

Issues Related to IUCD Discontinuation Rates among IUCD Users in Kembata Tembaro Zone, Southern Ethiopia

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Submitted: 2023, Apr 28; Accepted: 2023, May 15; Published: 2023, Jun 12

Citation: Yoseph, T., Tamene, A., Abera, A., Damissie, T., Lafore, T., et al. (2023). Issues Related to IUCD Discontinuation Rates among IUCD Users in Kembata Tembaro Zone, Southern Ethiopia. *Int J Health Policy Plann*, 2(2), 58-65.

Abstract

Background: Intrauterine contraceptive devices (IUCDs) are made of T-shaped plastic and are inserted into women's uteruses to prevent unwanted pregnancies. Despite the improvement in the availability and utilization of intrauterine contraceptive devices, discontinuation is becoming a public health concern. A significant proportion of women discontinue the method before its due date, which poses a concern in the health system, and its consequences may lead to the failure of a programme. As a result, the purpose of this study was to investigate the issues related to IUCD discontinuation rates among IUCD users IN twelve months ago in Kembata Tembaro Zone, Southern Ethiopia, in 2022.

Methods: A community-based, cross-sectional study was conducted. 415 women who had inserted an IUD from July 2021 to June 2022 in the Kembata Tembaro Zone were selected using a multistage sampling technique included in the analysis. This study's data collection instruments were pre-tested structured questionnaires. The coded data was entered into Epi Data version 4.6 and exported to SPSS version 25 for analysis. Finally, binary logistic regression analysis was carried out to identify independently associated factors and odds ratios at a 95% confidence interval with a significance level of p-value less than 0.05.

Results: Analysis revealed that 21% (95% CI 16.5-22.8) of women discontinued the use of their intrauterine contraceptive device in the last year. Issues like not being counselled about the intrauterine contraceptive device before insertion [AOR = 3.7; 95% CI: 1.23-7.30], not being appointed for follow-up [AOR = 2.8; 95% CI: 1.12-6.70], being married [AOR = 2.9; 95% CI: 1.35-6.23], and needing to have more children [AOR = 3.2; 95% CI: 1.5-7.0].

Conclusions: The findings of this study conclude that the overall magnitude of the IUCD discontinuation rates in the study area were found to be high when compared with different studies conducted in Ethiopia. Many of the factors that are attributed to the high magnitude of IUCD discontinuation are changeable. Appropriate counseling prior to insertion, including an appointment for follow-up visits, the preference to have more children, and marital status for the choice of service, will improve the continuation rate of IUCD.

Keywords: Intrauterine Device, Discontinuation, Kembata Tembaro Zone

List of Abbreviations and Acronyms

AOR: Adjusted Odds Ratio

CI: Confidence Interval

EDHS: Ethiopian Demographic Health Survey

FP: Family Planning

IUCD: Inter Uterine Contraceptive Device

RH: Reproductive Health

SPSS: Statistical Package for Social Sciences

SNNPR: South Nation Nationality of People Representatives

WHO: World Health Organization

1. Introduction

Intrauterine contraceptive devices (IUCD) are made of T-shaped plastic and are inserted into women's uteruses to prevent unwanted

ed pregnancies [1-3]. It works primarily by causing a chemical change that damages sperm and eggs before they can meet [3]. They are the most effective and safe intrauterine contraceptive devices. These devices effectively prevent pregnancy, are convenient for users, and are easy to insert and remove [4]. Efficacy with the copper T380A/IUD device is high, with a failure rate of less than 1% per year with prolonged use and effective for 5 years by suppressing the growth of the uterine lining [1,5-7]. When compared with the use of other methods, the use of an IUD results in fewer unintended pregnancies and fewer clinic re-visits [2].

They are the most widely used method of reversible birth control. Globally, they are used by nearly 163 million women, accounting for about 15 percent of the women in reproductive life. IUCD is used by approximately one out of every five women of reproductive age worldwide, but only about two out of every hundred women in Ethiopia [8]. Despite the improvement in availability and utilization of intrauterine device contraception, early discontinuation is becoming a major problem [9].

