

Trends of Inequalities in the Use of Long-Term Reversible Contraceptives in Burkina Faso between 2010 and 2015

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Abstract

Background: Efforts have been made in Burkina Faso, a French-speaking country, since 2010 to improve healthcare access and provide affordable contraceptive methods to women. With the increasing prevalence of modern contraceptives in Burkina Faso, it is important to examine the socio-demographic factors that contribute to this new pattern of contraceptive use. This study aims to analyze the changes in socio-demographic factors associated with long-term contraceptive use and provide scientific evidence to guide policy development and action planning in family planning. **Data and Methods:** We utilized data from the 2010 Demographic and Health Survey, which included 17,087 women aged 15 - 49 years, and the 2015 Demographic and Health Module, which included 11,504 women in the same age group. For the analysis of contraceptive use, we focused on women who were in need of contraception (either met or unmet), of reproductive age, non-pregnant, and either married or sexually active but not married. We included users of modern reversible methods and excluded non-users, as well as users of traditional or permanent methods. **Results:** Our findings revealed a high prevalence of long-term contraceptive use across all categories; however, certain challenges were identified, such as lower levels of information about contraceptive methods among users and the persistence of inequalities. Family planning discussions and partner approval did not influence long-term contraceptive choice. Additionally, some providers selectively offered specific methods based on women's life course characteristics, such as parity and marital status, despite evidence suggesting that young and nulliparous women can effectively use long-term methods. **Conclusion:** Given the high effectiveness of

long-term contraceptive methods, it is crucial to address barriers that hinder their utilization among young and nulliparous women, as well as those who desire to delay pregnancy. Efforts should focus on improving knowledge and dispelling misconceptions surrounding long-term methods. Providers play a pivotal role in this process by adopting counseling strategies that enhance users' understanding and facilitate informed decision-making regarding contraceptive options.

Keywords

Long-Term, Short-Term, Contraceptive Method, Method Information, Counselling, Burkina Faso

1. Background

Countries experiencing slow fertility transition are characterized by rapid population growth, high fertility rates, and low usage of modern contraceptives. Research has shown that women in sub-Saharan Africa have less access to modern contraceptive methods compared to women in other developing regions [1]. This lack of access leads to a high prevalence of unintended pregnancies, with Africa having a higher rate of unintended pregnancies (86/1000) compared to the global average (55/1000) in 2008 [2]. The low use of long-term contraceptives is a major contributing factor to these unwanted pregnancies in Africa, as these methods are not widely adopted by the population [3]. Non-compliance with contraceptive methods among women is also a significant factor in unintended pregnancies [4]. Factors such as effectiveness and ease of use play a crucial role in individuals' choice of contraceptive methods [5]. Therefore, the interest in long-term contraceptives in sub-Saharan Africa is justified, considering the ineffective use of short-term methods [6].

Efforts have been made in Burkina Faso, a French-speaking country, since 2010 to improve access to healthcare and provide low-cost contraceptive methods to women [7] [8]. These efforts include strategies such as securing contraceptive products, mobile teams for long-term contraceptives, and community-based distribution for non-prescriptive methods like condoms and pills. However, the question arises as to whether these efforts have been sufficient to democratize access to both short-term and long-term contraceptive methods nationwide. Between 2010 and 2015, there was an increase in the modern contraceptive prevalence rate among married women in Burkina Faso from 15% to 22.5%, with a rising trend in the use of long-term contraceptives. The use of intrauterine devices (IUDs) and implants among married women and women aged 15 - 49 increased from 0.3% to 0.7% and from 3.4% to 10.4%, respectively, during the same period [9].

Given the increasing prevalence of modern contraceptives in Burkina Faso, it is essential to examine the socio-demographic factors underlying this new pat-

tern of contraceptive use. This study aims to understand the changes in socio-demographic factors related to contraceptive use and provide scientific evidence to inform policy development and action planning in family planning. Additionally, the study's findings may support the reorientation of national reproductive health strategies in Burkina Faso, considering the completion of the country's Family Planning Acceleration Plan 2017-2020. To address the difficulties in accessing long-term contraceptives, it is crucial to investigate the barriers and challenges associated with their use.

