

ORIGINAL RESEARCH ARTICLE

Prevalence and determinants of contraception utilization over time in Migori County, Kenya: Repeated cross-sectional household surveys

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Abstract

Contraception use and family planning have been shown to save lives and benefit women, their families, and their communities. We conducted a cross-sectional study analyzing data from a 2021 survey that was conducted across eight different regions in Migori County, Kenya to examine the potential role that different factors play in meeting family planning targets. Comparisons are made to data collected in 2018/2019 in order to estimate the change over time of contraception uptake. Descriptive statistics were calculated, the Cochran–Mantel–Haenszel test was used to compare contraception use over time, and multivariable logistic regression was used to model determinants of contraceptive use. Sixty-four percent of respondents in 2021 reported that they currently use some form of contraception, and implants are the most popular contraceptive method. Factors associated with higher contraception usage were region, ages 25-34 years, and marital status. Contraception uptake increased significantly in East Kamagambo following a community-driven sexual and reproductive health intervention by the Lwala Community Alliance, suggesting that increased investment in family planning may be influential. We recommend targeted outreach to population groups with low uptake of contraception and investment in both demand- and supply-side interventions to increase contraceptive uptake. Additional research, especially for populations under 18, is needed to further inform effective investment and policy. (*Afr J Reprod Health 2023; 27 [6]: 17-26*).

Keywords: Contraception; family planning; Kenya

Résumé

Il a été démontré que l'utilisation de la contraception et la planification familiale sauvent des vies et profitent aux femmes, à leurs familles et à leurs communautés. Nous avons mené une étude transversale analysant les données d'une enquête de 2021 qui a été menée dans huit régions différentes du comté de Migori, au Kenya, pour examiner le rôle potentiel que différents facteurs jouent dans la réalisation des objectifs de planification familiale. Des comparaisons sont faites avec les données recueillies en 2018/2019 afin d'estimer l'évolution dans le temps du recours à la contraception. Des statistiques descriptives ont été calculées, le test de Cochran-Mantel-Haenszel a été utilisé pour comparer l'utilisation de la contraception dans le temps et une régression logistique multivariée a été utilisée pour modéliser les déterminants de l'utilisation de la contraception. Soixante-quatre pour cent des répondants en 2021 ont déclaré utiliser actuellement une forme de contraception, et les implants sont la méthode contraceptive la plus populaire. Les facteurs associés à une utilisation plus élevée de la contraception étaient la région, l'âge de 25 à 34 ans et l'état matrimonial. L'adoption de la contraception a augmenté de manière significative dans l'est de Kamagambo suite à une intervention de santé sexuelle et reproductive menée par la communauté par Lwala Community Alliance, ce qui suggère qu'un investissement accru dans la planification familiale peut avoir une influence. Nous recommandons une sensibilisation ciblée des groupes de population ayant une faible utilisation de la contraception et un investissement dans des interventions tant du côté de la demande que de l'offre pour accroître l'utilisation de la contraception. Des recherches supplémentaires, en particulier pour les populations de moins de 18 ans, sont nécessaires pour éclairer davantage les investissements et les politiques efficaces. (*Afr J Reprod Health 2023; 27 [6]: 17-26*).

Mots-clés: La contraception; planification familiale; Kenya

Introduction

Contraception use and family planning have been shown to save women's and children's lives and benefit the social and economic development of women, their families, and their communities. Contraception has been documented to prevent unintended pregnancy, reduce abortions, and lower the incidence of death and disability related to complications of pregnancy and childbirth¹⁻³. Increased access to contraception enhances women's autonomy within their households and allows women to complete their education, leading to better earning power and increased economic security^{2,4,5}. Other benefits of increased contraception coverage include reduction in neonatal deaths, reduction of vertical transmission of HIV, and population stability leading to increased economic and environmental sustainability^{6,7}. In 2019, an estimated 163 million women in low- and middle-income countries (LMICs) were considered to have an unmet need for contraception because they desired to avoid pregnancy but were not using a modern contraceptive method⁸.

