

Intrauterine contraceptive device discontinuation among Jordanian women: rate, causes and determinants

Yousef S Khader, Saleh El-Qaderi, Ali Mohammad Khader

Abstract

Objective To determine the intrauterine contraceptive device (IUD) discontinuation rate and its causes and related factors among women attending UNRWA health centres in Jordan.

Methods The study cohort comprised 371 women who had an IUD inserted during 1997 and who were interviewed during their visits to the health centres in the period January–March 2003. The main outcome measure was IUD discontinuation.

Results The incidence of IUD discontinuation in the first year following insertion was 17.5%. Approximately 32% of the study sample continued using their devices after 5 years. The average duration of IUD use was 36 months. Of the 371 women, 39.6% discontinued IUD use because of a desire to conceive, 18.6% because of side effects, 4.9% because they were sexually inactive and 1.6% because of opposition from the woman's family. The most common side effects reported as reasons for discontinuation were bleeding, infection and pain. Discontinuation was inversely related to current age, marital age and number of living children. Outside camp residents, previous contraceptive users and women with obstetric complications were significantly less likely to discontinue IUD use.

Conclusions The crude cumulative rate of IUD discontinuation was 17.5% during the first year, suggesting a need to tackle the problem of discontinuation through effective educational strategies on the process of fertility and contraception. The most common reason for voluntary IUD removal was the women's desire to conceive. This suggests that improved counselling and good selection of candidates before IUD insertion is required.

J Fam Plann Reprod Health Care 2006; **32**(3): 161–164
(Accepted 5 January 2006)

Key message points

- The incidence of intrauterine contraceptive device (IUD) discontinuation among Jordanian women in the first year following insertion is 17.5%.
- A desire to conceive and side effects are the main reasons for IUD discontinuation.

Department of Community Medicine, Public Health and Family Medicine, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan

Yousef S Khader, MSPH, ScD, *Assistant Dean*
Saleh El-Qaderi, MD, MHPed, *Associate Professor*
Ali Mohammad Khader, MD, MSc, *Instructor*

Correspondence to: Dr Yousef S Khader, Department of Community Medicine, Public Health and Family Medicine, Faculty of Medicine, Jordan University of Science and Technology, Irbid 22110, Jordan. Fax: +11 962 2 7095010.
E-mail: yousef.k@excite.com

Introduction

The reduction of method failure and discontinuation rates can make a substantial contribution to reducing unwanted fertility. The intrauterine contraceptive device (IUD) is one of the most effective methods of contraception.^{1,2} Women use IUDs longer than most other reversible contraceptive methods. In large multicentre trials conducted in developing countries, approximately 70–90% of women were still using their IUDs 1 year after insertion.³

In Jordan, the IUD is the most widely adopted modern contraceptive method for family planning. The 2002 Jordan Population and Family Health Survey revealed that 58% of the women using modern contraceptive methods were current IUD users.⁴ Moreover, the use of this method increased from 15% in 1990 to 24% in 2002 for women of reproductive age.⁴ The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) introduced family planning services in 1993 as an integral part of its comprehensive maternal and child health programme. All Palestine refugees registered with UNRWA in Jordan – whether they live in camps or outside camps – are eligible for UNRWA services. However, those living in or near camps – generally the poorest of the refugees – have easier access to Agency services. The copper IUD is the most common contraceptive method used by UNRWA family planning acceptors, with around 45% of them using this method.⁵

This study was an attempt to assess the frequency of and reasons for IUD discontinuation among women using UNRWA family planning services at various health centres in Amman, Jerash and Irbid in Jordan. The main objective of this study was to assess the magnitude of the problem of IUD discontinuation and its causes in order to identify strategies for maximising the efficiency and effectiveness of family planning programmes.

Methods

A historical cohort of all women who started to use the IUD during 1997 at various UNRWA health centres in Jordan was followed up until the end of 2002. Data were collected during the period January–March 2003 in the Amman, Jerash and Irbid areas. A special form was designed to collect data from maternal health records, family planning records and IUD discontinuation forms. Additional data were collected through interviews with IUD users during the women's regular visits to the health centres for well baby clinic, antenatal or postnatal services, telephone calls and home visits for those with reachable addresses.