Different studies suggest that a significant proportion of women discontinue the service within one year, even without any side effects [10]. From the limited research, it was indicated that factors related to service quality and health concerns, like fears about side effects and concerns like irregular bleeding, lower abdominal pain, anemia, and vaginal discharge, play an important role in discontinuation. While socio-demographic factors (level of parity or need for more children, preferred family size, reason for use, religious concern) and healthcare-related factors (appointment for follow-up and counselling) all contributed to discontinuation [11].

In a study in the USA, among 267 women, the incidence of IUD discontinuation in the first 12 months was found to be 19.5%. In another prospective study of 9,256 adolescents and women, the IUD discontinuation rate was reported to be 8%. The study conducted in Pakistan showed the overall IUCD discontinuation rate to be 18.0%. The studies showed that 22.7% of women in the 24-month cohort, 18.8% of women in the 12-month cohort, and 16.3% of women in the 6-month cohort had discontinued using an IUCD at the time of the survey. Of them, the average time of IUCD use was 7.4 (SD 5.8). Another retrospective study conducted in Pakistan also showed nearly one-fifth (19.4%, 95% confidence interval [CI] 16.3–22.5) of the women had discontinued IUD use [1,7].

According to a report based on developing countries, 13.1% of IUD users discontinue its use during the first 12 months, 26.3% within 24 months, and 36.7% by the third year of its use. Similarly, Ethiopian 2016 EDHs show 13.2% of IUD users discontinue their use during the first 12 months. Different studies also indicate that the discontinuation rate of IUD users in Ethiopia within the first 12 months ranges from 10.7% to 14.3% [11-13].

The higher discontinuation rate of intrauterine contraceptive devices is a public health concern; it is also a failure of a program. In

spite of the Ethiopian government's efforts to improve RH services and make health facility services accessible and usable for all reproductive-age women over the past decade, encouraging contraceptive continuation has been given less concern than enhancing new adoptions in the country [14].

Measuring the rate of discontinuation, identifying the complications and reasons for removal, and the side effects of intrauterine contraceptive devices (IUD), finding ways to improve utilisation, which are important for programme planning, and designing a strategy to overcome the problem. Therefore, this study aimed to study the issues related to IUCD discontinuation rates among IUCD users in Kembata Embark Zone, Southern Ethiopia.

2. Methods and Materials

2.1. Study Area and Period

A community based cross sectional study was employed in the Kembata Tembaro zone, Southern Ethiopia from July 1 to August 30, 2022. Among 2840 women whom were inserted IUCD in the last 1 year, since July 2021 to June 2022 in four selected districts, 415 participants were selected by using Simple random sampling method and were excluded women who ever inserted IUCD before July 2021 & after June 2022.

2.1.1. Source Population

All women aged (15-49 year) who had used IUCD in Kembata Tembaro Zone.

2.1.2. Study Population

All women who had received IUCD service from public facilities from July 2021 to June 2022 in 20 randomly selected Kebeles.

2.1.3. Study Unit

All women who had received IUCD and were available in the selected household during data collection time.

2.1.4. Dependent Variable: Discontinuation of IUCD.

2.1.5. Independent Variable: Socio-demographic factors, Reproductive History of the Mother, Individual health concern factors, Service-related & health facility factors were variables included in this study.

2.1.6. Eligibility Criteria: Women of reproductive age (15–49 years) who had received IUCD services from public health facilities in the Zone from July 2021 to June 2022 were included in the study, but women who were unable to communicate because of illness were excluded.

2.1.7. Sample /Size Determination

The sample size was calculated by using single population proportion by using Epi data version 4.6 by considering the discontinuation rate of IUCD 14.3%, 95% CI, margin of error (5%), and 10% non-response rate the final sample size considered will be 415 [13].