Global contraceptive prevalence has increased over time due to significant global attention and investment in family planning programs. From 1970 to 2019, global contraceptive prevalence rose from roughly 20% to 50%⁸. Correspondingly, unmet need dropped slightly from 8.7% to 8.3%, and demand satisfied rose from roughly 25% to nearly 80%⁸. Due to the successful expansion of family planning programs between 2000 and 2019, Kenya was in the top ten countries in sub-Saharan Africa with the largest increases in proportion of women who had their need for family planning satisfied with modern methods⁹. In 2022, the modern contraceptive prevalence rate in Kenya was estimated at 59% among sexually active unmarried women and 57% among currently married women, and the unmet need for family planning was estimated to be 19% among sexually active unmarried women and 14% among currently married women¹⁰.

However, this improvement has not affected every part of the country equally. According to the 2022 Kenya Demographic and Health Survey (KDHS), regional disparities across the 47 counties were marked with rates of

modern contraceptive usage among currently married women ranging from 2% in Mandera County to 75% in Embu County. The modern contraception prevalence in Migori County was reported at 55% among currently married women, just below the national average. Disparities across the country were highly correlated with education and wealth. Modern contraception prevalence among married women with no education was 21%, while more than half of women with at least some schooling used any modern method (58%-60%). Only 43% of women in the lowest wealth quintile used any modern method of contraception, whereas the prevalence ranged from 58% to 61% of women in the higher wealth quintiles¹⁰.

The Lwala Community Alliance (Lwala) is an organization that serves to promote the health and well-being of communities in Migori County by emphasizing community-led health and operating a hospital with inpatient, outpatient, maternal, child, reproductive, and HIV care in the North Kamagambo ward of the county. This model has found substantial success in improving health metrics, including contraceptive prevalence rates that are substantially higher than surrounding areas (79%)¹¹. Lwala's community-led sexual and reproductive health model targets both demand creation and service provision. First, Lwala organizes community advisory boards to advocate for sexual and reproductive rights and inform program delivery. Then, Lwala works with the Ministry of Health to train community health workers, facility-based workers, and youth peer providers to collaboratively educate, promote and provide sexual and reproductive health services, including short, long-term, and permanent family planning methods. Lwala supports family planning commodity supply chains as well as additional access points through outreaches and youth-friendly corners.

Beginning in 2017, as part of its routine monitoring and program evaluation activities, Lwala has conducted repeated cross-sectional household-level surveys designed to assess priority health metrics of the communities that Lwala serves¹¹⁻¹⁵. Surveys were conducted in 2017, 2018/2019, and 2021, and with each round of surveying, new catchment areas were incorporated. We utilize survey data from the

latest 2021 round of surveys to estimate contraception prevalence and to examine the potential role that different factors play in meeting family planning targets. Comparisons are made to data collected in 2018/2019 in order to estimate the change over time of contraception uptake. Results are intended to inform current and future programming to address the burden of unmet need in family planning in this area.

Methods

Sampling and survey

The survey and sampling methodology have been described in detail elsewhere¹². In summary, the survey was powered to detect a 10% change in health metrics over time with 80% power. Households were selected using a modified procedure based on the World Health Organization (WHO) Expanded Programme of Immunization (EPI) method^{16,17}. Each survey area was split into 127 grid squares, and survey teams would begin the day at the center of a grid square using global positioning system (GPS). The teams then utilized the spin-the-bottle technique to randomly select a direction to travel in order to survey seven households. Upon arrival to a household, the interviewer asked to speak to

the head of the household, who must have been 18 years of age or older to be surveyed. Female heads of household were preferred for the survey, and although male heads of households were surveyed if no female

heads of households were available, they were excluded from this analysis. The survey contained more than 300 questions across multiple domains. Participants received 50 KES (~\$0.50 USD) in cellphone airtime. Trained interviewers from the community administered the surveys. All of the interviewers were fluent in English, Dholuo, and Swahili – the main languages used locally. Surveys were administered on tablets using a customized Research Electronic Data Capture (REDCap) platform^{18,19}.

The survey was based on validated tools to capture a wide variety of health metrics^{20–22}. Demographic, health, and socioeconomic data were recorded about the respondent and household. The survey included education level, marital status, health insurance status, contraception use, and contraception preference. Survey responses were de-identified prior to analysis.