The literature indicates that several barriers contribute to the low uptake of long-term contraceptives [10] [11] [12] [13]. One significant barrier is the lack of information among users and healthcare providers, as well as the time required for counseling on these methods [14]. Insufficient information often leads to the spread of discouraging rumors about long-term contraceptives, particularly among socially disadvantaged individuals [14] [15]. Conversely, women who possess comprehensive knowledge about long-term contraceptives are more likely to adopt them [15] [16].

While higher levels of education generally improve women's ability to discuss and decide on contraceptive use, their impact on the adoption of long-acting methods may be limited. It has been observed that the decision to choose long-acting methods can be challenging, particularly for women without children [17]. A study focusing on young girls in Namibia found that those who already had at least one child were more likely to opt for long-term methods compared to those without children [18]. Furthermore, recent studies have highlighted several factors associated with the low likelihood of nulliparous women using long-term contraceptives. These factors include residing in rural areas, being younger, having lower levels of education, being single or unmarried, being unemployed, and having lower wealth status. These factors have been found to be negatively correlated with the utilization of long-term contraceptive methods among nulliparous women [19].

The time required for counseling can also hinder the use of long-term contraceptives. Evidence suggests that providers often require multiple visits from female patients to provide adequate counseling before offering a long-term contraceptive [20] [21]. More than half of the providers reported that a single visit was insufficient for comprehensive counseling on long-term contraceptives [20]. Providing these services to younger users may require extra time for counseling about LARC methods [22].

Another obstacle is the high cost associated with obtaining long-term contraceptives. In a longitudinal study on contraceptive choice, 70% of women aged 14 - 20 years chose long-term contraceptives when cost barriers were absent [21]. In Burkina Faso's public health facilities, before the introduction of free contraceptive products in June 2019, long-term contraceptives such as IUDs and implants cost 1000 West African CFA francs (equivalent to 2 US dollars), while short-term methods cost less than 500 Fcfa. These costs did not include opportunity or insertion expenses. Additionally, the availability of long-term contraceptive me-

thods varies between urban and rural areas, creating a discriminatory factor based on residency location [23].

Existing studies have consistently highlighted factors influencing the choice of long-term contraceptives, including demographic and socio-economic variables such as the place of residence, age, education level, marital status, and occupation. Supply-side factors such as counseling and side effects were also identified. While studies on access to long-term contraceptives have been conducted in various contexts, there is a dearth of research focusing specifically on sub-Saharan Africa, particularly Burkina Faso. This study aims to investigate the factors influencing the choice of long-term contraceptives among users of reversible modern contraceptives in the specific context of Burkina Faso. As long-term contraceptive use is prominent in Burkina Faso's modern contraceptive landscape [9], this research seeks to understand the underlying factors driving this choice. Furthermore, this study will compare women currently at risk of pregnancy, taking into account their fertility preferences and intentions to space or cease childbearing.

2. Data and Methods

2.1. Data

The data used in this study were derived from two surveys: the 2010 Demographic and Health Survey (DHS) and the 2015 Demographic and Health Module (DHM). In the 2010 DHS, the women's questionnaire was administered to 17,087 women aged 15 - 49 years, resulting in a response rate of 98.4%. For the DHM, the questionnaire was answered by 11,504 women aged 15 - 49 years, with a response rate of 96.6%. The DHS obtained approval from the ICF IRB and the National Ethics Committee of Burkina Faso. The DHM data was obtained from the Burkina National Institute of Statistics and Demography. This survey received ethical approval from the National Council of Statistics in 2013. The methodologies and questionnaires used in both surveys were similar, ensuring the comparability of indicators between the two surveys.

2.2. Study Sample and Variables

For the analysis of contraceptive use, we selected women who were in need of contraception (either met or unmet), fertile, non-pregnant, and either married or sexually active but not married. A respondent is sexually active if she declares to have had sex within the last 30 days. We included all users of modern reversible methods and excluded non-users as well as users of traditional or permanent methods. As a result, our final sample consisted of 2137 women for the years 2010 and 2009 women for the year 2015.

