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UPTAKE OF LONG-ACTING AND PERMANENT METHODS OF CONTRACEPTION AMONG WOMEN OF REPRODUCTIVE AGE IN KAJIADO COUNTY, KENYA
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ABSTRACT

Background: **Long acting and permanent methods of contraception (LAPM) are among the most effective family planning (FP) approaches but remain underutilized in Kajiado County. Despite global and national advancements in FP, socio-demographic, knowledge-related and systemic barriers persist, particularly in marginalized populations.**

Objective: **This study assessed factors influencing the uptake of LAPM among women of reproductive age (WRA) (15–49 years) in Kajiado County.**

Methods: **A mixed method (Explanatory sequential) study design was used. Data was collected from 428 WRA (15-49) in Oloolua and Kiserian Townships. Systematic random sampling was used to select households, with a sampling frame created from 1900 and 7800 WRA respectively. Using a sampling interval of approximately 4 (1900/428) and 18(7800/428), WRA in the selected households were included in the study. Data was collected via semi-structured questionnaires and focus group discussions (FGD) and analyzed using R version 4.1.2 and Colaizzi's thematic analysis having secured ethical approval and permits. Statistical level was set at $p \leq 0.05$ with a confidence interval (CI) set at 95%.**

Results: **The uptake of LAPM among the study participants was (22.7%, n=78) with a response rate of (80.1%, n =343.) Educational attainment (above secondary) significantly increased the likelihood of LAPM uptake (A.O.R 4.43, 95% CI (1.92-10.73), P<0.001. This study did not uncover a statistically significant link between culture, health-related factors and knowledge of contraception on the uptake of LAPM. Notably, no woman opted for a permanent method of contraception.**

Conclusion: **The uptake of LAPM in Kajiado County remains low, with no woman opting for a permanent method of contraception. Higher education increased**

uptake. Therefore, targeted interventions should focus on educational empowerment for women.

INTRODUCTION

Family planning is a term adopted to define the various methods of contraception used, decisions involved in the intention of pregnancy, and the management of mistimed or unintended pregnancies (1). Long-acting and permanent methods (LAPM) are 20% more effective, have minimal risk of user error and are safer for first-line contraception due to their prolonged duration of use, increased user satisfaction and reduced unintended pregnancies (2).

Globally, among women of reproductive age (WRA), 1.1 billion experience a demand for contraception and only 401 million utilise LAPM (3). In 2021, the proportion of WRA who had their family planning (FP) needs satisfied by LAPM was 47.2% (4). Africa's prevalence of LAPM stands at 16.3%, with East Africa accounting for 13.5%. Kenya has a higher prevalence of LAPM at 53% compared to Uganda at 23.5% (5). In Kajiado county, the current prevalence of LAPM is at 22% with Intrauterine Contraceptive Device (IUCD) at 8%, implants at 13% and permanent method, in this case female sterilization (FS) at 1% (6)

Improving access to services and information regarding FP is crucial in alleviating the burden associated with early pregnancies and their negative consequences (7). Hurdles including distance to the facility, gender inequalities, transportation hinder access to FP among the marginalized and pastoral communities in Kenya (8,9,10).Although sociodemographic, culture and access to healthcare affect the uptake of LAPM (11.12), there has been limited research about the particular challenges that nomadic societies in Arid and Semi-Arid Lands (ASALs) encounter. Therefore, this research intends to fill this gap by exploring the specific factors affecting FP utilization among WRA in Kajiado County.

MATERIALS AND METHODS

The study employed a mixed-method (explanatory sequential study) design to assess the utilization of LAPM among WRA in Kajiado County. This allowed the researchers to first gather broad, generalizable quantitative data and then follow up with qualitative data to explain or deepen the understanding of those initial results. This approach offered more comprehensive and actionable insights into the uptake of LAPM than either method alone.