The survey was administered in 2021 across eight wards, shown in Figure 1. North Kamagambo, East Kamagambo, and South

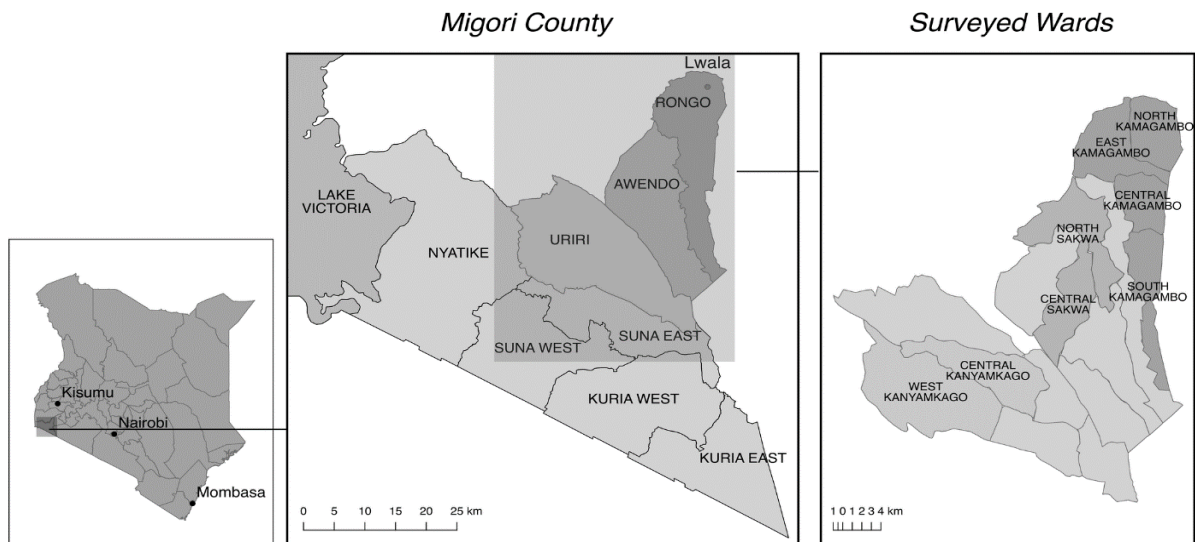


Figure 1¹²: Regions in which the Lwala Community Alliance’s programming is present (North Kamagambo, East Kamagambo, South Kamagambo), planned expansion areas (Central Kamagambo, North Sakwa, Central Sakwa), and control areas (Central Kanyamkago, West Kanyamkago)

Kamagambo represent wards in which Lwala's programs were present as of start of the 2021 survey. Central Kamagambo, North Sakwa, and Central Sakwa are wards in which Lwala plans to expand into within the two years following the survey, as such, data presented here are baseline for these regions. Central Kanyamkago and West Kanyamkago in the Uriri sub-county serve as comparison wards, as they are similar socioeconomically and demographically to the Rongo sub-county but are distant enough from where Lwala is active to minimize spillover effects. Data were collected by region consecutively. For this latest round, surveying occurred from May 3rd to June 25th 2021.

In a methodology modified from the DHS program, wealth tertiles were calculated using principal component analysis using the following variables: water source, toilet type, cooking fuel, floor material, and household ownership of items²³. Health insurance status was defined as ever having contributed to the National Hospital Insurance Fund (NHIF).

Statistical analysis

Descriptive statistics were used to describe the surveyed population. Contraceptive prevalence rate was calculated according to international standards as the use of any method among women of reproductive age (18 to 49 years)²⁴. Unmet need for contraception was defined as either being currently pregnant with an undesired pregnancy or not currently using contraception and not desiring a pregnancy in the next 24 months. The Cochran–Mantel–Haenszel test was used to compare contraception prevalence from the 2021 survey to the 2018/19 survey in each region. Multivariable logistic regression was used to analyze determinants of contraception prevalence. All analyses were performed using Stata (StataCorp LP, College Station, TX).