The dependent variable in this study was the current use of a long-term contraceptive (specifically, IUD or Implant). We have chosen to focus on these two contraceptive methods due to their long-lasting effectiveness once they are inserted into the body. The dependent variable is a dichotomous variable

representing reversible modern methods (0: No; 1: Yes). The independent variables included socioeconomic factors such as residency (capital, other cities, rural), education level (no education, primary, secondary, or higher), and standard of living (lower, medium, higher). Additionally, we included independent variables related to women's "place in the life course", which encompassed age groups (15 - 24 years, 25 - 39 years, 40 - 49 years), parity (no children, one to three children, four or more children), and marital status (married and non-married, including single and separated/divorced women). The third group of independent variables pertained to attitudinal factors, including religion (Muslim, non-Muslim, with non-Muslim category including Christian and others), partner approval of family planning (Yes, No, with the latter including individuals without a partner or with an unknown partner opinion), and discussion of family planning with relatives (Yes, No). Furthermore, there was a variable related to method information (not informed, quite informed, well informed), which was created by combining responses to three questions: whether providers informed them about other contraceptive methods, whether providers informed them about potential side effects of contraceptives, and if they were informed about side effects, whether providers explained what to do if they occur. These variables were recoded as 1 for "yes" and 0 for "no" or "not concerned". Finally, a synthetic variable was computed by summing up these three items, resulting in values ranging from 0 for "not informed", to 1 or 2 for "quite informed", and 3 for "well informed".

2.3. Analysis

We employed both bivariate descriptive and multivariate analyses in our study. The descriptive analyses were used to present the profiles of women and the ratio of contraceptive methods based on their socio-demographic characteristics. In the bivariate analysis, we utilized cross-tabulations and Chi-square tests. The comparison of women's characteristics revealed no significant differences between the two survey samples. However, to avoid including highly correlated independent variables in the regression models, we conducted multicollinearity tests to assess the relationship among the independent variables.

The multivariate analyses were performed to examine the associations between long-term contraceptive use and the independent variables. Specifically, we employed binomial logistic regression, which allowed us to estimate odds ratios (OR). For each regression model, we conducted a goodness-of-fit test to assess how well the model fits the data. To determine changes between the two surveys, we introduced a second model that included an interaction term between the survey year and variables that showed significance in the first model.

3. Results

3.1. Trends in the Use of Long-Term Contraceptives by Socio-Demographic Characteristics

Table 1 demonstrates that most of the independent variables were significantly

Table 1. Links between the use of LARCs and socio-demographic characteristics of reversible modern contraceptives users.

Variables	2010			2015		
	n	Using short-term method	Using LARC	n	%	Chi ²
All sample	2137	77.3	22.7	2009	55.8	44.2
Place of residence						1.2 (p < 0.537)
Rural	1027	76.4	23.6	1217	52.8	47.2
Other cities	827	78.9	21.1	620	57.7	42.3
Capital city	283	77.8	22.2	172	67.4	32.6
Education						15.9 (p < 0.001)
None	1193	74.8	25.2	1305	51.0	49.0
Primary	435	76.2	23.8	302	57.0	43.0
Secondary or plus	509	84.3	15.7	402	69.7	30.3
Standard of living						3.8 (p < 0.149)
Lower	389	74.4	25.6	528	49.2	50.8
Middle	755	77.1	22.9	859	55.1	44.9
Higher	993	78.7	21.3	622	61.7	38.3
Women's age group						47.8 (p < 0.001)
15 - 24	598	87.2	12.8	456	69.1	30.9
25 - 39	1198	74.5	25.5	1209	53.5	46.5
40 - 49	341	70.1	29.9	344	45.1	54.9
Marital status						50.6 (p < 0.001)
Non in union	232	95.4	4.6	233	88.4	11.6
In union	1905	75.4	24.6	1776	51.3	48.7
Parity						89.4 (p < 0.001)
No children	236	98.1	1.9	194	93.3	6.7
1 - 3 children	980	78.9	21.1	908	55.3	44.7
Four children or plus	921	70.1	29.9	907	47.9	52.1
Religion						8.5 (p < 0.004)
Muslim	1198	78.9	21.1	1176	55.8	44.2
Christian and others	939	75.2	24.8	833	55.3	44.7
FP* discussion						2.2 (p < 0.138)
Yes	1558	78.4	21.6	1244	58.3	41.7
No	579	74.7	25.3	765	51.2	48.8
Partner's FP approval						1.6 (p < 0.2)
Yes	1838	77.0	23.0	1695	54.0	46.0
No	299	79.5	20.5	314	64.0	36.0