The study was conducted in Oloolua and Kiserian Township in Kajiado County, Ngong municipality, located in southern Kenya and bordering Kisamis, Enoomatasiani, Ngong, and Ongata Rongai. The low uptake of LAPM in this region, 22%—highlights the urgent need to explore the underlying reasons behind this limited utilization (6). The target population consisted of WRA in the study area who had resided in the area for at least six months. This ensured that participants were familiar with the local healthcare systems, cultural practices, and community dynamics. The age group of 15-49 years was particularly relevant for studying the uptake of LAPM, as it encompasses the period of highest fertility. The following were excluded from the research study; WRA who were unwell or had a medical condition that could interfere with their ability to participate in the study.

A systematic random sampling technique was used to select the study participants. This was established from a sampling frame of 1900 and 7800 WRA in Oloolua and Kiserian Townships

respectively obtained from the civil administration office. The sampling interval was obtained by dividing the number of WRA in the sampling frame by the sample size, resulting in 18(7800/428) and 4(1900/428) in Kiserian Townships and Oloolua respectively. The starting point being randomly selected. This method ensured that every woman in the sampling frame had an equal chance of being selected, which minimized selection bias.

Kajiado County has three municipalities: Ngong, Kajiado, and Kitengela. To choose the study area, a random selection process was used, and Ngong municipality was picked through a simple random sampling, ballot method, sampling frame being the three municipalities. According to the Kajiado County Integrated Development Plan (CIPD) for 2022-2027, Ngong municipality mainly covers Kajiado North Sub-County and parts of the Keekonyokie Ward in Kajiado West Sub-County. The towns and wards within Ngong municipality were then used as the sampling frame for the study area. This included Ongata Rongai, Kiserian, and Ngong, as well as three other wards from Kajiado North Sub-County: Oloolua, Olkeri, and Nkaimurunya, in addition to the Keekonyokie Ward from Kajiado West Sub-County. These names were written and dropped in a ballot box. Two papers were randomly picked, that is Oloolua and Kiserian Townships which formed the study area selected using the simple random sampling method.

Fisher's formula for sample size determination was used in this research study (Fisher, 2020)

$$n = \frac{z^2 p(1-p)}{d^2}$$

n, the desired sample size; (when the population is more than 10,000)

z, the standard normal deviate set as 1.96, with a 95% confidence interval

p, is the estimated proportion of women of reproductive age (15-49), 50.16%

d, is the degree of accuracy set at 5% (0.05).

$$n = \frac{1.96^2 \times 0.5016 \times 0.4984}{0.05^2}$$

n=385

The desired sample size was 385

Considering a 10% non-response rate

$$n = \frac{385}{1-0.1}$$

n =428

Therefore, the total sample size was 428 WRA. The study used questionnaires and focused group discussions (FGDs) for data collection for both quantitative and qualitative designs. The questionnaire was administered using the Kobo Collect mobile application. The research assistants guided the participants through the questionnaire, ensuring a clear understanding of the questions before they provided their answers. The dependent variable was the uptake of LAPM. The independent variables were sociodemographic characteristics, cultural factors, knowledge of LAPM and health system factors. On the other hand, four FGDs were conducted—two in Oloolua and two in Kiserian—to gather insights on the study objectives. The discussions lasted approximately 15 minutes. Digital recorders were used to capture the information shared.

To ensure the utmost integrity of this research study, rigorous measures were implemented to uphold confidentiality, anonymity, and privacy for all research participants This research sought ethical clearance from the Kenyatta University Ethical Review Committee(KU-ERC),(PKU/2592/11718) and research permit was successfully obtained from The National Commission for Science, Technology, and Innovation (NACOSTI),(Nacosti/P/22/21107) and permission to conduct the research from

Kajiado County government(CGK/Medical services/01/Vol.11/83). A trained research assistant approached each participant and explained the study in simple language, ensuring the participant understood the study's purpose and procedures. Once the participants had answered all their questions and were comfortable with the information provided, they were asked to sign the consent form and verbal consent for those unable to write. During the consenting process, participants were informed about how their personal information was being protected. The entire consent process adhered to ethical research guidelines ensuring respect for autonomy, beneficence and justice.

