Level and timing of Implanon discontinuation and associated factors among women who used Implanon in Andabet District, public health facilities, North-West Ethiopia, 2017

Gizachew Worku Dagnew (giz.work12@gmail.com)
Bahir Dar University College of Medical and Health Sciences https://orcid.org/0000-0003-2043-3041
Yared Mulu Gelaw
Bahir Dar University College of Medical and Health Sciences
Melash Belachew Asresie
Bahir Dar University College of Medical and Health Sciences
Zelalem Alamrew Anteneh
Bahir Dar University College of Medical and Health Sciences

Research article

Keywords: Implanon, method discontinuation, Contraceptive, long-acting reversible, Ethiopia

Posted Date: August 7th, 2019

DOI: https://doi.org/10.21203/rs.2.12467/v1

Abstract

Abstract Background: Implanon discontinuation is unacceptably high in developing countries, including Ethiopia; furthermore there is an observed problem of high unintended pregnancy rate after method discontinuation this might stride to program failure. Therefore, the purpose of this study was to assess the level and determinants of Implanon discontinuation among women who used Implanon in Adabet district, public health facilities, North-West Ethiopia, 2017. Methods: Facility-based cross-sectional study was conducted among 537 women, from Feb.03 to April 28, 2017, by face to face interview. Systematic random sampling technique was used to select the study subjects. The collected data were entered into Epi Info- version 7 then exported to SPSS version 20 for analysis. Both descriptive and analytical statistical analysis was computed. On multi-variable binary logistics regression, p-value and odds ratio (AOR) with 95%Ci was used to showing statistical association with the outcome variable. Results: In this study, 36.9% of Implanon users were discontinued the method before the intended time period. Among those women who discontinue the method 85.9% of them were discontinued before two years of Implanon insertion. Women who had no live child at the time of Implanon insertion[AOR=2.17,95%CI:1.25-3.77], didn't received pre-insertion counseling on potential side effects [AOR=1.85,95%CI: 1.15-2.97], developed side effect secondary to Implanon insertion [AOR=5.17,95%CI:3.18-8.40], received appointment follow-up [AOR=0.23,95%CI:0.13-0.41], and not satisfied by the service provided [AOR=5.40,95%CI:3.04-9.57] were statistically associated with Implanon discontinuation. Conclusions: level of Implanon discontinuation before its intended period was high. Hence, to increase Implanon continuation rate; provide pre-insertion counseling including its possible side effects, improve client's service satisfaction and strength appointment follow-up for Implanon users should be made.

Introduction

Implanon is a second-generation single-rod progestogen-only contraceptive implant with a length of 40 mm and a diameter of 2 mm containing 68 mg of etonogestrel dispersed in a membrane of ethylene-vinyl acetate. It delivers ENG at a dose sufficient to suppress ovulation in every cycle throughout the 3 years of use (1–4). This single-rod progestogen sub dermal (etonogestrel) is developed as a need to reduce some of the problems associated with the six implant system, Norplant by 2008, and it is prequalified by world health organization (WHO) in 2010 (5, 6). Implanon have the most effective implants to prevent pregnancy compared to other injectable and combined oral contraceptives (4, 6, 7), In 11 worldwide studies of Implanon, no pregnancies occurred with the implant in situ(8).

Globally, 7% of married or in-union reproductive-age women were using injectable contraceptives(9, 10). Even though millions of reproductive age women were using implants, its contribution among all method mix was not more than 1%, and the significant number of women discontinue the method before it intended time period(9). Across the world, there is great variation in discontinuation of Implanon, the probability of discontinuation ranges from 3% in Burkina Faso to 27% in Yemen in the first year and 23 percent in Liberia to 69 percent in Yemen at the end of three years of insertion(11).

In 2009, the Ethiopian Federal Ministry of Health (FMOH) launched an Implanon scale-up program with the goal of improving the availability of long-acting reversible contraceptive (LARC) methods at the community level. The Integrated Family Health Program (IFHP) supported the MOH to train Health Extension Workers (HEWs), a cadre of frontline health workers, on Implanon insertion(12). The scale-up program was successful in reaching all communities by LARC, and Implanon utilization among married or in-union women were increased from 3.4% in 2011 to 8% in 2016 (13). Despite this significant improvement, Implanon discontinuation becomes unacceptably high in different parts of the country and becomes a programming challenge. According to a study finding from Tigray, Ethiopia 16% of women were discontinued in the first years of Implanon insertion(14), and from a study conducted in Amhara regional state, 46.5% of Implanon users have discontinued the method in a three years period (15).