Continued

Type of FP need		62.7 (p < 0.001)			47.2 (p < 0.001)		
For spacing	1498	82.1	17.9	1464	60.2	39.8	
For limiting	639	66.0	34.0	545	43.1	56.9	
Level of method information		94.8 (p < 0.001)			89.5 (p < 0.001)		
Low	595	91.5	8.5	525	71.4	28.6	
Middle	425	76.7	23.3	441	58.3	41.7	
High	1117	69.4	30.6	1043	46.5	53.5	

Notes: *FP: Family planning; LARC: Long-acting reversible contraceptive; The analysis is done on fecund, non-pregnant, married or sexually active non-married women in need of contraception and users of reversible modern contraceptives at the time of survey application. Proportions are weighted, but frequencies are not. The data came from the 2010 DHS women's questionnaire and the 2015 Demographic and health module of the continuous multisectoral survey.

associated with long-term contraceptives (at 5% significance level) in our analysis. In 2010, only residency, standard of living, FP discussion, and partner approval of FP did not show significant associations with long-term contraceptives. However, in 2015, all variables (except religion) displayed significant relationships with long-term contraceptives.

In 2010, the prevalence of long-term contraceptives among modern contraceptive users was 22.7%. The utilization of long-term contraceptives was higher in rural areas compared to urban areas. Additionally, women with no formal education and those with a lower standard of living were more likely to use long-term contraceptives compared to their counterparts with higher education and a higher standard of living, respectively.

As women's age increased, there was a decrease in the prevalence of short-term contraceptives and an increase in the prevalence of long-term contraceptives. A similar pattern was observed for parity, where the prevalence of long-term contraceptives increased as the number of children increased.

Moreover, married women had a higher likelihood of using long-term contraceptives (24.6%) compared to sexually active, non-married women (4.6%). Non-Muslim women, those whose partners approved of family planning, and those who were well-informed about contraceptive methods were more likely to use long-term contraceptives than their respective counterparts.

3.2. Evolution of Associations between Socio-Demographic Characteristics and the Use of Long-Term Contraceptives between 2010 and 2015

Table 2 reveals that, at the overall level, only four variables (marital status, parity, type of family planning needs, and method information) exhibited significant associations with long-term contraceptive methods. The post-estimation indicators indicated that the first model fit the data quite well. In 2015, women were three times more likely to use long-term contraceptive methods compared to 2010. Non-married women were almost twice as unlikely to use long-term methods

Table 2. Change in odds ratio in the use of LARC in Burkina between 2010 and 2015.

Variables	Model 1: Without interactions effects	Model 2: Interactions between year and significant variables in Model 1	Model 3: Interactions between year and all the variables
	Adjusted effects (standard errors)	Adjusted effects (standard errors)	Adjusted effects (standard errors)
Year (ref 2010)			
2015. Year	2.933*** (0.291)	4.141*** (1.250)	5.993*** (2.679)
Place of residence (ref = rural)			
2. Urban	1.184 (0.153)		1.165 (0.235)
2015. Year#2. Urban			0.991 (0.258)
Education (ref = No formal education)			
2. Primary	1.016 (0.126)		1.109 (0.175)
3. Secondary+	0.916 (0.123)		0.819 (0.159)
2015. year#2. Primary			0.835 (0.202)
2015. Year#3. Secondary+			1.215 (0.325)
Wealth (ref = poor)			
2. Middle	0.881 (0.104)		0.902 (0.159)
3. Rich	0.855 (0.129)		1.177 (0.269)
2015. Year#2. Middle			0.956 (0.225)
2015. Year#3. Rich			0.580* (0.176)
Age (ref = 15 - 24 years)			
2. age3	1.069 (0.134)		1.108 (0.214)
3. age3	1.179 (0.205)		0.988 (0.252)
2015. Year#2. 25 - 39			0.956 (0.245)
2015. Year#3. 40 - 49			1.432 (0.497)
Marital status (ref = married)			
2. Non-married	0.573** (0.148)	0.675 (0.251)	0.605 (0.238)
2015. Year#2. Non-married		0.750 (0.377)	0.896 (0.468)
Parity (ref = 4/more children)			
2. 1 - 3 children	0.941 (0.109)	0.894 (0.136)	0.838 (0.165)
3. 0 child	0.201*** (0.0791)	0.178*** (0.111)	0.178*** (0.118)
2015. Year#2. 1 - 3 children		1.061 (0.201)	1.231 (0.298)
2015. Year#3. 0 child		1.116 (0.888)	1.302 (1.094)
Religion (ref = Muslim)			
2. Non-Muslim	1.126 (0.108)		1.381** (0.192)
2015. Year#2. Non-Muslim			0.692* (0.131)
Discussion with partner (ref = No)			
2. Yes	0.872 (0.0736)		0.849 (0.106)
2015. Year#2. Yes			1.057 (0.178)