Ethical approval

The protocol and study design were approved by the Ethics and Scientific Review Committee at AMREF Health Africa (AMREF-ESRC P452/2018) and the Institutional Review Board at Northeastern University (IRB #: 20-09-18). Written informed consent was provided by all participants prior to administration of the survey.

Results

Contraception prevalence

A total of 7,250 households were surveyed. Data are included in this analysis for 6,029 female heads

Table 1: Demographic characteristics by contraceptive prevalence for female heads of household in Migori County, Kenya in 2021

Variable (N=6029)	Contraception Prevalence N (%)*	Total N (%)
Overall Contraception Prevalence	3879 (64.3)	
Region		
North Kamagambo	527 (69.8)	755 (12.5)
East Kamagambo	511 (66.4)	770 (12.8)
South Kamagambo	472 (63.4)	745 (12.4)
Central Kamagambo	435 (55.2)	788 (13.1)
Central Kanyamkago	459 (63.1)	728 (12.1)
West Kanyamkago	471 (63.2)	745 (12.4)
North Sakwa	511 (65.3)	783 (13.0)
Central Sakwa	493 (69.0)	715 (11.9)
Mother's age		
18-24	1149 (60.4)	1903 (31.6)
25-34	2150 (69.3)	3102 (51.5)
35-49	580 (56.6)	1024 (17.0)
Mother's education level		
No education/Primary	2093 (64.9)	3227 (53.5)
Secondary+	1786 (63.8)	2801 (46.5)
Marital Status		
Single	125 (47.5)	263 (4.4)
Married	3267 (67.4)	4844 (80.3)
monogamous/cohabiting		
Married polygamous	253 (58.0)	436 (7.2)
Widowed/divorced/separated	234 (48.3)	485 (8.0)
Wealth Tertile		
Poor	1317 (65.9)	1998 (33.1)
Middle	1305 (65.4)	1997 (33.1)
Rich	1242 (62.2)	1997 (33.1)
Missing	15 (40.5)	37 (0.6)
Religion		
Christian	3098 (64.6)	4794 (79.5)
Roho church	647 (63.5)	1019 (16.9)
Other	134 (62.3)	215 (3.6)
Visited by CHW in the last 3 months		
Yes	1451 (67.2)	2160 (63.8)
No	2426 (63.0)	3849 (35.8)
Health insurance		
Yes	934 (64.7)	1444 (76.0)
No	2945 (64.3)	4584 (24.0)

*Percentages represent the proportion of contraceptive usage of total persons in that category

of households between the ages of 18 and 49 years (Table 1). This analysis focuses specifically on questions in the survey related to contraceptive usage. Overall, 3,879 (64.3%) respondents reported that they currently use some form of contraception. Respondents in North Kamagambo reported the highest rate of usage, at 69.8%, with all other regions reporting between 55.2% and 69%. Contraception usage was highest among ages 25-34 at 69.3%. Married and monogamous women