All IUD users were followed up until IUD discontinuation (event) or interview. Dropouts were followed up with telephone calls, home visits, or they were notified through their respective family files. Verbal informed consent was obtained from each woman before inclusion in the study. The information collected included marital age, age at IUD insertion, residence, level of education, current client work, total number of pregnancies, number of living children, previous use of modern contraceptive methods, previous obstetric history, counselling, client satisfaction, and reasons for IUD discontinuation.

ARTICLE

Table 1 Sociodemographic characteristics of the study sample

Variable	n	%
Marital age (years)		
<16	61	16.0
17-19	192	52.0
20-24	107	29.0
≥25	11	3.0
Current age (years)		
<20	5	1.4
21-24	46	12.4
25-29	110	29.6
30-34	92	24.8
35-39	74	20.0
≥40	44	11.8
Residence		
Inside camps	150	40.4
Outside camps	221	59.6
Client's level of education		
Illiterate	13	3.5
School education	301	81.1
Diploma or higher	57	15.4
Husband's level of education		
Illiterate	25	6.7
School education	258	69.6
Diploma or higher	88	23.7
Client's work		
Home work	327	88.0
Outside work	44	12.0

In this retrospective cohort study, 2% of participants were lost to follow-up leaving 371 women for inclusion in the analysis. This number of participants exceeded the required sample size of 271. The required sample size for estimating the discontinuation rate was calculated using EpiCalc 2000 software (version 1.02). A rate of 13% (the lowest reported IUD discontinuation rate in Jordan in the first year⁴) and the desired level of precision of 4% were specified in the formula presented by Kirkwood.⁶ Sociodemographic characteristics for all women were described using frequency distribution. Life tables were used to describe the proportion of women who discontinued IUD at various time intervals. For each interval, all women who had been observed for at least that long were used to calculate the probability of IUD discontinuation (event) occurring in that interval. The probabilities estimated from each of the intervals were then used to estimate the overall probability of the event occurring at different time points. Women who were still in the study but who had not discontinued IUD were considered censored ones. Reason for IUD discontinuation by time interval was tabulated. Data were analysed using Statistical Package for Social Sciences software (SPSS, version 11.5). Values of $p < 0.05$ were considered statistically significant.

Results

Participants' characteristics

Sociodemographic characteristics of the study population are given in Table 1. Age at time of IUD insertion ranged from 16 to 50 years with a mean of 31.5 ± 6.6 years and marital age ranged from 14 to 28 years with a mean of 19.8 ± 3.0 years. Some 40% of the study sample was residing inside camps while 60% was residing outside camps. The median number of living children was four, with more male children (785) than female children (749). Only 10.5% of women had no male children while 12.1% of them had no female children.

About two-thirds (65%) of the women were previous users of modern contraceptive methods while 35% started their first contraceptive experience with the IUD. Only 2.2% of the women reported that they were not counselled on IUD insertion and 10.8% of the sample was not satisfied

with the contraceptive services they received. The most important reasons given for dissatisfaction were the presence of a male doctor (47.5%) and a long waiting time (42.5%). Almost all (99%) the women reported that they chose the IUD device for either children spacing or limitation while only 1% reported having medical reasons for IUD insertion to avoid pregnancy.

IUD discontinuation rate

The IUD discontinuation rate was 2.4% after the first 3 months and 17.5% after the first year of use. About one-third (32.1%) of the study population continued using their IUD for 5 years following insertion. The third year following insertion was the year with a maximum number of IUD discontinuations (68) (Table 2).

The device failed in 12 women either because of expulsion (6), missing device (1) or unintended pregnancy (5). The IUD was removed in 240 women at their request for different reasons. Of the 371 women, 39.6% discontinued the IUD because of a desire to conceive, 18.6% on account of side effects, 4.9% due to being sexually inactive and 1.6% because of opposition from the woman's family. The most common adverse effect cited as a reason for IUD discontinuation was bleeding – either prolonged periods or frequent spotting – in 31 women. Infection as a reason for IUD discontinuation was reported by 26 women. Pain ranked third, either as a sole reason in eight women or combined with infection in three women. Other side effects (e.g. disturbance during intercourse) were reported in four women and mainly by husbands. The distribution of the 240 women who requested IUD removal for any reason other than device failure by time and reason is presented in Table 3.

