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Trends and factors influencing long-acting contraceptive utilisation among contraceptive users in Ethiopia: repeated cross-sectional study

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ABSTRACT

Objectives Although nationally representative data are helpful in designing strategies and policies of programmes in a country, there is paucity of evidence with regard to trends and factors influencing utilisation of long-acting contraceptives (LACs). Thus, this study aimed to assess the trends and factors influencing LAC utilisation among contraceptive users in Ethiopia.

Design A repeated cross-sectional study.

Setting and participants The Performance Monitoring and Accountability (PMA2020) national community-based survey data were used, and 2035 contraceptive users participated. To identify trends, proportions of LAC users were analysed using PMA data from round 1 in January 2014 to round 6 in July 2018.

Main outcome measures Users using LAC methods or otherwise.

Results There was a difference in trends in LAC utilisation in the last 4.5 years. There was a 7% increase in the proportion of implant users, while there were no significant changes in utilisation of intrauterine device and female sterilisation. Women in the middle wealth quintile were 1.7 times more likely than those in the lowest quintile to use LAC, while contraceptive users who received recommendations from healthcare providers as well as those who made decisions jointly with healthcare providers were more likely to use LAC compared with those who decided on their own. Women with access to their desired method of contraception were less likely to use LAC, while those informed about intrauterine contraceptive device were more likely to use LAC compared with their counterparts. Women served at health posts, private hospitals and others (family planning clinics, pharmacies and non-governmental organisations) were less likely to use LAC compared with women served at public hospitals.

Conclusion Overall the utilisation of LAC in Ethiopia is low. Therefore, much has to be done in terms of raising awareness about intrauterine device, how healthcare providers can help users in choosing contraceptive methods, and sharing of experiences between public hospitals and other family planning service delivery points.

Strengths and limitations of this study

► The study used country-level data, which are more representative.
► The study presents up-to-date data as the data were collected on an annual basis compared with data from demographic health surveys.
► The study used short time series data of only 4.5 years to analyse trends.
► It is difficult to establish in a survey the cause–effect relationship between response and explanatory variables.

Intrauterine contraceptive devices, implants, and female and male sterilisation methods are among the popular LAC methods used in Ethiopia.[1] They are safe, cost-effective and convenient for users and are associated with lower rates of failure compared with short-acting methods such as contraceptive pills, injectables and condoms.[2]

Globally, 62% of married women aged 15–49 years use a family planning method to limit and space childbirth. However, the prevalence rate of use of contraceptives varies significantly between women living in high-income countries (67%) and those living in low-income countries (34%). Likewise, huge disparity is observed in different countries, ranging from 4% in South Sudan to 88% in Norway.[3] Despite variations in the overall prevalence rate of use of contraceptives, LAC methods were used by about a quarter (27%) of modern contraceptive users worldwide.[4] Additionally, the utilisation of LAC is low in Sub-Saharan Africa and the region has predominantly relied on short-term family planning methods over the past 30 years.[5]

Evidence shows that it is difficult for women to use oral contraceptives correctly and consistently. Unintended pregnancy and its consequences happen from faulty

INTRODUCTION

Long-acting contraceptives (LACs) are modern family planning methods that help prevent pregnancy for 3 or more years.

use of oral contraceptives each year in the world.[6–10] Therefore, by enhancing effective use of LAC and tackling barriers to its use, the world could avert more than 54 million unintended pregnancies, 79 000 maternal mortalities and 1 million infant deaths each year.[11] In the developing world, 72 million unintended pregnancies occur annually, 30% of which resulted from faulty use of contraceptives.[12]

Ethiopia is one of the three African countries contributing to high maternal mortality in the world. In 2012, the region averted 25.2% of maternal deaths through family planning methods.[13] The utilisation of contraceptives was highly skewed towards use of short-term methods in Ethiopia despite the lower rate of failure and the effectiveness of LAC. Even though the Ethiopian Ministry of Health is working on the provision of modern contraceptive methods at the lowest service delivery points (SDPs) to make them accessible at a lower or at no cost, the country's utilisation of LAC is low.[14] For instance, the rates of utilisation of permanent family planning methods, intrauterine devices (IUDs) and contraceptive implants were less than 1%, 2% and 8% among women of childbearing age, respectively.[15]

Previous research has focused on local factors affecting LAC utilisation in different areas of the country despite the need to analyse nationally representative data to provide a clear understanding of the overall factors influencing utilisation. In addition, up-to-date evidence on the trends and determinants of LAC utilisation is crucial in designing family planning strategies and policies to get the benefits of family planning, especially the advantages of contraceptive method mix. Therefore, this study aimed to assess the trends in the last 4.5 years and the factors influencing LAC utilisation in Ethiopia.