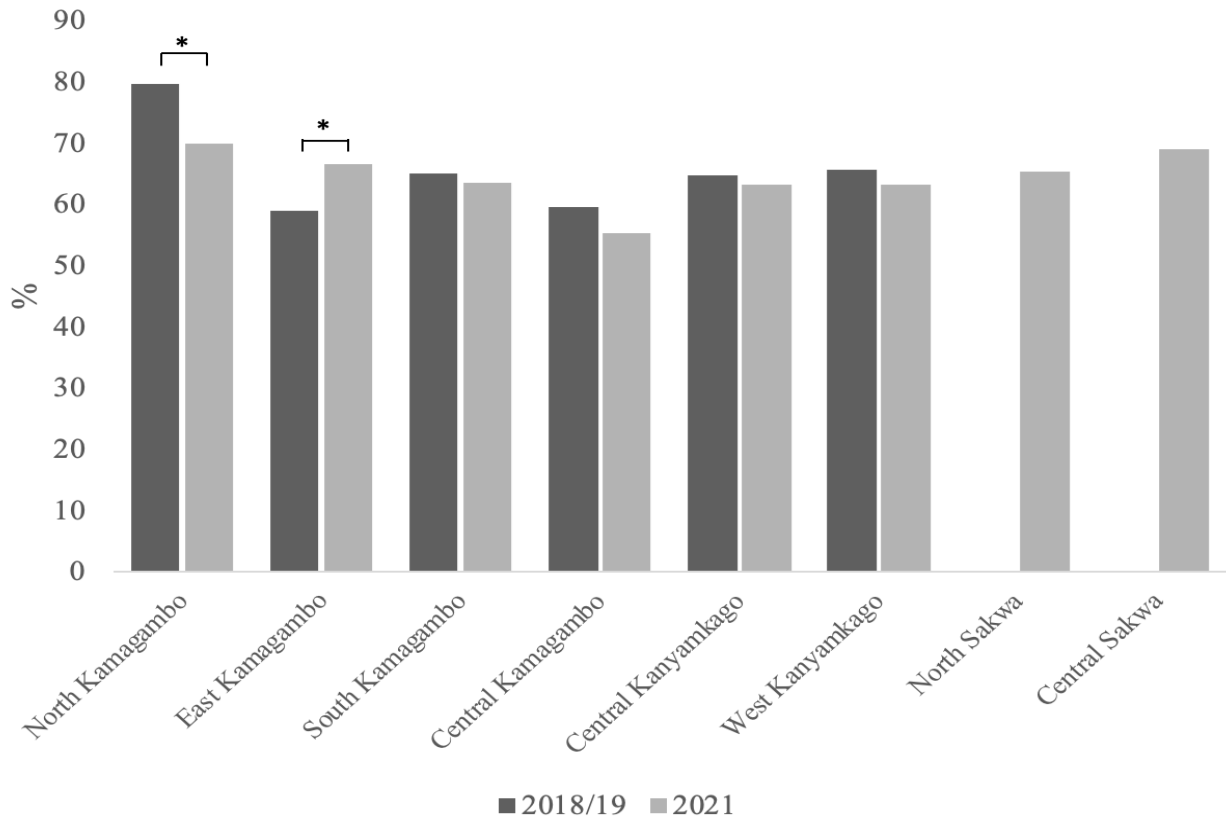


Figure 2: Comparison of contraception prevalence by region from 2018/19 to 2021; * p<0.05

