the Family Planning SmartCare registers. Accordingly, the sample was distributed as follows: Kazembe (n = 108), Mukamba (n = 39), Salanga (n = 42), and Chipunka (n = 38). This approach ensured that each site was represented in the sample in proportion to its population size, thereby enhancing the representativeness of the study findings. A total sample size of 227 women was initially planned and proportionately allocated across the selected health facilities. During data collection, 214 eligible women were approached and invited to participate in the study. Of these, 200 women consented and completed the interviews, giving a response rate of 93.5%. Fourteen eligible women declined participation mainly because of lack of time or personal reasons. In addition, questionnaires with substantial incomplete responses were excluded from the final analysis to ensure data quality and completeness. Therefore, the final analysis included 200 respondents.

2.2. Data Collection Procedure

Ethical clearance and permission were sought from the University of Zambia Biomedical Research Ethics Committee (UNZABREC REF. No. 6753-2025) and data was collected over a period of 6 weeks from 1st January to 15th February, 2025. Participants were assured of anonymity and confidentiality by allowing them to answer questions in privacy individually after consenting to participate with their signature. The researcher administered a questionnaire in face-to-face interviews that lasted about 30 minutes.

2.3. Instruments

Data was collected using a questionnaire on the uptake of LARC, knowledge on LARC and attitude towards uptake of LARC. The questionnaire was adapted from the Uptake of LARC among Women of Reproductive Age Questionnaire validated by [15] and was further translated, pretested, and assessed for reliability within the local study setting. It was a reliable and valid instrument with the Cronbach's alpha values of 0.76, 0.82 and 0.77 for each section of the questionnaire. The tool was used in studies conducted by Mahfouz, *et al.*, [16] and Bekele, *et al.*, [17], in Saudi Arabia and Ethiopia respectively. No permission was required to use the adopted questionnaire as it was listed under creative common by the developer. The tool was translated in local language (Bemba) for easy understanding and use by the respondents. Thereafter, back translation of the tool to English was done. As it was listed under creative common by the researcher. The adapted Bemba questionnaire was pretested among 20 women attending family planning services at a non-study health facility in Mwansabombwe District to assess clarity, comprehension, and cultural appropriateness. Minor revisions were made based on participant feedback. It comprised a series of closed ended questions and had four sections as follows; Section A had question on demographic data including; Sex, Age, Marital status, Income and level of Education. Section B assessed the uptake of LARC among women. The uptake of long-acting reversible contraceptives (LARC), knowledge regarding LARC, and attitudes towards LARC were assessed using composite scores derived from questionnaire responses. Section C assessed knowledge levels on LARC. Knowledge regarding LARC was assessed using structured questions on types, effectiveness, duration, reversibility, side effects, and eligibility. Correct responses were scored as 1 and incorrect or "don't know" responses as 0, giving a total score ranging from 0 - 10. Respondents scoring at or above the mean score were classified as having adequate knowledge, while those below the mean were considered to have inadequate knowledge. The mean knowledge score among respondents was 7.8 ± 1.9 out of a possible 10 points, indicating generally high awareness regarding LARC methods. The median knowledge score was 8.0 (IQR: 7 - 9). Based on the established cut-off, 88.5% of respondents were categorized as having adequate knowledge. Section D assessed the attitude of women towards uptake of LARC. Attitude towards LARC was assessed using Likert-scale statements on perceptions, fears, beliefs, and acceptance

of LARC methods. Responses were scored from 1 (strongly disagree) to 5 (strongly agree), with negatively worded items reverse coded. Total attitude scores ranged from 10 - 50, with higher scores indicating more positive attitudes. Respondents scoring at or above the median score were categorized as having a positive attitude, while those scoring below the median were classified as having a negative attitude. Attitude scores ranged from 12 to 47 out of a possible 50 points. The median attitude score was 28 (IQR: 24 - 33), suggesting generally unfavorable perceptions towards LARC among respondents. Using the median score as the classification threshold, 34.0% of respondents demonstrated positive attitudes, while 66.0% had negative attitudes toward LARC methods.