Collected data underwent a cleaning process in the R version 4.1.2 software before being subjected to analysis. To assess for factors associated with the utilization of LAPM, binary logistic regression was carried out. The variables with p-values less than 0.25 were selected for the multivariable logistic regression model. The results were presented using odds ratios, confidence intervals for odds ratios and p-values. The FGDs were analyzed using Colaizzi's thematic analysis to generate themes.

RESULTS

Out of a sample of 428, a total of 343 women participated, resulting in a response rate of 80.1%. Since the population was very similar to the respondents in terms of key variables, then the 80.1% response rate was unlikely to introduce substantial selection bias. The majority (37.6%, n = 129) were aged between 25 to 29 years, were married (64.4%, n=221), had between 2-6 years in marriage (67.3%, n=231) and had less than 3 children (58.9%, n=202). The rest of the information is shown in Table 1.

Table 1

Sociodemographic characteristics of the study participants (N = 343)

Characteristic	Description	Frequency (%)
Age in years	15-19	13 (3.8)
	20-24	60 (17.5)
	25-29	129 (37.6)
	30-34	57(16.6)
	35-39	48 (14.0)
	40-44	25 (7.3)
	45-49	11 (3.2)
Marital status	Single	61 (17.8)
	Married	221 (64.4)
	Separated/widowed/divorced	61 (17.8)
Years in marriage	<2	71 (20.7)
	2-6	231 (67.3)
	>6	41 (12.0)
Number of children	<3	202 (58.9)
	3-6	124 (36.2)
	>6	17 (5.0)
Level of education	No education	7 (2.0)
	Primary	85 (24.8)

	Secondary	164 (47.8)
	Above secondary	87 (25.4)
Occupation	Employed	59 (17.2)
	Self-employed	144 (42.0)
	Unemployed	140 (40.8)
Family income in Kenya shillings	<10,000	253 (73.8)
	10,000-20,000	85 (24.8)
	>20,000	5 (1.5)
Religion	Catholic	146 (42.6)
	Protestant	155 (45.2)
	Muslim	40 (11.7)
	Others	2 (0.6)
Parity	Nulliparous	19 (5.5)
	Primigravida	237 (69.1)
	Multiparous	87 (25.4)

Uptake of LAPM among WRA in Kajiado County

Regarding LAPM uptake, out of the 343 women who participated in this study,78 of them were using LAPM, resulting in a prevalence of 22.7%. IUCD usage was at 7.5% (n = 26), implants at 15.2% (n = 52), while no woman utilized permanent methods of contraception. The remaining women employed other contraceptive methods while 39% (n = 134) were not on any methods of contraception. This information is illustrated in Figure 1 below. The themes that emanated from the FGDs attributed this low uptake of LAPM to inadequate knowledge and awareness especially with regards to side effects. One respondent said:

"*I got pressure from using Implanon. This makes other women fear using Implanon and that will reflect low utilization of Implanon. So, when we are in the community and friends see how we react to FP, this peer pressure drives them away from it*" [R8]