Discontinuation while still in need (DWSIN) is particularly problematic when it leaves women at risk of an unwanted pregnancy, which was true for 15 to 20 percent of LARC users three months after discontinuation (11). The incidence of unintended pregnancy secondary to improper switching of another method after discontinuation was high among low- socioeconomic women in developing countries (16–18). Although, there is a high number of women come to health institution and requesting removal of Implanon prematurely and its contribution to increasing unwanted pregnancy is high, there is little study and had limited information available from developing countries including Ethiopia. The purpose of this study was to assess the level of premature Implanon discontinuation and associated factors among women who requested removal of Implanon in Andabet district North-west Ethiopia.

Methods

The facility-based cross-sectional study design was conducted among women who requested Implanon removal from February 03 to April 28, 2017, inAndabet district, North-West Ethiopia. The district is located 717 km from Addis Ababa the capital city of Ethiopia. According to the 2016 health office report the total population of the district was 139,462 (70,944 males and 68,518 females), and the total female reproductive age group (15–49 years) was 33,332. The district has 24 Kebeles (small administrative units), 5 Health centers and 24 Health posts.

Eligibility criteria: All Women who requested removal of Implanon were included in the study. *Sample size determination:* The sample size was determined by using Epi-info version –7software by considering the following statistical assumption. Educational status and its odd ratio were taken from a study done at Ofla district, Tigray, Ethiopia (19).

Assumption; two-sided significant level: 95%, power (1-Beta):90%, ratio of sample size: 2, percent not read and write with outcome: 50.8%, percent with secondary education with outcome 34.9% and Odd ratio: 0.51, continuity correction result = 485 which is the largest sample size from the factors.

Then by adding 12% non-response rate, the final sample size (n);

n = 485*11–0.12 = 544

Sampling method and procedures: Health facilities, which provide the service, were Andabet health center (HC), Jaragedo HC, Astede-Mariam HC, Gono HC, and Genete-Mariam HC. The calculated sample size was allocated proportionally for each health facilities based on the previous three-month clients' flow (1276 women were removed Implanon three months prior to the study), which were obtained from the unit family planning registration logbook. The sampling interval was allocated by dividing women booked to remove Implanon (1276 clients) to the current sample size (544), which is every two clients were selected and interviewed. Finally, each study participants were selected by systematic random sampling technique.

Data collection procedure and tools: A structured questionnaire was adapted from the study done at Ofla district, Ethiopia (19), That was first prepared in English and translated to local language (Amharic), and then pre-tested among 5% of the study participants. Finally, data were collected by face to face interview by using five trained data collectors who were diploma graduates in health sciences (level-IV) and two supervisors who have a BSc degree in nursing.

Data management and analysis: The data were entered in Epi- Info version 7 and then exported to Statistical package for social sciences (SPSS) version 20.0 software for analysis.

Both descriptive and analytical statistical analysis was done. Bivariate analysis was computed to select the candidate variables for multi-variable analysis at $P \leq 0.2$.

Variables with p-value < 0.05 in the multivariable binary logistics regression analysis were considered predictor variable for Implanon discontinuation. Finally, odds ratios (AOR) and its corresponding 95% confidence interval were used to show the strength of association.

Results

Socio-Demographic and reproductive Characteristics study participants

A total of 537 participants responded to the interview, making a response rate of 98.7%. The age ranges of the participants were between 16 and 47 years with the mean (±SD) age of 29.38 ± 6.30 years. Majority of the respondent 498 (92.7%) were married, 527 (98.1%) were Orthodox in religion and 432 (80.4%) were house-wife in occupation (Table1).

Family planning service-related characteristics of the study participants

Five hundred twenty-two (97.2%) participants had ever heard at least one type of contraceptive before inserting Implanon; 519 (96.6%) women had ever heard about injectable followed by Pills 446 (83.1%) and 117(21.8%) heard about condom, 79(14.7%) hear about IUCD and only 23(4.3%) had ever heard

about permanent family planning method and the main information source was health providers. Four hundred forty-four (82.7%) participants had ever used other contraceptives before taking Implanon, among that 90% of them were used injectable.