2.4. Data Analysis

Data were checked for completeness and consistency before analysis. Variables with missing responses were analyzed using available-case analysis; therefore, totals for some variables may not equal the overall sample size of 200. Missing data were minimal and resulted primarily from non-response to specific questionnaire items. Questionnaires with incomplete or inconsistent responses were reviewed and corrected where possible to ensure data quality. The cleaned data was coded and entered into the Statistical Package for the Social Sciences (SPSS) version 26 for analysis. Descriptive statistical analysis was conducted to summarize the characteristics of the respondents and key study variables. Frequencies and percentages were used to describe categorical variables such as socio-demographic characteristics, knowledge of LARC, attitudes towards LARC, and uptake of contraceptive methods. Inferential statistical analysis was performed to determine the association between independent variables and the uptake of LARC. The Chi-square test was used in the bivariate analysis to assess the relationship between LARC uptake and independent variables, knowledge level, and attitude towards LARC including socio-demographic factors. Conceptually important socio-demographic variables, including age, education level, and marital status, were retained in the model regardless of statistical significance because of their established relationship with contraceptive utilization in previous literature and their potential role as confounders. This helped to improve adjustment for confounding and enhance the validity of the estimated associations. Variables that showed statistical significance at the bivariate level ($p \leq 0.05$) were included in a multivariable logistic regression model to identify independent predictors of LARC uptake while controlling for potential confounding factors. Given that the dependent variable (LARC uptake) is binary (high uptake versus low uptake), a binary logistic regression model was employed. The strength of association was measured using Odds Ratios (OR) with corresponding 95% Confidence Intervals (CI). A p-value of less than 0.05 was considered statistically significant. Knowledge scores ranged from 0 - 10, and the mean score of 7.8 was used as the cut-off for adequate knowledge because the data were approximately normally distributed. Respondents scoring ≥ 7.8 were classified as adequately knowledgeable. Attitude scores

ranged from 10 - 50, and the median score of 28 was used as the cut-off for positive attitude because the data were not normally distributed. Respondents scoring ≥ 28 were categorized as having a positive attitude.

3. Results

Although the final analytical sample consisted of 200 respondents, some variables had minor missing data due to incomplete responses for individual questionnaire items. Consequently, percentages for selected variables may not total exactly 100%, and category totals may differ slightly across tables. The interview was conducted with 200 participants of whom the age distribution of respondents was relatively young, with the highest proportion falling within the 35 - 39 age group (23.1%). Educational attainment varied considerably among respondents, with 31.5% having attained tertiary education, while a notable proportion (33.5%) had either no formal education or only completed primary education. Nearly half of the respondents were married (47.0%). The largest proportions were housewives (24.5%) and unemployed women (22.5%), suggesting substantial economic dependency among respondents. most respondents resided in remote areas located more than 10 km from a health facility (72.4%) (Table 1, Table 2); the uptake of LARC was slightly more than half (51.5%). This indicates a moderate level of uptake of LARC among women of reproductive age in the study area. Regarding knowledge, most respondents (88.5%) had adequate knowledge about LARC, while only 11.5% were inadequate knowledge. This suggests a generally high level of awareness and understanding of LARC among women in the study population. In terms of attitude, most respondents (66.0%) had a negative attitude towards LARC.

Table 1. Socio-demographic characteristics of respondents (n = 200).

Variable	Category	Frequency (n)	Percentage (%)
Age Group	15 - 19 years	13	6.5
	20 - 24 years	33	16.6
	25 - 29 years	45	22.6
	30 - 34 years	40	20.1
	35 - 39 years	46	23.1
	40 - 44 years	15	7.5
	45 - 49 years	7	3.5
Education Level	No formal education	30	15.2
	Primary	36	18.3
	Secondary	69	35.0
	College/University	62	31.5
Marital Status	Single	74	37.0
	Married	94	47.0

Continued

	Divorced	19	9.5
	Widowed	13	6.5
Employment Status	Unemployed	45	22.5
	Housewife	49	24.5
	Employed	39	19.5
	Student/Pupil	39	19.5
	Self-employed	26	13.0
	Other	2	1.0
Distance to Facility	Intermediate (≤10 km)	55	27.6
	Remote (>10 km)	144	72.4

"Totals may vary because of missing responses."

Table 2. Overall uptake of long acting reversible contraceptives (n = 200).