Factors associated with IUD discontinuation

Table 4 shows IUD discontinuation by independent variables. Gender of children, level of education and current work had no significant effect on IUD discontinuation. IUD discontinuation was inversely related to the number of living children, current age and marital age. All women aged <20 years discontinued the method. The percentage significantly decreased with increasing age until it reached 40% in the ≥40 years age category. Outside camp residents, previous contraceptive users and women with obstetric complications were significantly less likely to discontinue IUD use.

Discussion

IUD discontinuation rate

The life table method revealed that the cumulative IUD discontinuation rate was 2.4% after the first 3 months and 17.5% after the first year of use. Discontinuation during the

Table 2 Life table analysis for crude cumulative discontinuation probabilities

Time (months)	Women with IUD at the beginning of the interval (n)	Women who discontinued IUD (n)	Discontinuation probabilities	Cumulative probabilities of discontinuation
<1	371	4	0.011	0.011
2-3	367	5	0.013	0.024
4-5	362	14	0.038	0.062
6-11	348	42	0.113	0.175
12-23	306	67	0.181	0.356
24-35	239	68	0.183	0.539
36-47	171	34	0.091	0.630
48-60	137	18	0.049	0.679
>60	119			

IUD, intrauterine device.

Table 3 Distribution of the 240 women who had the intrauterine device removed for any reason other than device failure by time interval and reason

Time (months)	Desire to conceive (n)	Side effects (n)	Sexually inactive (n)	Family opposition (n)	Total (n)
<1	1	2	0	0	3
1-2	1	1	0	1	3
3-5	5	5	0	1	11
6-11	18	14	6	3	41
12-23	41	20	3	1	65
24-35	44	18	5	0	67
36-47	24	7	2	0	33
48-60	13	2	2	0	17
Total	147	69	18	6	240

first 12 months of use was most likely related to IUD complications and side effects. The higher discontinuation rate in the second and third years was mostly due to the desire of women to conceive. In Jordan, the lowest reported discontinuation rate was for the IUD with 13% in the first year.⁴ The findings of this study were in agreement with a study carried out in the USA in which 19% of women had their IUD removed during the first year.⁷ Similar results were reported by El Yahya⁸ among family planning users at UNRWA health centres in 1995. In contrast, the IUD discontinuation rate in Egypt was higher at 28% in the first year as reported by Mahdy and El-Zeiny.⁹

Reasons for IUD discontinuation

The cumulative pregnancy rate of 1.3% after 5 years of use is consistent with other studies.^{2,3,10} Six women expelled their IUDs, giving an expulsion cumulative probability of 1.6% after 5 years, which is much lower than that found in other studies.^{3,10} A rate of 1.3 per 100 women during the

first year was reported in the USA by Meirik *et al.*¹⁰ and a lower rate of 0.4% was reported in Libya by Singh and Al-Amari.¹

The present study demonstrated that the most common reason for voluntary IUD removal was the women's desire to conceive. Most of these women had their IUDs removed in the second and third years after insertion while only 25 had them removed in the first year. While it is more reasonable to remove the IUD during the second and third year (this being considered to represent an adequate spacing period before the woman conceives again), discontinuing IUD use during the first year reflects women's uncertainty and hesitance, which indicates that further efforts in proper counselling and good selection of candidates before IUD insertion are required. A lower rate of 33.5% of IUD discontinuation for pregnancy planning was reported by Tu *et al.*¹¹ The 2002 Jordan Population and Family Health Survey reported a rate of 39.9%.⁴

Side effects ranked second as a reason for IUD discontinuation. The most common adverse effect reported as reason for IUD discontinuation was bleeding, followed by infection and pain. Socioeconomic, religious and cultural attitudes regarding vaginal bleeding greatly affect both the acceptance and continuation rate. In patients who regularly make prayers, intermenstrual bleeding is considerably more serious and is a reason for removal more often than in other areas of the world where religious prohibition of praying when bleeding is not so strong.