METHODS
Study context
A secondary data analysis was conducted using Performance Monitoring and Accountability (PMA2020) survey data, a nationally representative, community-based, cross-sectional study of Ethiopian family planning programmes. All women of childbearing age (15–49 years old) who were using any method of contraceptives in Ethiopia were included in the analysis.

Data source and study period
The PMA2020 survey collects data at the national level to estimate key indicators in order to monitor progress in family planning both at the population and SDP level. The resident enumerator model enables replication of surveys on an annual basis or more frequently. The PMA2020 round 6 project was obtained from https://www.pmadata.org/countries/ethiopia/ethiopia-indicators/pma2018ethiopia-round-6-indicators.

The study was conducted in six rounds: round 1: January–March 2014; round 2: October–December 2014; round 3: April–May 2015; round 4: March–April 2016; round 5: April–May 2017; and round 6: June–July 2018.

Sampling design
PMA2020/Ethiopia used a two-stage cluster design, with urban–rural major regions as strata. This survey round used the same 221 enumeration areas (EA) (sampling unit) used for all rounds by the Central Statistical Agency from its master sampling frame. Thirty-five households were selected from each EA, and households with eligible women of reproductive age (15–49 years) were contacted for interviews.

Once listed, 35 households were randomly selected by field supervisors using a phone-based, random number-generating application. All occupants in the selected households were enumerated, and from this list all eligible women aged 15–49 years were approached and asked to provide informed consent to participate in the study. Of the 7429 women interviewed, 2035 reported using contraceptive methods for PMA2020 round 6. The final weighted sample size was therefore 2035 contraceptive users.

Data collection tool
PMA2020 used a standardised questionnaire to gather data about households, individual women and SDPs that are comparable across programme countries and consistent with existing national surveys. It is a comprehensive questionnaire that includes sociodemographic variables, reproductive characteristics, SDPs and contraceptive behaviours. Prior to launching the survey in each country, public health experts from Addis Ababa University reviewed and modified the questionnaire to ensure that all questions were appropriate to each setting. The questionnaire was then translated into three local languages.

Data collection procedures
Fieldwork training started with a 2-week training of new field staff, followed by a 3-hour refresher training for returning field staff before actual data collection. Unlike traditional paper and pencil surveys, PMA2020 uses Open Data Kit (ODK) Collect, an open-source software application, to collect data on mobile phones. All questionnaires were programmed using this software and installed on all project smartphones. The ODK questionnaire forms are programmed with automatic skip patterns and built-in response constraints to reduce data entry errors.

This instantaneous aggregation of data also allowed for concurrent data processing and course corrections while PMA2020 was still active in the field. Throughout data collection, the central staff at Addis Ababa University in Ethiopia and the data manager from the Gates Institute in Baltimore, Maryland routinely monitored incoming data and notified the field staff of any potential errors, missing data or problems found with form submissions on the central server.

Table 1 Sociodemographic characteristics of contraceptive users in Ethiopia in 2018

Variables	Categories	Unweighted number (n=2035)	Weighted number (n=2073)	Weighted percentage
Age	15–19	134	146	7.0
	20–24	415	405	19.5
	25–29	564	540	26.16
	30–34	405	403	19.4
	35–39	312	342	16.5
	40–44	149	172	8.3
	45–49	56	65	3.1
Marital status	Married	1773	1895	91.4
	Divorced or widowed	117	91	4.4
	Never married	145	87	4.2
Education	Never attended	569	797	38.4
	Primary	747	816	39.5
	Secondary	288	257	12.4
	Technical/vocational	201	131	6.3
	Higher education	130	72	3.4
Wealth quintile	Lowest	201	345	16.6
	Lower	223	379	18.3
	Middle	212	338	16.3
	Higher	414	455	21.9
	Highest	985	556	26.8
Administrative regions	Tigray	273	107	5.2
	Afar	20	7	0.3
	Amhara	431	631	30.4
	Oromia	445	705	34.0
	Somali	16	7	0.3
	Benishangul Gumuz	43	33	1.6
	SNNP	511	461	22.3
	Gambela	20	9	0.4
	Harari	12	4	0.2
	Addis Ababa	247	101	4.9
	Diredawa	17	8	0.3