Status	Frequency (n)	Percentage (%)
Low uptake	97	48.5%
High uptake	103	51.5%
Overall, Knowledge of Long Acting Reversible Contraceptives (n = 200)		
Category	**Frequency (n)**	**Percentage (%)**
Adequate Knowledge	177	88.5%
Inadequate knowledge	23	11.5%
Overall Attitude Towards LARC (n = 200)		
Category	**Frequency (n)**	**Percentage (%)**
Positive attitude	68	34.0%
Negative attitude	132	66.0%

Table 3 shows that most socio-demographic variables, including age group, education level, marital status, and employment status, were not significantly associated with LARC uptake ($p > 0.05$). However, there was a noticeable trend indicating higher uptake among women aged 35 - 49 years. Distance to the health facility was significantly associated with LARC uptake ($p = 0.018$), with women residing closer to health facilities being more likely to utilize LARC methods. Additionally, knowledge level ($p < 0.001$) and attitude towards LARC ($p < 0.001$) were strongly associated with LARC uptake.

Table 4 shows the binary logistic regression model was tested for multicollinearity, Hosmer and Lemeshow test of fitness for data, and omnibus test of model coefficients and classification accuracy. Results present the association between key study variables and LARC uptake. In the unadjusted analysis, knowledge level, attitude towards LARC, and distance to the health facility were significantly associated with LARC uptake. After adjusting for potential confounders, knowledge

level and attitude towards LARC remained statistically significant predictors of LARC uptake. Conceptually important socio-demographic variables, including age, education level, and marital status, were retained in the model regardless of statistical significance because of their established relationship with contraceptive utilization in previous literature and their potential role as confounders. This helped to improve adjustment for confounding and enhance the validity of the estimated associations. Women who had adequate knowledge were significantly more likely to utilize LARC compared to those who had inadequate knowledge (AOR = 12.4; $p < 0.001$). Similarly, respondents with a positive attitude were more likely to use LARC compared to those with negative attitudes (AOR = 3.1; $p = 0.011$). Distance to the health facility, although significant in the unadjusted analysis, was not statistically significant after adjustment ($p = 0.828$), indicating that its effect may be mediated through knowledge and attitudinal factors.

Table 3. Association between independent variables and LARC uptake (n = 200).

Variable	Category	Non-User n (%)	LARC User n (%)	P-value
Age Group	15 - 24	27 (57.4%)	20 (42.6%)	0.091
	25 - 34	45 (52.9%)	40 (47.1%)	
	35 - 49	25 (36.8%)	43 (63.2%)	
Education Level	No formal/Primary	42 (63.6%)	24 (36.4%)	0.094
	Secondary/Tertiary	55 (41.0%)	79 (59.0%)	
Marital Status	Single	45 (60.8%)	29 (39.2%)	0.121
	Married	40 (42.6%)	54 (57.4%)	
	Divorced/ Widowed	12 (37.5%)	20 (62.5%)	
Employment Status	Not employed	52 (55.3%)	42 (44.7%)	0.201
	Employed	45 (42.5%)	61 (57.5%)	
Distance to Facility	<10 km	20 (36.4%)	35 (63.6%)	0.018*
	≥10 km	77 (53.5%)	68 (46.5%)	
Knowledge Level	Inadequate knowledgeable	18 (78.3%)	5 (21.7%)	<0.001*
	Adequate knowledgeable	79 (44.6%)	98 (55.4%)	
Attitude	Negative	82 (62.1%)	50 (37.9%)	<0.001*
	Positive	15 (22.1%)	53 (77.9%)	
Total		**97 (48.5%)**	**103 (51.5%)**	

Table 4. Logistic regression analysis of factors associated with LARC uptake (n = 200).

Variable	Category	UOR (95% CI)	P-value	AOR (95% CI)	P-value
Knowledge Level	Inadequate knowledge	Ref		Ref	

Continued

Attitude towards LARC	Adequate knowledge	24.9 (5.6 - 11.4)	<0.001*	12.4 (3.5 - 44.6)	**<0.001***
	Negative	Ref		Ref	
	Positive	5.7 (2.9 - 11.2)	<0.001*	3.1 (1.30 - 7.38)	**0.011***
Distance to Facility	<10 km	Ref		Ref	
	≥10 km	0.46 (0.2 - 0.9)	0.017*	0.9 (0.4 - 2.2)	0.828

CI = Confidence interval, UOR, AOR = Unadjusted and adjusted odd ratios.