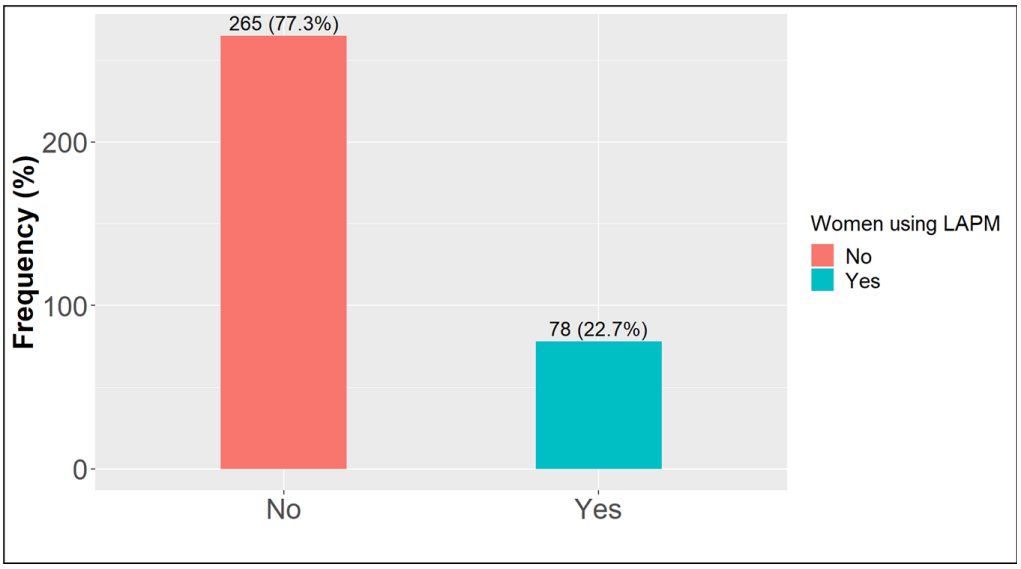

Figure 1: Proportion of women using LAPM

Sociodemographic Characteristics Associated with Uptake of LAPM

Occupation (O. R 2.17, 95% CI (1.05-4.48), P-value 0.033) and level of education (O. R 4.50, 95% CI (0.99-37.43), P-value <0.001) were significantly associated with the uptake of LAPM. After adjusting for sociodemographic variables with p-values <0.25, which were included in the model to explore their potential contribution to explaining the variance in the outcome, only the level of education (above secondary) remained significant (A.O.R 4.43, 95% CI (1.92-10.73), P<0.001. (Table 2).

Table 2

Socio-demographic characteristics related to uptake of long-acting and permanent methods of contraception

Characteristic	**Description**	**Using LAPM**			
		No (Ref) N = 265	**Yes N = 78**	**Adjusted odds ratio (95% CI)**	**P-value**
Years in marriage	<2	58	13	*Reference*	
	2-6	178	53	1.04 (0.52, 2.22)	0.906[c]
	>6	29	12	1.36 (0.50, 3.64)	0.543[c]
Level of education	Primary	73	12	*Reference*	
	No education	7	0	NA	
	Secondary	135	29	1.29 (0.63, 2.81)	0.987[f]
	Above secondary	50	37	4.43(1.92, 10.73)	<0.001[f]
Occupation	Unemployed	118	22	*Reference*	
	Self-employed	105	39	1.50 (0.75, 2.97)	0.247[c]
	Employed	42	17	1.97 (0.85, 4.48)	0.107[c]
Family income in Kenya shillings	<10,000	203	50	*Reference*	
	10,000-20,000	60	25	0.65 (0.31, 1.34)	0.251[f]
	>20,000	2	3	1.71(0.25,14.32)	0.595[f]

[c] *Chis square test*, [f] *Fisher's exact test*

Cultural Factors Associated with Uptake of LAPM.

Women who perceived health facilities as being culturally sensitive had 42% higher odds of using LAPM compared to those who did not. However, this association was not statistically significant (p = 0.263). Women who reported male involvement in FP discussions had 37% higher odds of using LAPM. The association was insignificant (P = 0.289), suggesting that while male involvement is important, it does not solely determine uptake. Women who reported religious influence on their FP decisions were 52% more likely to use LAPM. However, this association was also not statistically significant (P = 0.201).

The Association Between the Knowledge of Contraception and the Uptake of LAPM.

Having a fair knowledge of family planning increased the odds of using LAPM by 2%, (OR 1.02, 95% CI 0.51- 2.02) while good knowledge increased the odds of using LAPM by 10% (OR 1.10, 95% CI 0.11-10.73). However, there was no statistically significant association between knowledge of contraception and the use of LAPM at 5% significance level (P value >0.05). In the FGDs, participants expressed a perceived deficiency in their knowledge and awareness regarding LAPM. One respondent said:

"*Once in a while when we gather together, the nurses conduct health education when we come to the clinic. So, they are supposed to teach us in a regular basis or all the time for us to understand*" [R3]

The Association Between Health System Factors and the Uptake of LAPM.