SNNP, Southern natiions, nationalities, and peoples
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Data analysis

Once all data were on the server, the data analysts cleaned and de-identified the data, applied survey weights, and prepared the final data set for analysis using STATA V.14 software. Survey data were declared using the 'svy' command to perform variance estimation that accounts for multiple stages of clustered sampling, and weighting of the sample was applied before running the analysis. Descriptive statistics were used for trend analysis, and bivariable and multivariable logistic regression were employed to determine factors influencing LAC utilisation. Finally, statistical significance was set at $p<0.05$.

Operational definition

LAC utilisation refers to a woman currently using either IUD, implant or female sterilisation method.

Patient and public involvement

No patients were involved in the design of the study.

RESULTS

Sociodemographic characteristics of contraceptive users in Ethiopia

A total of 7429 women were interviewed for the study, yielding a response rate of 97.5%. Of the women
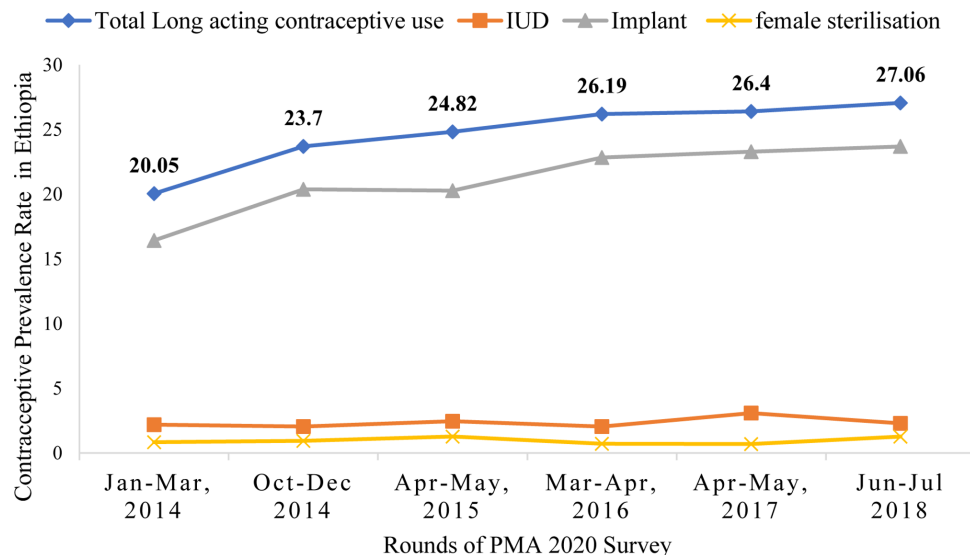
Figure 1 Overall trends in long-acting contraceptive use among all women of reproductive age in Ethiopia. IUD, intrauterine device; PMA, Performance monitoring and Accountability.

interviewed, 27.9% reported they were using contraceptives. The mean (95% CI) age of women was 28.9 (28.6 to 29.2) years. As shown in table 1, 91.4% were married. With regard to educational status, 39.5% of the respondents reached primary school, followed by 38.4% who never attended formal education and 12.4% who attended secondary school (table 1).

Trends of LAC utilisation among contraceptive users in Ethiopia

The overall prevalence of LAC utilisation in Ethiopia was 7.6% among married and unmarried women (those engaged in sexual activities) and 11.0% among married women (figure 1).