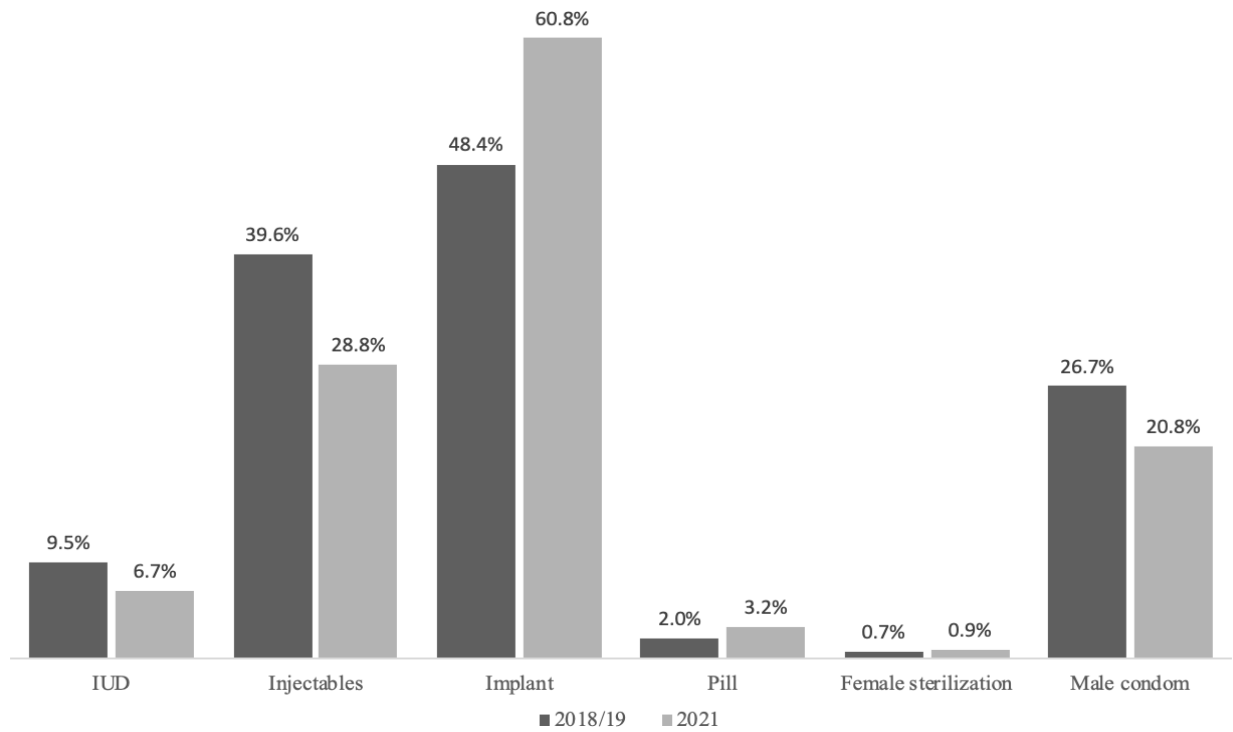


Figure 3: Change in contraception preference from 2018/19 to 2021

had the highest rate of contraception usage at 67.4%, whereas single women had the lowest rate at 47.5%. The proportion of contraception use was largely similar across wealth tertiles.

Change in contraception use since 2018/19

In multivariable analysis, we compared the usage of contraception in each region in 2021 to their usage in 2018/19. Most notably, there was a significant increase in contraception prevalence among women in East Kamagambo from 59% to 66% between 2018/19 and 2021 (OR 1.54, 95% CI: 1.06-2.27, p-value: 0.025). North Kamagambo experienced a decrease in contraceptive prevalence rate from 79.5% to 69.8% between 2018/19 and 2021 (OR: 0.35, 95% CI: 0.18-0.69, p-value: 0.002). No significant difference in contraception use was seen in South and Central Kamagambo, nor in Central and West Kanyamkago between the two study time points (Figure 2).

Type of contraception used and change since 2018/19

In order to compare contraception preference over time, North and Central Sakwa were excluded from this analysis as these regions were not surveyed in 2018/19. The implant was the most commonly used type of contraception in 2021 (60.8%). The implant has increased in popularity in the intervening years between the surveys as it was the second-most popular choice behind the injection in 2018/19. The least popular type of contraception in 2021 was female sterilization (0.9%). Across all regions surveyed in both 2018/19 and 2021, the implant grew in popularity while injectables decreased in use. Male condoms remain an important form of contraception, although its use slightly declined in the intervening years between surveys (Figure 3).

Determinants of contraception use

Multivariable logistic regression was utilized to explore determinants of current contraceptive use (Table 2). Women aged 25-34 were 1.54 times more likely to use contraception than women aged 35-49 (OR: 1.54, 95% CI: 1.32-1.80, p-value: <0.001). Additionally, monogamously married women were twice as likely to use contraception as single women (OR: 2.00, 95%

Table 2: Factors associated with contraception use in Migori County in 2021

Variable	OR (95% CI)	P-value
Region		
North Kamagambo	Ref.	
East Kamagambo	0.83 (0.67-1.04)	0.109
South Kamagambo	0.76 (0.61-0.95)	0.016
Central Kamagambo	0.58 (0.46-0.73)	<0.001
Central Kanyamkago	0.75 (0.60-0.95)	0.018
West Kanyamkago	0.77 (0.61-0.97)	0.026
North Sakwa	0.83 (0.66-1.04)	0.110
Central Sakwa	0.98 (0.77-1.24)	0.858
Mother's age		
18-24	1.02 (0.86-1.21)	0.832
25-34	1.54 (1.32-1.80)	<0.001
35-49	Ref.	
Mother's education level		
No education/Primary	1.03 (0.92-1.17)	0.584
Secondary+	Ref.	
Marital Status		
Single	Ref.	
Married	2.00 (1.54-2.59)	<0.001
monogamous/cohabiting		
Married polygamous	1.38 (0.99-1.90)	0.055
Widowed/divorced/separated	0.92 (0.67-1.27)	0.632
Wealth Quintile		
Poor	1.13 (0.97-1.31)	0.107
Middle	1.09 (0.95-1.26)	0.216
Rich	Ref.	
Religion		
Christian	Ref.	
Roho church	0.94 (0.81-1.09)	0.399
Other	0.95 (0.71-1.27)	0.719
Visited by CHW in the last 3 months		
Yes	1.12 (0.98-1.27)	0.093
No	Ref.	
Health insurance		
Yes	1.06 (0.92-1.21)	0.435
No	Ref.	