The majority 87.5% (n = 300) of the women lived less than five kilometres from health facilities. Those who said the health facilities were accessible were 98.0% (n = 336), 60.6% (n = 208) said the healthcare workers were friendly and 93.3% (n = 320) said they were provided with health education at the facility (Table 3). However, the FGDs revealed the unavailability of their preferred contraceptive methods, as outlined below:

"*Sometimes when you come and there is one type of contraception you want but you miss them out. You get the one which was not your preferred choice or the one you did not plan to use"* [R5]

Table 3

The association between health system factors and the uptake of LAPM

Characteristic	**Description**	**Using LAPM**				
		No (Ref) N = 265	Yes N = 78	Frequency (%)	Crude odds ratio (95% CI)	P-value
Distance from health facility	≥5kilometers	36	7	300 (87.5)	*Reference*	
	5 kilometers	229	71	43 (12.5)	1.59 (0.68, 3.74)	0.280[c]
Facility is accessible	No	7	0	208 (60.6)	*Reference*	
	Yes	258	78	320 (93.3)	NA	0.358[f]
Friendly providers	No	105	30	126 (36.7)	*Reference*	
	Yes	160	48		1.05 (0.63, 1.76)	0.853[f]
Provided with health education	No	20	3	31 (24.6)	*Reference*	
	Yes	245	75	5 (4.0)	2.04 (0.59, 7.06)	0.251[c]

[c] *Chis square test,* [f] *Fisher's exact test*

DISCUSSION

The study found a prevalence rate of LAPM uptake at Kajiado County to be 22.7% which aligns with the latest prevalence of 21.5% (6). A study conducted in Kilifi and Kisii counties revealed a comparable prevalence of 21.5%, aligning closely with the findings of the present study (16). However, none of the women in this study opted for permanent sterilization, a significant contrast to the global female sterilization rate of 25%, which is also the most widely used LAPM (4). This could be due to inadequate sensitization on permanent methods of family planning, resulting to inadequate knowledge and awareness among WRA. A higher prevalence of long-acting and reversible contraceptives (LARC) utilization, 34.7% has been documented in Ethiopia (17). This difference may be ascribed to variations in the research environment. This investigation took place in both rural and semi-rural contexts, whereas the aforementioned study was carried out in a purely urban setting, where women often lead busy lives, prompting the necessity to regulate the size of their families.

Tertiary-level education was significantly associated with the use of LAPM. Other studies have also reported a positive association between education levels and use of LAPM (18,19). Women with higher levels of education tend to participate in time-consuming economic activities, hence the desire to space their children. Education gives women the power to make decisions on the number of children that they can have.

Knowledge is a necessary component, but it is often not sufficient on its own to ensure the adoption of LAPM (12). The finding that knowledge correlates with increased use of LAPM, albeit not significantly, might be influenced by other mediating factors such as cultural beliefs, social norms, and accessibility of services. For instance, a study in Ethiopia highlighted that even when women had adequate knowledge about LAPM, their uptake was influenced by cultural and familial pressures, suggesting that knowledge needs to be complemented by supportive social and health system environments(13).

Several health system characteristics have been identified as key factors that increase the likelihood of utilizing LAPM. These include cultural sensitivity, the friendliness of service providers, and the provision of health education to women (20). Cultural sensitivity is particularly crucial in enhancing the acceptance and utilization of healthcare services. When healthcare providers demonstrate an understanding and respect for the cultural beliefs and practices of the communities they serve, they build trust and rapport, which in turn fosters a more favorable attitude towards adopting healthcare interventions, including LAPM. This aligns with recent studies highlighting the importance of culturally sensitive healthcare services in improving patient outcomes and adherence to medical advice (14).

In this study, limitations such as cultural difficulties, recall bias, and social desirability bias could all have had an impact on the results. However, the study offered important insights into the uptake of LAPM in Kajiado by addressing those constraints through thoughtful design, mitigation techniques, and open reporting.

Conclusion

The uptake of LAPM in Kajiado County remains low, with no woman opting for a permanent method of contraception. Higher education levels increased uptake.

Recommendation

Targeted interventions should focus on educational empowerment for women.

Expanding the men and women community-based health education on LAPM is essential, particularly regarding permanent methods.

CRediT:
Okore LA: Conceptualization, Data Collection, Data Analysis.
Oyore JP: Reviewing and Editing, Supervision
Kanini C: Supervision.

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