Sample Size for First Objective

Assuming 95% confidence level with margin of error (5%) and by taking design effect (D) =2.0

$$n = \frac{(Z_{\alpha/2})^2 p (1-p) D}{d^2}$$

$$n = (Z_{\alpha/2})^2 p (1-p) D / d^2 = ((1.96)^2 * (0.143) * (0.857) * 2.0 / (0.05)^2) = 377$$

Considering 10% and non response rate the sample size become 415

n = required sample size = 415

Epi Info software taking three significant variables associated with discontinuation of IUCD determined it. It was calculated by considering ratio of exposed to unexposed 1:1, 95% CI and power of 80%. The sample size was calculated using factors Age (15-24), Educational status (higher) and Number of alive children (2 to 4) major factors [14]. However, the calculated sample size of the first objective was higher. Thus, the sample size calculated using the single population formula taken sufficient to measure the magnitude of IUCD discontinuation & associated factors among IUCD users.

2.2. Sampling Procedures

Kembata Tembaro Zone had twelve districts, of which twenty kebeles were chosen from four districts of the study area using a simple random sampling method, and the proportion of the reproductive-age population was sampled for each kebele. The list of IUCD users was taken from the family planning cards of each selected kebele. For the sake of confidentiality, government-owned health facilities were supposed to serve nearly 100% of IUCD users, and the given number gave the privacy issue an identification number and address that were used to select the study participants. A systematic random sampling method was used until the sample size for each kebele was large enough. Then study subjects from each kebele are obtained through house-to-house interviews. The total number of IUCD users from the selected 20 kebeles was 2840. The sample size was proportionally allocated to each kebele based on the number of IUCD users in each kebele. The first sample to be included using a simple random method. When two or more eligible women were present in one household, only one woman was considered by the lottery method. For women who were not at home during the visit, repeated household visits were done to decrease the non-response rate.

2.3. Data Collection Procedures

After reviewing different articles, a structured questionnaire was designed to collect socio-demographics, individual factors, reproductive health of mothers, and facility-related factors concerning data. The information was gathered from selected households, and all women who had received IUCD were interviewed house to house in a setting where participants were free to express their

feelings and ideas during face-to-face contact. In addition, if the women have not been contacted due to absence, up to two interview attempts are made to reduce the non-response rate. Among the discontinuers, further information was asked about the date of insertion, duration of the IUCD used, and the reason for the removal during the data collection period, in addition to having the registration books and cards checked to minimize recall bias. Data was collected for two months during the home-to-home visit using a face-to-face interview. Five nurses and two health officers from other districts were involved in the data collection process as data collectors and supervisors respectively.

2.4. Data Quality Management

The entire questionnaire was translated from English to Amharic, then translated to Kembata by language experts, then re-translated back to English by another expert to check their consistency. Prior to data collection, 5% of the sample was pretested on a similar population that was not part of the actual sample of selected kebeles. The reliability of items in the questionnaires was tested, and revision of the questionnaire was considered necessary. Data collectors were trained for two days on the study instrument and data collection procedure. During the actual data collection process, supervisors cross-checked the data collectors on the field randomly every day for questionnaire consistency and completeness. Daily completed questionnaires were checked.

After data collection, each questionnaire was given a unique code by the principal investigator. The principal investigator prepared the template and entered data using Epi Data version 4.6, which was then exported to SPSS version 25.0. Five percent of the entered data were re-checked by comparing the entered data with the actual questionnaire. Frequencies were used to check for missed values and outliers. Any errors identified at this time were corrected after a revision of the original data using the code numbers.

2.5. Data Processing and Analysis

Data were cleaned and entered into an Epidata version 4.6 statistical programme before being exported to SPSS version 25.0 for analysis. The data were checked for inconsistencies and missing values. Simple frequencies were calculated to determine the overall distribution of the study subject in relation to the variables under consideration. Descriptive statistics, including frequencies and percentages, were done and presented in a table, figure, and graph.

Bivariate analysis was used to determine the association between different factors and the outcome variable. Finally, multivariable logistic regression analysis was carried out to examine the relationship of independent variables with the outcome and to identify the key factors influencing IUCD discontinuation among users. The significance level was set at 5%, and a 95% confidence level was used to assess the study's precision. The level of significance was set at 0.05, and the model's fitness was checked. Independent variables with a p-value less than 0.25 in bivariate analysis were considered candidates for multivariable analysis.