LAC utilisation did not show significant improvement in the last 4.5 years since January 2014. Only 27% of the current users were using LAC. Among the current users in Ethiopia, there was a difference in trends in LAC utilisation during the last 4.5 years. It was 20.0% in January 2014, 23.7% in November 2014, 24.8% in May 2015, 26.2% in April 2016 and 26.4% in May 2017. Implant utilisation showed good progress in the last 4.5 years, with an increment of 7 percentage points, while there were no significant changes in utilisation of IUD and female sterilisation (figure 2).

Factors influencing LAC utilisation among contraceptive users in Ethiopia in 2018

After controlling for confounding effects using multivariable logistic regression, factors influencing LAC utilisation among contraceptive users in Ethiopia were determined as household wealth status, final say about contraceptive use, SDPs, having access to desired contraceptive and being informed about IUD.

SDPs significantly influenced LAC utilisation. Women served at health posts (adjusted OR (AOR) 0.3, 95% CI 0.1 to 0.5), private hospitals (AOR 0.1, 95% CI 0 .04 to 0.24) and others (family planning clinics, pharmacies and

non-governmental organisations) (AOR 0.1, 95% CI 0.1 to 0.2) were 71%, 90% and 88% less likely to use LAC compared with those who received contraceptive services at public hospitals, respectively (table 2).

The decision-making process shows a statistically significant association with LAC use. Women whose method of contraception was decided by their healthcare providers only were more than six times likely (AOR 6.4, 95% CI
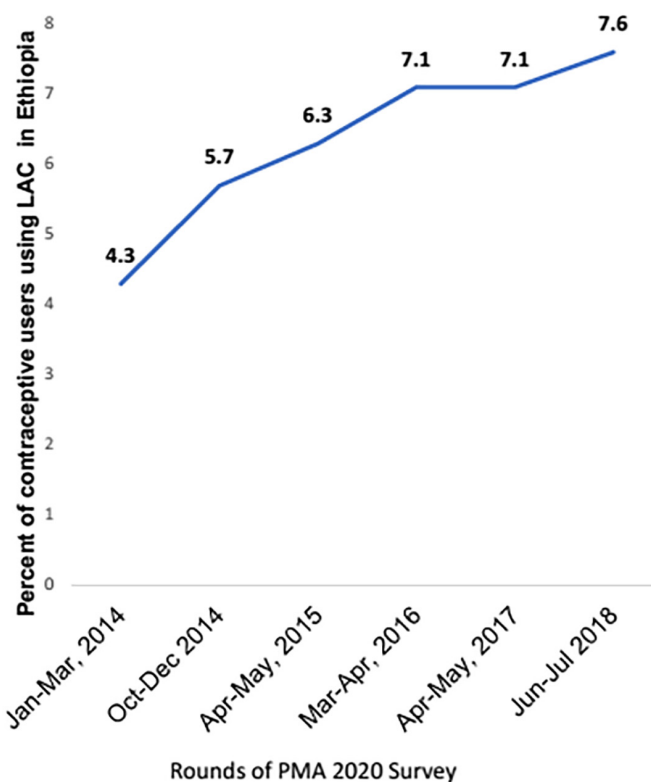
Figure 2 Trends in long-acting contraceptive (LAC) use among contraceptive users in Ethiopia. PMA, Performance Monitoring and Accountability.

Table 2 Multivariable analysis of LAC utilisation among contraceptive users in Ethiopia