Continued**Partner approval of FP (ref = Yes)**

2. No	0.828 (0.102)		1.072 (0.193)
2015. Year#2. No			0.632* (0.152)

Type of FP need (ref = for spacing)

2. Limiting	1.589*** (0.189)	1.924*** (0.300)	1.882*** (0.326)
2015. Year#2. Limiting		0.783 (0.170)	0.725 (0.171)

Level of method information (ref = Low)

2. Middle	1.873*** (0.265)	2.335*** (0.508)	2.429*** (0.535)
3. High	2.771*** (0.339)	3.239*** (0.700)	3.488*** (0.779)
2015. annee#2. Middle		0.673 (0.193)	1.611** (0.305)
2015. annee#3. High		0.735 (0.192)	2.406*** (0.368)
Sample size	4146	4146	4146
Goodness of fit: F statistic	0.78	0.44	1.42
Goodness of fit: p-value	0.639	0.915	0.174

Notes: ***p < 0.01, **p < 0.05, *p < 0.1, FP = Family planning; LARC: Long-acting reversible contraceptives; The analysis is done on fertile, non-pregnant, married, or sexually active unmarried women in need of contraception and users of reversible modern contraceptives at the time of the survey application. Data are from the women's 2010 Demographic and Health Survey and the 2015 Demographic and Health Module of the continuous multisectoral survey.

as married women. Regarding parity, there was no significant difference between the two categories of women with children, but both groups were five times more likely to use long-term methods than women without children. Furthermore, based on the type of family planning need, women with a birth-limiting intention were 60% more likely to use long-term methods than those with a birth spacing intention. The likelihood of using long-term methods increased with a higher level of information about family planning methods.

In the second model, we included significant variables associated with long-term contraceptive methods to examine the differences between the two years. The model with interactions appeared to be a better fit than the previous model without interactions. However, none of the interaction terms were found to be associated with the outcome variable. This model indicates that the effect of the survey year becomes more pronounced when considering the interaction between the survey year and other variables. The effect of marital status did not show significance in the presence of interaction. However, the significance level of parity remained unchanged. In this final model, the differences between the categories of type of family planning need and the level of family planning information increased.

4. Discussion

In 2010, socioeconomic variables did not demonstrate significant associations with the use of long-term contraceptives, suggesting a lack of inequalities in

access within Burkina Faso. This could be attributed to targeted interventions implemented in rural areas, such as community-based distribution, mobile clinics, and subsidized costs for long-term contraceptives [7] [8]. While socioeconomic factors may not be directly associated with the use of long-term contraceptives, it should be noted that disparities in access to modern contraceptives persist based on these socioeconomic characteristics in other studies. Thus, economic disparities primarily impact the overall access to contraceptives rather than specifically long-term methods. The supply-side interventions in Burkina Faso have not prioritized a particular type of contraceptive, resulting in broad accessibility for all women, irrespective of their wealth, place of residence, or educational level.

The main inequalities observed were related to non-married and nulliparous women, who seemed to have less access to long-term methods [14]. Some providers selectively offer specific methods based on women's life course characteristics such as parity and marital status, despite evidence showing that young and nulliparous women can use long-term methods. Some medical staff may hold the belief that long-term contraceptives, particularly hormonal ones, are not suitable for women who have not yet had children or achieved their desired fertility [24] [25]. These issues raise questions about providers' level of information and perceptions, as highlighted in previous research [26].