CI: 1.54-2.59, p-value: <0.001). Lastly, women living in South Kamagambo, Central Kamagambo, Central Kanyamkago, and West Kanyamkago were all less likely to use contraception than women living in North Kamagambo. Level of education, wealth, religion, recent visit by community health workers (CHWs), and health insurance status did not impact rate of contraception use.

Contraceptive unmet need

Total unmet need for contraception across all regions surveyed was 14.8%. North Sakwa had the highest unmet need at 16.6% and West Kanyamkago had the lowest unmet need at

13.1%. Women aged 25-29 had the highest rate of unmet need at 31.1%, with women aged 45-49 having the lowest rate of unmet need at 3.8% (data not shown).

Discussion

The overall prevalence of modern contraception use across all regions studied in 2021 was 64.3%, which was slightly higher than the prevalence reported in our survey in 2018/19 (63.3%), and higher than Kenya's 2022 national average of 59% among married women, as reported in the 2022 Kenya DHS¹⁰. In our study catchment area, the implant, injectables, and the male condom were the most reported contraceptive methods used across the two study periods. The KDHS found similar trends across Kenya with implants and injectables being the most common forms of modern contraception among married women. However, amongst all demographics, injectables were the most commonly used form of modern contraception at 20%, followed by implants at 19%¹⁰.

Over the last two decades, Kenya has implemented wide-spread and aggressive HIV treatment and prevention programs that have both promoted and aggressively distributed male condoms as a means of HIV prevention. As such, it is not surprising that male condoms are one of the more commonly used methods. However, preferences in contraception type may be evolving within our study catchment area, with use of the implant increasing from 2018/19 to 2021, while use of injectables and male condoms has slightly decreased. One possible reason for this may be a recent surge in educational initiatives and community outreach campaigns targeting reproductive-age women that highlight the longer-term protective benefits of both the implant (up to five years) and the injectable methods (three months).

The IUD was a less common choice for long-term contraception among the women in our study. Anecdotal information suggests this may be due to misconceptions about this device, such as local rumors that IUDs can cause cancer or permanent infertility. Misconceptions and myths about the IUD have been reported elsewhere across sub-Saharan Africa. Studies in Nairobi County, Kenya, Uganda, and South Africa found

that many women believe that the IUD can damage the womb, move to other parts of the body, reduce sexual pleasure, cause infections, and cause cancer²⁵⁻²⁷. Additionally, several studies in Ghana reported that male partner preference may also play a role in the decision around IUD use, as the male partners complained of being able to feel the IUD strings during intercourse^{28,29}. The IUD has a stated duration of effectiveness of 12 years. In some instances, women have reported that they did not feel they needed contraception for that long despite education about the possibility of early removal, and instead choose the implant because five years is seen as a more reasonable period of time to wait before having children³⁰.

Negative attitudes towards contraception use from men have been documented in many sub-Saharan African countries, with contraception viewed as a gateway to promiscuity³¹. This has resulted in covert use of contraception among women, leading to a popularity in injectable methods both in our surveyed communities, as well as more broadly across sub-Saharan Africa³². The pill is the least popular form of hormonal contraception, likely because taking a daily medication is seen as a cumbersome and inconvenient option. Many women would rather choose an option where they do not have to think about it so often³³.

Across both our study time periods, women ages 25-34 were most likely to report contraception use, a trend that is consistent nationwide¹⁰. Further, in our study and other studies in sub-Saharan Africa, younger women had lower overall rates of contraception usage³⁴⁻³⁷. One possible explanation is the myth that contraception of any kind can lead to infertility, leading to young women who are concerned about future fertility being less likely to use contraception^{38,39}. These pervasive fears could affect younger women's use of contraception more, as this fear could hold more prominence in the minds of women who have not yet had any children. Our survey was restricted to those 18 years and older. Further research is needed amongst young women of reproductive age in our catchment area to more fully understand their choices and behaviors around contraception.