4. Discussion of Findings

4.1. Characteristics of the Study Sample

The study involved women of reproductive age, with the majority of respondents falling within the age range of 25 - 39 years, representing the most active reproductive age group. This finding is consistent with the Zambia Demographic and Health Survey, which reported that contraceptive utilization is generally higher among women within peak reproductive ages because of increased fertility intentions, child spacing needs, and exposure to reproductive health information [12]. Similar findings have also been reported in recent studies conducted in sub-Saharan Africa, where women within this age category were more likely to seek family planning services compared to adolescents and older women [1] [18]. The study further found variation in educational attainment among respondents, with a notable proportion having attained secondary and tertiary education. However, education level was not significantly associated with uptake of LARC in the present study. This finding differs from studies conducted in Ethiopia and Nigeria, where higher educational attainment was associated with increased utilization of long-acting contraceptive methods because educated women were more likely to access reproductive health information and make informed decisions regarding contraception [18] [19]. The lack of association observed in the present study may suggest that educational attainment alone may not necessarily translate into utilization of LARC methods in rural settings where cultural beliefs, misconceptions, and community perceptions continue to influence contraceptive behaviour.

Regarding marital status, nearly half of the respondents were married, although marital status was not significantly associated with uptake of LARC. Comparable findings have been reported in some low-resource settings where contraceptive utilization was found to be more strongly influenced by behavioural and psychosocial factors than by marital status alone [19]. However, this finding contrasts with demographic studies which reported higher contraceptive utilization among married women because of increased fertility planning and partner communication regarding family planning [20]. The absence of a significant association in the present study may indicate that decisions regarding LARC utilization are influenced by multiple interacting factors beyond marital relationships alone.

The study also showed that the largest proportion of respondents were either housewives or unemployed, suggesting substantial economic dependency among respondents. However, employment status was not significantly associated with uptake of LARC. This finding is inconsistent with studies conducted in low- and middle-income countries where employed women were more likely to utilize contraceptive methods because of improved financial independence and access to health information [1]. In the current study, this finding may suggest that economic activity alone does not necessarily determine utilization of LARC methods when knowledge, attitudes, and perceptions regarding contraception remain major influencing factors.

Most respondents resided in remote areas located more than 10 km from a health facility. Distance to the health facility was significantly associated with uptake of LARC at the bivariate level, although this association was not statistically significant after adjustment for confounding factors. Similar findings have been reported by the World Health Organization, which emphasizes that geographical access alone may not guarantee utilization of reproductive health services unless accompanied by adequate information, counselling, and positive perceptions towards available services [1]. This finding suggests that although physical accessibility may initially influence utilization, behavioural factors such as knowledge and attitudes may have a stronger influence on uptake of LARC among women of reproductive age. These findings may further be interpreted within the context of the Health Belief Model, which proposes that health-related behaviours are influenced by perceived benefits and barriers associated with a health intervention [21] [22]. In the present study, socio-demographic and structural factors alone did not independently influence uptake of LARC, suggesting that women's perceptions, beliefs, and understanding regarding LARC methods may have had a stronger influence on utilization than background characteristics alone.

4.2. Uptake of Long-Acting Reversible Contraceptives

The study found that 51.5% of respondents were utilizing long-acting reversible contraceptives (LARCs), indicating a moderate level of uptake among women of reproductive age in Mwansabombwe District. Although this level appears relatively higher than estimates reported in several sub-Saharan African countries, a substantial proportion of respondents (48.5%) were still not utilizing LARC methods. This suggests that despite progress in contraceptive access and awareness, utilization of effective long-term contraceptive methods remains below optimal levels. According to the World Health Organization and the United Nations Population Fund, uptake of long-acting contraceptive methods remains low in many low- and middle-income countries despite their effectiveness in preventing unintended pregnancies and reducing maternal health risks [1] [2]. Similarly, the Zambia Demographic and Health Survey reported that although modern contraceptive utilization has improved nationally, short-term contraceptive methods continue to dominate the contraceptive method mix [12].

The findings further showed that implants were the most commonly utilized LARC method, while IUCD utilization remained comparatively lower. Similar findings have been reported in recent studies conducted in Ethiopia and Kenya, where implants were preferred because they are more widely available, easier to insert, and associated with fewer misconceptions compared to IUCDs [18]. Likewise, Weldekiros *et al.* [23] reported that fear of side effects, misinformation, and inadequate counselling contributed to lower uptake of IUCDs compared to implants among women of reproductive age. The World Health Organization further emphasizes that provider preference, quality of counselling, and prevailing community perceptions significantly influence contraceptive method choice [1]. Therefore, the lower utilization of IUCDs observed in the current study may be associated with misconceptions regarding infertility, fear of pain during insertion, concerns about side effects, and inadequate information regarding the safety and effectiveness of the method.