Four hundred seventeen participants (77.6%) responded their reason for choosing Implanon at the beginning was due to its long term duration of protection from unwanted pregnancy, hence 94(17.5%) were chosen Implanon secondary to unavailability of other method choices (Table2).

Level, time and reasons for implanon discontinuation

According to this study, out of the total 537 women who requested removal of Implanon, 198 (36.9%) [P = 36.9%, 95%CI: 33.0%–41.2%] of Implanon users discontinued the method before its intended time period. The most reported reasons for discontinuation were the presence of side effects 136(68.7%) followed by want to be pregnant 55(27.7%). The discontinuation of Implanon starts as early as 01 months and as long as 35 months with a mean (±SD) 15.56 ±7.82 duration of use (*fig.1)*..

Factors associated with Implanon discontinuation

In multivariable binary logistic regression analysis, there are high odds of Implanon discontinuation among women who had no child during Implanon insertion [AOR = *2.17,*95%CI*:1.25–3.77],* had no experience of abortion[AOR = *2.62,*95%CI*:1.18–5.44],*, women felt happy if pregnant soon compared to who felt sad if pregnant [AOR = *2.66,*95%CI:*1.59–4.45],*, didn't receive pre-insertion counseling on potential side effects [AOR = *1.85,*95%CI: *1.15–2.97],*, developing any side effect after insertion [AOR = *5.17,*95%CI:*3.18–8.40],*, didn't have specific date appointment after insertion [AOR = *4.31,*95%CI:*2.43–7.69]* and no perceived satisfaction by the service given [AOR = *5.40,*95%CI:*3.04–9.57]* compared to their counterparts(Table 3).

Discussion

The overall discontinuation rate of Implanon was 36.9% with the mean duration of use 15.56 ±7.82 months. This finding is consistent with the study conducted in Ghana, with an overall three years discontinuation rate of 40%(20). However, this finding is higher than the study conducted in Malaysia, Zaria, and Ilorin in Nigeria (21–23). The first reason for this difference might be due to a difference in pre-insertion counseling and follow-up services after insertion; counseling can correct misconceptions about the methods and women can get full information about it. The second reason might be different in participants experience for Implanon; participants in Zaria Nigeria had the previous history of Implanon use, this might the women able to tolerate minor side effects of the method.

The major reason for Implanon discontinuation in this study was the presence of side effect followed by desire of pregnancy, this is similar to the study done in Debremarkose town and Arsi zone, Ethiopia(15, 24), however different from the study finding from Jos-central Nigeria(25), and the possible reason might be different in menstrual condition that leads commonly for discontinuation, 85.5% of women have

regular menstruation in Jos-central Nigeria(25), and only 20.5% respondents have had regular menstruation in this study.

In this study found women who had a history of abortion had low odds of Implanon discontinuation compared to their counterparts. This finding is supported by the study conducted from seven different countries (26). The possible explanation for this might fear of unwanted pregnancy and reoccurrence of repeated abortion. The other possible reason might be different in the understanding of abortion and its related complication; they learned from previous abortion.

There are high odds of Implanon discontinuation among women who had no live children compared to their counterparts. This finding is supported by the study conducted in Debremarkose town(15). The possible explanation might be women who have no live children have more desire for future fertility and predispose for method discontinuation. This idea is supported by the study done in Arsi zone, Ethiopia; where there is no association between a history of parity and Implanon removal; since 93% of the study participants had at least one live child (24). The other reason might be those women might have influence from their family to give birth before infertility. Another finding also showed women reported felt happy if got pregnant soon have high odds of discontinuing Implanon use as compared to those will be sad if pregnant soon. The result supported by a study in Ofla district, and Jos Central Nigeria; where the main reasons for discontinuation of Implanon were the desire for pregnancy(19, 25). This is the fact that if women have a desire to become pregnant, her first action will be discontinuing the method. The other possible reason might be if women have strong motivation to prevent unintended pregnancy, they might tolerate minor side effects of the method.