This study did not find any significant association between contraception utilization and

education, religion, wealth tertiles, or NHIF status. We also did not see an effect of education or religion in our 2018/19 survey¹¹. In contrast, the 2022 Kenya DHS found that married women with no education had much lower levels of modern contraception utilization than married women with any form of education (roughly 20% vs. 60% respectively)¹⁰. However, this lack of relationship with education is consistent with a 2014 study that examined the DHS's from 27 sub-Saharan African countries and found that level of education was not related to increased contraception prevalence. Instead, they found that increased contraception usage was more directly linked to increased family planning programming implemented by the governments of these countries⁴⁰. The contrasting finding from the 2022 KDHS may reflect changing relationships with education over time.

In terms of marital status, we found that single women had the lowest rates of contraception prevalence in both 2018/19 and 2021¹¹. This is also similar to another study of sub-Saharan Africa that found that young married women had lower odds of unmet need for contraception than those who were cohabiting³⁵. However, this trend was not seen in the 2022 Kenya DHS, which reported that modern contraception usage was similar between sexually active single women (59%) than currently married women (57%)¹⁰. These results may differ from our survey because we did not capture sexual activity, meaning many of the single women surveyed may not be sexually active.

When the 2018/19 survey was conducted, the Lwala Community Alliance was present in only North Kamagambo. After this survey was conducted, Lwala expanded their programming into East Kamagambo and South Kamagambo. After the 2021 survey was completed, Lwala expanded into Central Kamagambo. The only region that showed a significant increase in likelihood of using contraception over time was East Kamagambo, as women in this region were 1.54 times more likely to use contraception in 2021 than they were in 2018/19 ($p=0.025$). This is notable because this was a region that Lwala has expanded into between the 2018/19 and the 2021 surveys. The other region that Lwala expanded into in this time

frame, South Kamagambo, did not experience any significant difference in contraception usage. This could be due to the fact that Lwala's interventions had not been present for very long before the 2021 survey was conducted. While North Kamagambo did experience a significant decrease in likelihood in using contraception, the contraception prevalence remains the highest in this region among all the regions surveyed at 69.8% (79.5% in 2018). Although this decrease may be due to ceiling effect, further investigation is needed to determine the cause.

Across all regions surveyed, the total unmet need for contraception was 14.8%. This is similar to national data, as the 2022 Kenya DHS found that the unmet need for family planning among currently married women was 14% and 19% among sexually active unmarried women. Our finding that women ages 25-29 had the highest rate of unmet need was flipped in the 2022 Kenya DHS, as this age group had the lowest unmet need¹⁰.

Strengths and limitations

The representativeness of our study due to its large sample size and robust survey and sampling methodology is its main strength. Additionally, the repeated cross-sectional design allows us to follow trends over time. However, this cross-sectional design is also a limitation in that we cannot draw definitive conclusions about what caused these changes over time. Additional data points, which are already planned, will allow for more robust comparison of rates of change in implementation and control areas using quasi-experimental methodologies. Moreover, participation in this survey required respondents to talk about subjects that are sensitive and may be considered taboo, which may have affected the answers given. Finally, given that minors were not surveyed, we cannot comment on adolescent contraception use in Lwala's areas of work, although the 2014 KDHS showed increasing uptake among adolescents⁴¹.

Conclusion

We found an overall higher level of contraception prevalence in the surveyed portions of Migori County as compared to the national average. Contraception usage increased significantly in

East Kamagambo since 2018/19, which may be attributable to the expansion of the Lwala Community Alliance's programming into this area. Implants and injectables continue to be the most popular form of contraception. Factors associated with higher contraception usage were region, ages 25-34 years, and marital status. Groups with low prevalence of contraception uptake, such as single women, should be targeted in future interventions. Our data demonstrates a positive benefit of Lwala's community-led sexual and reproductive health approach, and we recommend similar investment in both demand- and supply-side interventions to increase contraceptive uptake. Additional research, especially with groups under 18, is required to further shape future interventions and policy.

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