Variables	LAC utilisation		COR (95% CI)	AOR (95% CI)
	Yes (%) (n=565)	No (%) (n=1508)		
Service delivery points				
Public hospital	48 (8.5)	46 (3.3)	1.0	1.0
Public health centre	358 (63.5)	497 (36.0)	0.68 (0.4 to 1.1)	0.80 (0.5 to 1.3)
Health post	119 (21.0)	440 (31.9)	0.25 (0.1 to 0.4)†	0.29 (0.1 to 0.5)†
Private hospital	19 (3.3)	224 (16.2)	0.07 (0.0 to 0.2)†	0.10 (0.0 to 0.2)†
Others‡	21 (3.6)	173 (12.5)	0.11 (0.0 to 0.2)†	0.12 (0.1 to 0.2)†
Final say about contraceptive use				
Self	247 (43.9)	911 (56.7)	1.0	1.0
Provider only	65 (11.5)	18 (1.3)	11.2 (5.4 to 23.1)†	6.4 (2.5 to 16.2)†
Partner only	19 (3.1)	49 (3.6)	1.1 (0.6 to 2.2)	1.08 (0.5 to 2.2)
With provider	53 (9.5)	59 (9.5)	2.9 (1.6 to 5.0)†	2.13 (1.1 to 4.2)*
With partner	181 (32.0)	471 (4.3)	1.21 (0.9 to 1.6)	1.27 (0.9 to 1.7)
Parity	565 (27.3)	1508 (72.7)	1.06 (1.0 to 1.1)*	1.06 (1.0 to 1.1)
Wealth quintile				
Lowest	76 (13.4)	269 (17.9)	1.0	1.0
Lower	103 (18.2)	276 (18.3)	1.3 (0.8 to 2.1)	1.2 (0.7 to 2.0)
Middle	120 (21.3)	218 (14.4)	1.9 (1.2 to 3.1)*	1.7 (1.0 to 2.9)*
Higher	113 (20.1)	341 (22.6)	1.2 (0.8 to 1.8)	1.1 (0.7 to 1.8)
Highest	153 (26.9)	404 (26.8)	1.3 (0.9 to 1.9)	1.5 (0.9 to 1.7)
Obtained desired contraceptives				
Yes	487 (86.3)	1362 (98.7)	0.1 (0.0 to 0.1)†	0.1 (0.0 to 0.3)†
No	77 (13.7)	17 (1.3)	1.0	1.0
Heard about intrauterine device				
Yes	416 (73.7)	936 (62.1)	1.7 (1.3 to 2.3)†	1.8 (1.3 to 2.5)†
No	148 (26.3)	572 (37.9)	1.0	1.0
Media exposure to contraceptives				
Yes	255 (45.2)	653 (43.4)	1.1 (0.8 to 1.4)	1.1 (0.8 to 1.5)
No	309 (54.7)	852 (56.6)	1.0	1.0

Adjusted for age, marital status, educational status, administrative region, wealth, parity, gravidity, number of living children, ever hearing of contraceptives, method preferences and media exposure.
Reference category: 1.0.
*Family planning clinics, pharmacies and non-governmental organisations.
†Statistically significant at p<0.05.
‡Statistically significant at p<0.001.
AOR, adjusted OR; COR, crude OR; LAC, long-acting contraceptive.

2.5 to 16.2) to use LAC, while women who decided jointly with their healthcare providers were more than twice likely (AOR 2.1, 95% CI 1.1 to 4.2) to use LAC compared with those who decided on their own (table 2).

Although contraceptives were provided freely in public health facilities of the country, women of middle wealth status were nearly two times more likely (AOR 1.7, 95% CI 1.0 to 2.9) to use LAC compared with those in the lowest wealth category. Respecting only clients' desire was found to have a negative effect on the utilisation of LAC. Women with access to their desired method of contraception were 88% less likely (AOR 0.1, 95% CI 0.0 to 0.3) to use LAC than their counterparts. Finally, being informed

about intrauterine contraceptive devices shows a statistically significant association with LAC utilisation. Women informed about intrauterine contraceptive devices were nearly twice more likely (AOR 1.8, 95% CI 1.3 to 2.5) to use LAC than their counterparts (table 2).

DISCUSSION

Determining the trends and status of LAC utilisation is decisive in showing the progress of the country and in comparing the status with that of other countries as well as worldwide at large. Thus this study aimed to show the trends and predictors of LAC utilisation.

In this study a steady increase in LAC utilisation in the country was observed. This finding lends acceptance to the existing literature regarding the heavy reliance on short-acting contraceptive methods.[16–18] The finding indicates that only 27.1% of modern contraceptive users in Ethiopia used LAC. Among the LACs, contraceptive implants (23.7%) were the most frequently used, followed by IUD (2.3%) and sterilisation (1.3%). These findings are consistent with the Ethiopian Demographic and Health Survey (EDHS).[15] It implies that much has to be done in improving IUD services and permanent methods of contraception. The national reproductive health strategy also supports this finding and the plan was to increase the use of long-acting reversible and permanent contraceptive methods to 50% by 2020.[14] The study also found that women who received services from health posts, private hospitals and others are less likely to use LAC than those who visited government hospitals for family planning services. This finding is similar to studies performed in the Tigray regional state of Northern Ethiopia.[19] This might be because provision of LAC services requires skills and expertise, which were not consistent across different SDPs.