Women who didn't receive pre-insertion counseling about the potential side effects of the method had high odds of discontinued the Implanon compared to those who received counseling.This finding is supported by the study done in Debremarkose town(15). The possible reason might be women who counseled about side-effect can develop pre-set mind about it, and can able to tolerate possible minor side-effects. The other reason might be during counseling women can get full information about each method, and can clear their misconceptions that might cause for discontinuation.

In this study, there are high odds of Implanon discontinuation among women who had not satisfied with the service provided compared to those who were satisfied. This is consistent with the study finding in Ofla district and Debremarkose town (14, 15). This might be, true that first contact service satisfaction can increase the continuation of longitudinal type service use(27, 28). If the service provided to women were not based on women's expectation, they mightn't trust and respect what the service provider said to them. This will push the women took their own decision, and cause for early Implanon discontinuation. The other reason might be service satisfaction increases the affection between the women and the service providers, this enable women to perform what the providers said before discontinue the method and can tolerate minor side effects of the methods, Because of feeling of confidence due to caring professionals and treating of possible side effects early(29).

Appointment follow-up had strong statistical significance on Implanon discontinuation. Women who had an appointment follow-up service had low odds of discontinuing the method compared to their counterparts; this means that by providing proper follow-up service can reduce around 77% of Implanon discontinuation. This finding is supported by a study conducted in Ofla district and southern Ethiopia(14, 30). This might be due to the fact that on follow-up women can get further detail counseling on tolerable side-effects. The second reason might be during follow-up service; women can be got management for developed side-effects and can continue its use with management. The last reason also; during follow-up service, women might get proper information if they have any concern or misconception regarding the methods that cause for early discontinuation.

In the current study, the primary reason for discontinuation is facing side effects. There are high odds of Implanon discontinuation among women who developed method related side-effects compared to their counterparts. This finding is consistent with the study conducted in Debre Markos, Amhara region and Ofla District Tigray (14, 15). This might be women intolerance to newly occurring minor side effects of the method. The other reason might be women who develop vaginal bleeding, may interfere with their sexual experience and feel of guilt by the usual occurrence of bleeding.

The current study has its own limitations: Since most variables assessed retrospectively, there may be recall bias (the women may not remember some information conducted during Implanon insertion). The other limitation also the survey assessed by using the quantitative data and lacks women exploration on the methods and type of services they used.

Conclusion

The level of Implanon discontinuation in this study was high and need to further study to investigate its contribution to the high total fertility rate. The main reasons for discontinuation were presence of side effects, followed by the desire to have childbirth.

Having children at the time of insertion, history of abortion, feeling of women if got pregnant, pre-insertion counseling, the presence of side effects, received appointment follow-up and perceived satisfaction for service provided were predictors for Implanon discontinuation. Therefore, strength service quality is recommended to increase method continuation.

Abbreviations

p>EDHS: Ethiopian Demographic and Health Survey

FMOH: Federal Ministry of Health of Ethiopia

HC: Health Center.

KM: Kilo Meter

LARC: Long Acting Reversible contraceptives

DWSN: Discontinuation While Still in Need

Declarations

Ethics approval and consent to participate: Ethical clearance was obtained from Bahr Dar University Ethical Review committee with ethical reference number (□/□/□/□/1/552/109); and permission letters were received from Amhara national regional health bureau and Andabet district Health Office. Informed written consent was taken from all study participants after provided clear explanation about the study and participation was entirely on a voluntary basis. Information obtained from the study participants were kept confidential.

Consent to Publish: Not applicable

Availability of Data and Materials: The data that supported the findings are readily available in supplementary material section of the journal of BMC women's health.

Competing Interests: We do not have any competing interests.

Funding: This study was funded with the authors' own contributions.

Authors' Contributions: GWD was involved in designing of the study, proposal writing, and analysis, interpretation and drafting of manuscript; *YMG, MBA* and *ZAA* were involved in designing of the study, data analysis, interpretation of the findings, and critically reviewing the manuscript.

Acknowledgment: We would like to thank Bahir Dar University for providing us ethical clearance to conduct the study. Furthermore, we would like to appreciate Andabet district health office health professionals for their invaluable support and cooperation. And our great thank extends to all women data collectors and supervisors who participated in this study.