3. Results

3.1. Socio-Demographic Characteristics of Respondent

Totally 415 IUCD users have participated in this study, with a response rate of 100%. The age category for the women aged 15–19 was 41 (9.9%), 20–34 was 146 (35.2%), and 35–49 was 228 (54.9%). Similarly, the majority of 394 (94.9%) participants were married. Regarding school enrolment, 233 (56.1%) of the respon-

dents had no formal education, and the least of them, 32 (7.7%), were at the college or university level. Regarding the occupation status of respondents, about 280 (67.5%) were engaged as homemakers, 105 (25.3%) were daily laborers, and the rest were non-government and government employees, 16 (3.9%) and 14 (3.4%), respectively, and the majority of the participants 270(65%) lived in low-income households.

Variables(n=415)	Categories	Frequency	%
Age (in years)	15-19	41	9.9
	20-34	146	35.2
	35-49	228	54.9
Marital status	Single	21	5.1
	Married	394	94.9
Educational status	No formal education	233	56.1
	Elementary(1-8)	78	18.8
	Secondary(9-12)	72	17.3
	College/University	32	7.7
Occupational	Government employee	14	3.4
	Non - Government employee	16	3.9
	Daily labourer	105	25.3
	House wife	280	67.5
Monthly Income	0-1000 ETB	270	65
	>1000 ETB	145	35

Table 1: Socio-Demographic Related Factors among IUCD Users among Women in Kembata Tembaro Zone Southern Ethiopia, August 2022

3.2. IUD Users' Responses with Service Provider Related Factors

When asked about whether the provider explained the follow up visit, 349(84.1%) of the women were answered in the assenting. 341(82.2%) of users said that the provider had given them counseling service before IUCD insertion. The majority of participants

284(83%) of the women said that they had received the counseling service individually while 57(17%) of them received the service in mass. Information that provided during counselling on effectiveness 67(18 %), duration 105(32%), benefits 150(44%) and side effect 19(7%).

Variable(415)	Category	Frequency	%
Counselled before insertion	Yes	341	82.2
	No	74	17.8
	Benefits	150	44
Information provided during counselling	Duration	105	32
	Effectiveness	67	18
	Side effect	19	7
How was the counselling provided	Individually	284	83
	In mass	57	17
Which health problems described	Nausea & vomiting	114	33
	Infection/STI	79	23
	Pain	77	22
	Heavy bleeding	71	21

Did the provider was given appointment	Yes	349	84.1
	No	66	15.9

Table 2: IUD Users' Responses with Service Provider Related Factors in Kembata Tembaro Zone Southern Ethiopia, August 2022

3.3. Reproductive History Related Factor

In terms of the mother's reproductive history, 60 (14.5%) were married between the ages of 15 and 19, and 351 (84.6%) were older than 19 at the time of their first marriage. Respondents' re-

sults showed that IUCD users desired to have additional children 363(87.5%). Both husband and wife decide on the number of children: 244 (58.8%), husband 75 (18.1%), wife 64 (15.42%), and God 32 (7.71%).

Variables(n=415)	Categories	Frequency	%
Age during Frist pregnancy	15-19 year	60	14.5
	>19 year	355	84.6
Parity	1-3 give birth	196	47.2
	3-6 give birth	149	35.9
	>6 birth	70	16.9
Want more children	Yes	363	87.5
	No	52	12.5
Who decide number of birth /more children	Husband	75	18.1
	Wife	64	15.42
	Both	244	58.8
	God	32	7.71

Table 3: Reproductive History Related Factors among IUCD Users among Women in Kembata Tembaro Zone Southern Ethiopia, August 2022

3.4. Individual Health Concern Related Factors

Variables(n=415)	Categories	Frequency	%
Have you on IUCD	Yes	328	79
	No	87	21
Duration of IUCD insertion/continuation of months	≤3 months	145	44
	3-≤6 months	96	29
	7-<12 months	87	26
Duration of IUCD removal/ discontinuation of months	≤3 months	19	21
	3-≤6 months	29	33.7
	7-<12 months	39	45.3
Reason for discontinuation	Desire of pregnancy	37	42
	Fear of side-effects	15	17
	Husband Influence	5	7
	Misconception	30	34
Which health problem occurred	Heavy bleeding	75	18.1
	Pain	87	21
	Infection/STI	99	23.9
	Nausea and Vomiting	154	37.1