The study also demonstrated that uptake of LARC was significantly associated with women's knowledge and attitudes toward long-acting contraceptive methods. Women who had adequate knowledge and positive attitudes towards LARC were more likely to utilize these methods compared to those with inadequate knowledge and negative perceptions. Similar findings have been reported in recent studies conducted in sub-Saharan Africa, where awareness, perception of benefits, confidence in contraceptive safety, and exposure to counselling significantly influenced uptake of long-acting contraceptive methods [18] [23]. These findings suggest that utilization of LARC is influenced not only by service availability but also by behavioural and psychosocial factors that shape women's perceptions and decision-making regarding contraception.

The findings may further be interpreted using the Health Belief Model, which proposes that individuals are more likely to adopt preventive health behaviours when they perceive the benefits of an intervention to outweigh the potential barriers [21] [22]. Women who perceive LARC methods as safe, effective, and convenient may therefore be more willing to utilize them. However, fear of side effects, infertility, pain during insertion, and misconceptions surrounding long-acting methods may continue to discourage uptake despite awareness of the methods. Similar observations were reported by Weldekiros *et al.* [23], who found that misconceptions and fear of adverse effects remained major barriers to utilization of long-acting contraceptive methods among women of reproductive age. These findings underscore the importance of strengthening counselling services, improving reproductive health education, promoting community awareness, and addressing misconceptions surrounding LARC methods in order to improve utilization among women of reproductive age.

4.3. Knowledge of Long-Acting Reversible Contraceptives and Uptake

The study revealed that most respondents had adequate knowledge regarding

long-acting reversible contraceptives (LARC), indicating a generally high level of awareness among women of reproductive age in Mwansabombwe District. Despite this relatively high level of awareness, important gaps remained in detailed and method-specific knowledge, particularly regarding identification of implants and intrauterine contraceptive devices (IUCDs). Similar findings have been reported in studies conducted in sub-Saharan Africa, where women demonstrated general awareness of contraceptive methods but limited understanding of specific LARC methods and their mechanisms of action [1] [23]. Studies conducted in Ethiopia further reported that women may have heard about LARC methods without having sufficient information required for informed contraceptive decision-making [18].

Inferential analysis in the current study showed that knowledge was significantly associated with uptake of LARC ($p < 0.001$), and women who had adequate knowledge were significantly more likely to utilize LARC methods compared to those with inadequate knowledge (AOR = 12.4). Similar findings have been reported in studies conducted in Ethiopia and Nigeria, where adequate contraceptive knowledge was identified as an important predictor of LARC utilization among women of reproductive age [18] [19]. These findings suggest that women who understand the effectiveness, reversibility, duration of action, and benefits of LARC methods are more likely to adopt and utilize these contraceptive methods. The findings may further be explained using the Health Belief Model, which proposes that individuals are more likely to engage in preventive health behaviours when they perceive benefits associated with an intervention and when perceived barriers are minimized [21] [22]. Women with adequate knowledge may therefore better appreciate the effectiveness, safety, and long-term benefits of LARC methods, thereby increasing the likelihood of utilization. The World Health Organization similarly emphasizes that accurate contraceptive knowledge positively influences informed decision-making and uptake of modern contraceptive methods [1].

However, evidence from recent studies also indicates that knowledge gaps and misconceptions regarding the safety and benefits of LARC methods continue to affect utilization. Gupta *et al.* [24] and Abrahams *et al.* [25] reported that inadequate counselling, misconceptions regarding side effects, and limited understanding of available LARC methods remained important barriers to uptake among women of reproductive age. These studies further emphasized that strengthening contraceptive counselling and improving reproductive health education are necessary for improving utilization of long-acting contraceptive methods.

Despite the relatively high levels of knowledge observed in the current study, uptake of LARC remained moderate. This suggests that knowledge alone may not be sufficient to influence contraceptive behaviour. Other behavioural and psychosocial factors, particularly attitudes, misconceptions, fear of side effects, and social influences, may continue to affect women's decisions regarding LARC utilization. These findings therefore indicate that while knowledge is an important enabling

factor for LARC uptake, comprehensive interventions addressing both informational and behavioural barriers are necessary to improve utilization among women of reproductive age.