Authors' information

[1] Department of Reproductive Health, School of Public Health, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia

[2]Department of Health Service management, School of Public Health, College of Medicine and Health Sciences, Bahir Dar University, Bahir Dar, Ethiopia

[3]Department of Reproductive Health, School of Public Health, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia.

[4]Department of Epidemiology and Biostatistics, School of Public Health, College of Medicine and Health Science, Bahir Dar University, Bahir Dar, Ethiopia.

Additional Files: Additional file 1: The English Version Questionnaires

References

1.Meirik O, Fraser IS, d'Arcangues C. Implantable contraceptives for women. Human Reproduction Update. 2003;9(1):49–59.

2.Jacobstein R, Stanley H. Contraceptive implants: providing better choice to meet growing family planning demand. Global Health: Science and Practice. 2013;1(1):11–7.

3.Bahamondes L, Bahamondes MV. New and emerging contraceptives: a state-of-the-art review. International journal of women's health. 2014;6:221.

4.The RESPOND Project. Hormonal implant services: Delivering a highly effective contraceptive method now available at reduced cost. RESPOND Technical Brief No. 2. September. New York: EngenderHealth (The RESPOND Project). 2013.

5.Ramchandran D, Upadhyay UD. Implants: The next generation. Population reports Series K: Injectables and implants. 2007(7):1–19.

6.Jacobstein R. Hormonal implant services. Delivering a highly effective contraceptive method now available at reduced cost. 2013.

7.Croxatto H, Mäkäräinen L. The pharmacodynamics and efficacy of Implanon®: An overview of the data. Contraception. 1998;58(6):91S–7S.

8.Darney P, Patel A, Rosen K, Shapiro LS, Kaunitz AM. Safety and efficacy of a single-rod etonogestrel implant (Implanon): results from 11 international clinical trials. Fertility and sterility. 2009;91(5):1646–53.

9.Alkema L, Kantorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis. The Lancet. 2013;381(9878):1642–52.

10.Organization WH. Annual technical report: 2013: department of reproductive health and research, including UNDP/UNFPA/WHO/World Bank Special Programme of Research Training in Human Reproduction (HRP). World Health Organization, 2014.

11.Staveteig S, Mallick L, Winter R. Uptake and discontinuation of long-acting reversible contraceptives (LARCS) in low-income countries. 2015.

12.Asnake M, Henry EG, Tilahun Y, Oliveras E. Addressing unmet need for long-acting family planning in Ethiopia: Uptake of single-rod progestogen contraceptive implants (Implanon) and characteristics of users. International Journal of Gynecology & Obstetrics. 2013;123:e29-e32.

13.Central Statistical Agency (CSA) [Ethiopia] and ICF. Ethiopia Demographic and Health Survey 2016. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF. 2016.

14.Birhane K, Hagos S, Fantahun M. Early discontinuation of implanon and its associated factors among women who ever used implanon in Ofla District, Tigray, Northern Ethiopia. International Journal of Pharma Sciences and Research. 2015;6(3):544–51.

15.Siyoum M, Mulaw Z, Abuhay M, Kebebe H. Implanon Discontinuation Rate and Associated Factors among Women who ever Used Implanon in the Last Three Years in Debre Markos Town, Northwest Ethiopia, 2016, Cross Sectional Study. ARC Journal of Public Health and Community of Medicine. 2017;2:8–16.

16.Bradley SE, Polis CB, Bankole A, Croft T. Global Contraceptive Failure Rates: Who Is Most at Risk? Studies in family planning. 2019.

17.Curtis S, Evens E and Sambisa W. Contraceptive Discontinuation and Unintended Pregnancy: An Imperfect Relationship. International Perspectives on Sexual and Reproductive Health. 2011; 37(2):58–66.

18.Puri M, Henderson JT, Harper CC, Blum M, Joshi D, Rocca CH. Contraceptive discontinuation and pregnancy postabortion in Nepal: a longitudinal cohort study. Contraception. 2015;91(4):301–7.

19.Birhane K, HagoS S, Fantahun M. Earlydiscontinuation of implanon and its associated factors among women who ever used implanon in Ofla District, Tigray, Northern Ethiopia. International Journal of Pharma Sciences and Research (IJPSR). Mar 2015; Vol. 6: No.3.