Table 4: Individual Health Concern Related Factors among IUCD Users among Women in Kembata Tembaro Zone Southern Ethiopia, August 2022

3.5. Related Issues with IUCD Discontinuation

Out of the 415 women who used IUCD during the last 1 year, of these 87(21%) women were discontinued. Among overall discontinued 39(45.4%) of the IUCD discontinues had removed between 7 and 12 months following insertion and 29 (33.7%) of discontinued had removed 3–6 months and 19(21%) of discontinued within 3 months.

Variables with a bivariate p-value less than 0.25 were entered into a backward likelihood ratio multivariable logistic regression model. Variables in the multivariable logistic regression analysis were marital status, occupational status, educational status, counseling before IUCD insertion, appointment for follow-up, monthly income, desired to need more children, alive children and number of birth gave. These variables had a p-value of less than 0.25 and were candidates for the multivariable logistic regression analysis.

The last step of logistic regression analysis indicated that being married, not being appointed about the follow-up visit, not receiving counseling before insertion, and wanting more children were found to be the key factors influencing IUCD discontinuation by users.

Respondents who were married were 2.9 times more likely to discontinue IUCD than those who were single [AOR = 2.9 [1.35, 6.23]]. Furthermore, users who have not been told about the follow-up visit are 20% more likely to discontinue IUCD as compared to those who have been told about the follow-up visit [AOR = 2.8 [1.12, 6.70]]. At the same time, users who had not received counseling before insertion of the IUCD had 3.7 times more odds of discontinuing their method than those who had received counseling before insertion [AOR = 3.7 [1.23, 7.30]]. Those users who wanted more children were 80% more likely to discontinue IUCD when compared with their counterparts. AOR = 3.2 [1.51, 7.0].

Variables	IUCD Discontinuation		AOR(95%CI)	P-value
	Yes N (%)	No N (%)		
Marital status				
Single	2(2) 85(98)	19(6)	1	
Married		284(86)	2.9[1.35,6.23] *	0.01
Did told for Follow up				
Appointment Yes	8(9) 79(91)	326(99)	1	
No		2(1)	2.8[1.12,6.70] *	0.03
Counselled IUCD before insertion				
Yes	11(12)	291(89)	1	
No	76(88)	50(11)	3.7[1.23,7.30] *	0.01
Want more children				
Yes	82(94)	89(27)	3.2[1.51,7.0] *	0.02
No	5(6)	239(73)	1	
Residence				
Urban	18(4)	281(68)	1	
Rural	66(16)	60(14)	0.23[0.16,0.68] **	0.20
Provider describe possible side effect				
Yes				
No	29(33)	297(91)	1	
	76(77)	44(9)	0.21[0.16,0.68] **	0.22
How was the counseling provided				
Individually	20(23)	301(92)	1	
In mass	67(77)	40(8)	0.23[0.16,0.68]**	0.21
NB: “*” P-value <0.05: statistically associated; “**”P-value<0.25 “1” = reference group				

Table 5: Multivariable Logistic Regression Analysis for Factors Associated with IUCD Discontinuation among Women in Kembata Tembaro Zone Southern Ethiopia, August 2022

4. Discussion

This study investigated issues influencing the discontinuation rates of IUCD among users in Kembata Tembaro Zone, Southern Ethiopia. According to the study findings, the overall magnitude of IUCD discontinuation was 21% [95% CI: 16.5%–22.8%] of women using intrauterine contraceptive devices in Kembata Tembaro

Zone who stopped using IUCD. Moreover, not being counselled about the intrauterine contraceptive device before insertion, not described possible side effects described with a provider, not being appointed for follow-up, and being single were factors significantly associated with IUCD discontinuation.