Women's autonomy was found to be a statistically significant factor influencing the use of LAC in Ethiopia. Women who received healthcare providers' recommendation and jointly decided with healthcare providers on the method of contraception were more likely to use LAC as compared with those who decided on their own. This finding is similar to studies performed in Western Ethiopia.[20 21] During such discussions, there is counselling and information sharing about family planning, including LACs, which are important to correct myths and misconceptions related to LACs. In addition, it raises awareness about the importance of various options for LAC so that clients can decide on their preferred family planning method. In addition, where providers were the only ones who decide on the choice of family planning method, women use LACs at a higher rate compared with those who decide on their own. A possible explanation for this is that healthcare providers are experts on the pros and cons of LACs. Since LACs are more effective and have a lower rate of failure, healthcare providers might choose this option for women based on their health status.

The wealth index is another significant predictor of LAC utilisation. Women in the middle economic class are more likely to use LACs compared with those in the lower class. This is consistent with studies done in Ethiopia that used EDHS 2016 data.[22] The possible explanation for this can be coupled to upgrading the economic status for preparedness and readiness to generate more income. This finding is in contrast to studies done in the town of Assosa in Western Ethiopia and in Zambia,[20 21 23] and this discrepancy might be explained by methodological differences.

Having access to their desired method of contraceptives is one of the predictors of not using LACs. This finding is in line with studies performed in the USA, Uganda and Russia.[24–26] This is because women of reproductive age are more inclined to use short-acting modern contraceptives, and the myths and misconceptions related to LAC make it a less preferred choice of contraceptive. Therefore, women are less likely to use LAC.

In this study, being informed about IUD was positively associated with utilisation of LACs. This finding is in line with studies conducted in the towns of Arba Minch and Jinka in Southern Ethiopia and in Amhara Region in Northern Ethiopia, and a study using EDHS 2016 data in the western region of Gambia.[22 27–29] Being informed about the issue or being aware of it helps women make a decision with regard to LAC utilisation. However, the utilisation of IUD is very low despite available knowledge. This might be due to myths or misconceptions, discomfort, or wrong expectations about future infertility, which can hinder utilisation of IUD. Lastly, being informed about contraceptives through mass media has no statistical significance in influencing women's use of LAC. This is supported by studies performed in Western and Southern Ethiopia.[20 30] This might be due to women in Ethiopia were busy for gender roles to follow mass medias.

The implication of these findings supports the national reproductive health strategy that focuses on a rights-based approach. It is a reproductive right to obtain adequate information about appropriate family planning methods from health professionals. Thus, it will be essential to improve the quality of family planning counselling and services and bring a well-informed decision-making process on the choice of family planning method. Since Ethiopia is a low-resource country, improved utilisation of LAC can reduce healthcare burden, improve productivity and impact on the economic growth of the country. Moreover, this should be a priority area of the country in order to achieve universal healthcare coverage to meet the sustainable development goals.

Recommendation

More actions should be taken to raise awareness among all women in the community on the importance of informed decision-making when choosing contraceptive methods, as well as to improve provider–client communication through effective counselling. The private sector should be encouraged to play a bigger role in the provision of family planning services. Additionally, the government should strengthen the public–private SDP partnership in sharing public hospital experiences and skills in providing LAC services and enhance the quality of LAC services at lower delivery points. Finally, it is recommended that further operational research be performed using a qualitative approach to address untouched areas such as sociocultural factors.

CONCLUSION

Only approximately 1 in 10 married women of reproductive age and 8 out of 100 women of reproductive age used LAC. Much has to be done in raising awareness

about IUD, how healthcare providers can help users in choosing contraceptive methods, and sharing of experiences between public hospitals and other family planning SDPs. However, mass media was insignificant in this study. Socioeconomic factors and gender roles should also be taken into account when designing different family planning strategies in Ethiopia.

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