20.Modey EJ, Aryeetey R, Adanu R. Contraceptive discontinuation and switching among Ghanaian women: evidence from the Ghana Demographic and Health Survey, 2008. African journal of reproductive health. 2014;18(1):84–92.

21.Asmah Mastor SLK, Siti Zawiah Omar. Users' perspectives on Implanon in Malaysia, a multicultural Asian country. Open Access Journal of Contraception 2011;2:79–84.

22.Madugu N. H., Abdul M. A., Bawa, U. and Kolawole, B. Uptake of Hormonal Implants Contraceptive in Zaria, Northern Nigeria. Open Journal of Obstetrics and Gynecology. 2015; 5: 268–273..

23.Balogun O. R. ONAAS, and. Fawole A. A. Implanon sub-dermal implant: an emerging method of contracep-tion in Ilorin, Nigeria. Journal of Medical and Biomedical Sciences 2014;3(1):1–5.

24.Burusie A. Reasons for premature removal of Implanon among users in Arsi zone, Oromia region, Ethiopia, 2013. Reprod Syst Sex Disord. 2015;4(148):2.

25.Pam V, Mutihir J, Karshima J, Kahansim M, Musa J, Daru P. Factors associated with use and discontinuation of implanon contraceptive in Jos, Nigeria. Tropical Journal of Obstetrics and Gynaecology. 2014;31(2):90–9.

26.Marston C, Cleland J. Relationships between contraception and abortion: a review of the evidence. International family planning perspectives. 2003:6–13.

27.Rosenstock JR, Peipert JF, Madden T, Zhao Q, Secura GM. Continuation of reversible contraception in teenagers and young women. Obstetrics and gynecology. 2012;120(6):1298.

28.Black KI, Bateson D, Harvey C. Australian women need increased access to long-acting reversible contraception. Med J Aust. 2013;199(5):317–8.

29.Peipert JF, Zhao Q, Allsworth JE, Petrosky E, Madden T, Eisenberg D, et al. Continuation and satisfaction of reversible contraception. Obstetrics and gynecology. 2011;117(5):1105.

30.Tadesse A, Kondale M, Agedew E, Gebremeskel F, Boti N, Oumer B. Determinant of Implanon discontinuation among women who ever used Implanon in Diguna Fango District, Wolayita zone, southern Ethiopia: a community based case control study. International journal of reproductive medicine. 2017;2017.

Tables

Table1: Socio-demographic characteristics of women who requested removal of implanon in Andabet district, Public health facilities, North-West Ethiopia; 2017.

Variable (n=537)	Category	Frequency (%)
Age	<20	53(9.9)
	21-24	66 (12.3)
	25-29	149 (27.7)
	30-34	155 (28.9)
	>35	114 (21.2)
Marital status	Married	498 (92.7)
	Single	29 (5.4)
	Others (widowed and divorce)	10 (1.9)
Educational status	have no formal education	406 (75.6)
	primary education	61 (11.4)
	secondary education	26 (4.8)
	certificate and above	44 (8.2)
Husband/partner educational status (n=516)	have no formal education	398 (77.1)
	primary education	51 (9.9)
	secondary education	18 (3.5)
	certificate and above	49 (9.5)
Religion	Orthodox	527 (98.1)
	Muslim	10 (1.9)
Occupation	house wife	432 (80.4)
	Merchant	42 (7.8)
	government employee	37 (6.9)
	Farmer	24 (4.5)
	Student	2 (0.4)
Have live children	Yes	444 (82.7)
	No	93 (17.3)
Need more children (n=444)	Yes	348 (78.4)
	No	96 (21.6
History of abortion	Yes	58 (10.8)
	No	479 (89.2)
Perceived her spouse want to child birth in the next two years (n=516)	Yes	261 (50.6)
	No	255 (49.4)
Purpose of using contraceptive	Spacing	437 (81.4)
	Limiting	100 (18.6)
Feeling of women if pregnant soon	Being happy	179 (33.3)
	Neutral	148 (27.6)
	Being sad	210 (39.1)

Table2: Family planning service-related characteristics women who requested removal of Implanon in Andabet district, public health facilities, North-West Ethiopia, 2017.