The magnitude of IUCD discontinuation observed in this study was higher than in an earlier study done in Pakistan (18.9%). This level of discontinuation is also higher when compared to studies conducted in Humara, Ethiopia, EDHS 2016, South Africa and Ghana, which showed an IUCD discontinuation rate ranging from 10.1% to 14.3% [13-18]. The likely causes of the disparity between studies are socio-demographic differences among the different study populations, and the disparity can be attributed to the fact that services are inaccessible. This study's findings showed that the age of IUCD users has no relationship with IUCD discontinuation, which is not in line with a study conducted in India and Nigeria [4,12].

Likewise, the odds of IUCD discontinuation among married women were 2.9 times more likely to discontinue IUCD than those who were single. This finding is similar to that of the study conducted in Malawi and Pakistan [3,17]. This could be because married women are not good candidates for IUCD due to their preference for being pregnant and having more children. In this study, not receiving information about the follow-up visit was found to be the factor that affects the IUCD discontinuation rate, in which users who have been told about the follow-up visit have 2.8 more odds of discontinuing IUCD as compared to those who have been told about the follow-up visit. This evidence was consistent with earlier studies done in Ghana and Nigeria [15,16].

At the same time, users who have not received counseling before insertion of an IUCD are 3.7 times more likely to discontinue their method when compared with their counterparts. This finding is in line with studies done in Ethiopia, Ghana, South Africa, and Pakistan [14-18]. This may be explained by the fact that, in the absence of counselling, users are exposed to rumors and misconceptions that lead to premature removal.

Furthermore, the study findings showed that users who wanted more children had 3.2 times the odds of discontinuing IUCD as compared to those who did not want more children. This finding is similar to that of the study conducted in developing countries [19]. This indicates describing side effects were a major concern among current and potential intrauterine contraceptive device users. Women should be informed about probable adverse effects and options to explore, such as method switching, when they encounter severe side effects, as part of the provision of quality IUCD services when IUCD use is first initiated. Women should receive health information to assuage any potential side effects. Generally, my study findings concerning factors associated with IUCD discontinuation are consistent with previous research findings. Therefore, married women pay attention to educating themselves on healthy birth spacing, improving the quality of counselling before IUCD insertion, being told about follow-up visits, routinely being informed about side effects during counselling, and being offered the possibility to switch methods if necessary during counselling as strategies to decrease IUCD discontinuation.

5. Conclusion

The findings of this study conclude that the overall magnitude of the IUCD discontinuation rates in the study area was found to be higher than in other studies conducted in Ethiopia. Many of the factors that are attributed to the high magnitude of IUCD discontinuation are changeable. Appropriate counselling prior to insertion, including an appointment for follow-up visits, a preference to have more children, and marital status for the choice of service, will improve the continuation rate of IUCD [20].

Limitation of the Study

It suffers from some limitations that need to be considered. The interviews were retrospective in nature, and the data on indicators related to side effects were self-reported by the respondents and not verified or confirmed by healthcare professionals. Because the study was cross-sectional in nature, it cannot determine a cause-and-effect relationship. Recall bias cannot be eliminated. Furthermore, the study was limited to the Kembata Tembaro Zone of southern Ethiopia rather than the entire region or at the national level. Therefore, the results should be interpreted carefully and can only be generalized to communities having similar characteristics.

Acknowledgment

First, I would like to thank God for giving me the courage and wisdom to do my work. I would like to express my gratitude to the Kembata Tembaro Zone Health Department for their assistance in providing information. Then, I'd like to express my heartfelt appreciation to my advisors, Mr. Dejene Ermias and Mr. Aiggan Tamene and my friend Dr. Aklilu Abera for guiding me in my research writing as well as for their invaluable support and sharing their knowledge and experience.

Data and Materials Availability

The datasets generated and analyzed in this study available from the corresponding author on reasonable request.

Authors' Contributions

I daily supervised the data collection, coded the data, carried out the analysis and wrote the first draft of the article. Other authors contributed the study design and analysis, comments throughout the entire process. Finally they approved the final version of the manuscript prior to submission.

Ethics Approval and Consent to Participate

A written permission letter was written from Kembata Tembaro Zone Health Department and sent to Woreda Health Offices. During data collection, each respondent was informed about the purpose, scope, and expected outcome of the research, and appropriate informed verbal consent was taken from the respondents. Anyone who is unwilling to participate has the full right to withdraw from the study.

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