Another persistent inequality is observed based on the type of family planning needs and the level of method information. This association may be bidirectional, suggesting several interpretations. First, women who receive detailed information about all types of contraceptives may be more likely to choose long-term methods. Second, because providing long-term contraceptive methods requires more time, some providers may mention and offer them without sufficient counseling and detailed information to those who accept long-term contraceptives. Besides, other studies show that the provider's preferences tend to outweigh that of the users [27].

Contrary to findings on overall modern contraceptive use, there were no significant effects of family planning discussion and partner approval on the likelihood of using long-term methods. This implies that men's opinions, as expressed through family planning discussions and partner approval, do not significantly influence the choice of long-term methods. This suggests that men may be more concerned about the decision to use any modern family planning method to prevent pregnancy, rather than the specific type of method chosen.

Other persistent inequalities were observed in terms of different family planning needs and levels of method information. Women who desired to stop childbearing but were not willing to use permanent methods were more likely to use long-term contraceptives. The difference in information levels implies the need for improved counseling and provision of information on all contraceptive options [20] [21]. It is crucial for women to have access to adequate information to make informed choices about the contraceptive method that best suits their needs. Additionally, some short-acting contraceptives can be obtained and used

without consulting a healthcare professional, which may contribute to the disparity in information and access to different methods.

The main limitations of this study are related to the available data. Firstly, the small sample size, resulting from the selection of users at risk of pregnancy, may limit the detection of small changes, especially between two closely spaced dates. Secondly, as we used cross-sectional data, we were unable to determine the direction of some relationships, particularly between long-term method use and the level of method information. Thirdly, data on family planning providers' attitudes and practices during counseling, as well as information on rumors about side effects that may deter young and nulliparous women from choosing long-term methods, were not available. These additional data would have provided insights into the interplay between providers and users, particularly regarding the choice of contraceptive methods.

5. Conclusions

In conclusion, this study highlights the lack of socioeconomic inequalities in long-term contraceptive use in 2010, likely due to targeted interventions aimed at rural populations, including community-based distribution, mobile clinics, and subsidized costs of long-term contraceptives. However, forthcoming research indicates that inequalities in access to modern contraceptives persist based on socioeconomic characteristics. Economic disparities primarily impact access to any contraceptive method rather than specifically long-term methods. This study reveals that while the likelihood of using long-term contraceptive methods has increased fourfold between 2010 and 2015, there has been no change in the existing inequalities during this period. Specifically, unmarried women, nulliparous women, and those seeking to delay a pregnancy continue to have lower rates of long-term method use. These disparities primarily arise from individual and provider choices influenced by the level of knowledge and negative rumors surrounding long-term methods. Inadequate or biased counseling may contribute to the persistence of these inequalities and compromise women's ability to make informed choices.

Given that long-term methods are highly effective, it is crucial to address the barriers to their use among young and nulliparous women, as well as those desiring to delay pregnancy. Efforts should focus on improving knowledge and dispelling misconceptions about long-term methods. Providers play a crucial role in this process by adopting counseling strategies that enhance users' understanding and facilitate informed decision-making regarding contraceptive options. Future studies should consider incorporating the perspectives of partners and providers, as well as examining the impact of counseling practices on user choices. Additionally, gathering data on counseling practices and their implications for contraceptive decision-making would provide valuable insights for further analysis. By addressing these areas of inquiry, we can strive to reduce inequalities and promote the optimal use of long-term contraceptive methods.

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Declaration

We utilized secondary data from the DHS and DHM. The DHS program obtained approval from the ICF Institutional Review Board (IRB) and the National Ethics Committee of Burkina Faso, while the DHM survey received approval from the National Council of Statistics in 2013. Data can be accessed from the DHS program and INSD site.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Abbreviations and Acronyms

DHM: Demographic and Health Module

DHS: Demographic and Health Survey

FP: Family planning

OR: Odds ratio

INSD: Institut national de la statistique et de la démographie

IRB: Institutional Review Board

PMA2020: Performance monitoring and accountability 2020

LARC: Long-acting reversible contraceptive

IUD: Intrauterine Device