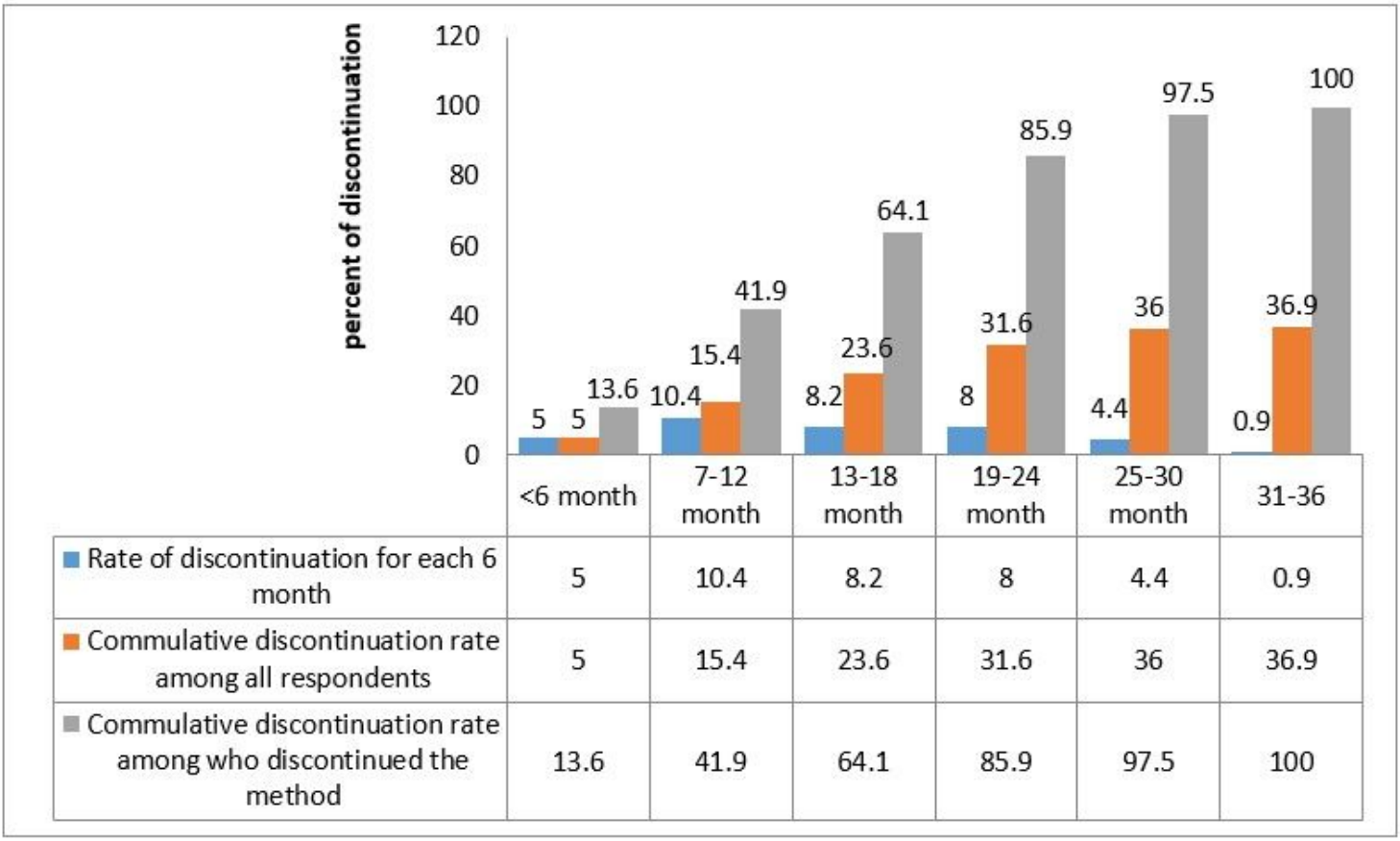
Variables(n=537)	Category	Frequency (%)
Ever heard about contraceptive	Yes	522 (97.2)
	No	15 (2.8)
Ever used any contraceptive before Implanon use	yes	444 (82.7)
	No	93 (17.3)
pre-insertion counseling	Yes	393(73.2)
	No	144 (26.8)
Counseling type (n=393)	Individual	327 (83.2)
	mass counseling	42 (10.7)
	Couple	24 (6.1)
Topics discussed during counseling (n=393)	Benefit (advantage)	327 (83.2)
	Side effect	193 (49.1)
	Duration of action	312 (79.4)
	Effectiveness	107 (27.2)
	Time of insertion and removal	270 (68.3)
Discuss with husband /partner to use implanon	Yes	349 (65)
	No	188 (35)
Accompanied with women at time of service provision	no one accompanied	417 (77.7)
	husband/partner	91 (16.9)
	Mother	16 (3.0)
	Others	13 (2.4)
Insists you to use Implanon	women herself	317 (59.0)
	couple together	79 (14.7)
	health provider	74 (13.8)
	husband/partner	67 (12.5)
Place of Implanon insertion	health post	290 (54)
	health center	247 (46)
Reason of using Implanon	Long duration of action	417(77.6)
	Need low follow up time	307(57.2)
	Unavailability of other methods	94(17.5)
	Less side effect	60 (11.2)
	Effectiveness	25 (4.7)
have appointment follow-up after Implanon insertion	Yes	151 (28.1)
	No	386 (71.9)
perceived satisfaction by the service provided	Yes	435 (81.0)
	No	102 (19.0)