4.4. Attitudes of Women towards Long-Acting Reversible Contraceptives and Uptake

The study observed that most respondents had negative attitudes towards long-acting reversible contraceptives (LARC). Specifically, 66.0% of respondents demonstrated negative perceptions towards these methods. The negative attitudes were mainly associated with misconceptions regarding infertility, fear of pain during insertion, side effects, and concerns regarding the suitability and safety of the methods. These findings are consistent with studies conducted in Zambia and other sub-Saharan African countries, where myths, misconceptions, and fear of side effects were identified as major barriers to contraceptive utilization [1] [26]. Similar findings have also been reported in studies conducted in Ethiopia and Kenya, where negative perceptions towards LARC significantly influenced women's willingness to adopt long-acting contraceptive methods [17] [23]. This suggests that negative attitudes towards LARC remain deeply rooted within communities and may continue to limit uptake despite increasing awareness of modern contraceptive methods.

Inferential analysis in the current study showed that attitude was highly significantly associated with uptake of LARC ($p < 0.001$), and women with positive attitudes were more likely to utilize LARC methods compared to those with negative attitudes (AOR = 3.1). Similar findings have been reported by Gashaye *et al.* [27] and Mare *et al.* [28], who found that positive perceptions regarding the effectiveness, convenience, and safety of LARC methods significantly increased the likelihood of utilization among women of reproductive age. These findings suggest that attitude is an important behavioural determinant of contraceptive utilization. Even when women are knowledgeable about contraceptive methods, negative beliefs, fears, and misconceptions may still discourage them from adopting LARC methods.

The findings may further be explained using the Health Belief Model, which proposes that individuals are less likely to adopt preventive health behaviours when they perceive significant barriers associated with an intervention [21] [22]. In the current study, misconceptions regarding infertility, pain during insertion, and side effects may represent perceived barriers that discourage women from utilizing LARC methods despite awareness of their benefits. Women who perceive LARC methods as safe, effective, and beneficial may therefore be more willing to adopt them compared to those with negative perceptions. Similar observations have been reported in studies conducted in Zambia and other sub-Saharan African settings, where myths and misconceptions negatively influenced contraceptive uptake [1] [26].

These findings therefore highlight the importance of addressing myths and

misconceptions surrounding LARC methods through strengthened health education, counselling services, and community sensitization programmes. Improving women's attitudes towards LARC, as well as involving male partners and communities in reproductive health education, may contribute significantly towards increasing utilization of long-acting reversible contraceptive methods among women of reproductive age.

5. Conclusion

The study found that uptake of long-acting reversible contraceptives (LARCs) among women of reproductive age in Mwansabombwe District was moderate, with implants being the most commonly used method. Adequate knowledge and positive attitudes towards LARC were significantly associated with LARC uptake, while socio-demographic factors and distance to health facilities were not independently associated after adjustment. Negative attitudes and misconceptions about LARCs were associated with lower utilization. These findings suggest that improving comprehensive knowledge and addressing misconceptions regarding LARC methods may help improve uptake among women of reproductive age in rural Zambia.

6. Recommendations

6.1. Ministry of Health

The Ministry of Health should strengthen reproductive health education programs with a focus on improving accurate knowledge and addressing misconceptions related to LARC. Interventions should prioritise behaviour change communication strategies that aim to influence attitudes and perceptions. Integrating LARC education into existing maternal and child health services may further improve uptake.

6.2. Mwansabombwe District Health Office

The District Health Office should enhance the capacity of healthcare providers through regular training in client-centered counselling, with emphasis on LARC methods. Training should focus on improving communication skills, addressing myths and misconceptions, and promoting positive attitudes among clients. In addition, outreach services should be strengthened to improve access for women living in remote areas.

6.3. Researchers

Future studies should explore the underlying reasons for negative attitudes towards LARC using qualitative research approaches. There is also a need for longitudinal studies to assess changes in knowledge, attitudes, and utilization over time. Research focusing on improving counselling quality and behavioural interventions would also be valuable.

7. Limitations of the Study

The cross-sectional design limited the ability to establish causal relationships be-

tween variables and uptake of long-acting reversible contraceptives (LARCs), although multivariable logistic regression was used to control for confounding factors and assess associations. The study also relied on self-reported data, which may have introduced recall and social desirability bias; however, confidentiality, private interviews, and a structured pre-tested questionnaire were used to minimize these biases. Additionally, since the study was conducted in only one district, the findings may not be generalizable to other settings, though the study still provides valuable context-specific evidence for rural Zambia.

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Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this article.

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