Table3: *Factors associated with discontinuation of Implanon among women who* requested removal of implanon in Andabet district, public health facilities; North-West Ethiopia: 2017.

Variables (n=537)	Implanon discontinuation		COR (95% CI)	AOD (95% CI)
	Yes	No		
Educational status				
No formal education	141	265	1	1
Primary	20	41	0.92(0.52-1.63)	1.27(0.58-2.81)
Secondary	14	12	2.19(0.99-4.87	2.50(0.91-6.88)
Certificate and above	23	21	2.06(1.10-3.85)	1.71(0.70-4.16)
Living children				
Yes	153	288	1	1
No	45	51	1.66(1.06-2.60)	**2.17(1.25-3.77)***
History of abortion				
Yes	14	44	1	1
No	184	295	1.96(1.05-3.68)	**2.62(1.18-5.44)***
Feeling of women if pregnant soon				
Happy	88	91	2.48(1.63-3.78)	**2.66(1.59-4.45)****
Neutral	51	97	1.35(0.86-2.12)	1,09(0.63-1.91)
Will be sad	59	151	1	1
Purpose of using the method				
For spacing	172	265	1.85(1.14-3.00)	1.21(0.59-2.49)
For limiting	26	74	1	1
Main decider to use implanon				
Women her self	108	209	1	1
Husband/partner	27	40	1.31(0.76-1.31	0.88(0.45-1.75)
Couple together	20	59	0.66(0.38-1.15	0.90(0.45-1.80)
Service provider	43	31	2.68(1.60-4.50)	1.71(0.90-3.24)
Counseled about benefit				
Yes	109	206	1	
No	89	123	1.43(1.00-2.05)	0.96(0.59-1.57)
Counseled about side effect				
Yes	56	135	1	1
No	142	204	1.68(1.15-2.45)	**1.85(1.15-2.97)***
Discussed with their partner				
Yes	120	229	1	
No	78	110	1.35(0.94-1.94)	1.16(0.70-1.92)
Presence of side effect				
Yes	162	150	5.67(3,73-8.63)	**5.17(3.18-8.40)****
No	36	189	1	1
Had appointment follow-up				
Yes	20	131	**0.18(0.11-0.0.30)**	**0.23(0.13-0.41)****
No	178	208	1	1
satisfied by the service provided				
Yes	119	316	1	1
No	79	23	**9.12(5.48-15.19)**	**5.40(3.04-9.57)****

*Note: *=statistically significant at p<0.05 and **=statistically significant at p<0.001*

Figures



	<6 month	7-12 month	13-18 month	19-24 month	25-30 month	31-36
Rate of discontinuation for each 6 month	5	10.4	8.2	8	4.4	0.9
Commulative discontinuation rate among all respondents	5	15.4	23.6	31.6	36	36.9
Commulative discontinuation rate among who discontinued the method	13.6	41.9	64.1	85.9	97.5	100

Figure 1

Rate of implanon discontinuation among women who requested removal of implanon in Andabet district, public health facilities; North-West Ethiopia: 2017.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- suplementalFile.docx