Six (1.6%) women requested removal of their IUD as a result of opposition from their family members. The most influential individuals in this respect were the husband and mother-in-law. Family opposition and social pressure were reported as the second most common reason for contraception discontinuation with a rate of 10.9% in the 6 months following IUD insertion.⁸ The role of the husband and mother-in-law in women's family planning has been highlighted by Fariyal *et al.*¹² and Odimegwu.¹³

Factors affecting IUD discontinuation

Age is one of the most important determinants of IUD discontinuation. The present study indicated that method discontinuation was negatively associated with age. Older women were more likely to continue using their IUDs, either because they have the desired number of children or sufficient contraceptive experience. This finding is in agreement with other studies.^{11,14} A Jordanian study reported that the woman's age has no effect on method discontinuation.¹⁵ Conversely, data from India contradict the present findings, as they show that the proportion of women aged 13-24 years who discontinued their contraceptive method was smaller than that of women in any other age group.¹⁶ Another study revealed that the risk of IUD discontinuation in the 35+ years age category was less than the risk among women aged <35 years.⁹ Women in these age groups had usually completed their families and hence wanted more effective and long-lasting contraceptive methods.

Camp residents were more likely to discontinue their contraceptive device earlier than those living outside camps. Petta *et al.*¹⁷ reported that living in a rural area was a significant factor associated with IUD discontinuation. In contrast, data from 15 developing countries demonstrated that in most countries neither residential status nor educational attainment affects contraceptive method continuation.¹⁸ Residence is an indicator of the socioeconomic status of the women. More wealthy refugees reside in independent houses outside camps, while camp residents are strongly influenced by the culture of the large family, where parents, mothers-in-law and

Table 4 Intrauterine device discontinuation by studied variables

Variable	Total (n)	Discontinuation (%)	p
Current age (years)			0.001
<20	5	100.00	
20-24	46	82.27	
25-29	110	81.96	
30-34	92	62.91	
35-39	74	58.16	
≥40	44	39.63	
Marital age (years)			0.021
<20	181	74.60	
20-24	167	63.98	
≥25	23	43.55	
Residence			0.001
Inside camp	150	78.65	
Outside camp	221	60.60	
Educational level			0.120
Illiterate	13	91.32	
Primary or secondary	301	66.43	
Diploma or higher	57	70.29	
Current work			0.600
Home work	327	68.19	
Outside work	44	65.77	
Living children (n)			0.001
1-2	106	82.95	
3-4	133	70.57	
5-6	80	52.87	
>6	52	53.51	
Male child			0.110
Yes	333	68.52	
No	38	62.48	
Female child			0.713
Yes	327	67.62	
No	44	69.98	
Past use of contraceptive			0.001
Yes	239	61.01	
No	132	80.38	
Obstetric history			0.001
Yes	168	59.63	
No	203	74.75	

ARTICLE

neighbours influence women's decisions on contraceptive method use.

No statistically significant relationship was found between IUD discontinuation and the woman's or her husband's level of education. Conversely, Al-Naaimi¹⁹ reported a negative association between level of education and the risk of IUD discontinuation while Lorenzo¹⁸ revealed an opposite pattern of association. This might be due to the fact that women with a higher level of education, although satisfied with a smaller number of children, tend to get married at an older age.

The finding of no association between the women's work and the risk of IUD discontinuation agrees with results in Egypt.⁹ Meanwhile, another study reported that women working outside the home are more likely to continue using contraception.¹⁵ Although working women are more motivated to continue using their IUD, usually they get married later and do not complete their families at an early age.

An inverse relationship between previous contraceptive experience and the risk of IUD discontinuation was reported in the present study. This findings is in agreement with two studies carried out in Jordan.^{15,19} This reflects the fact that experienced women desire a safe and long-lasting contraceptive method free from the fear of childbearing, side effects and that they are more resistant to the influence of their family members.

The risk of IUD discontinuation would appear to be inversely related to the number of living children, and this trend was statistically significant. Having male children was not associated with a higher discontinuation rate. Radheshyam reported that the effect of sex preference on contraceptive use was never high, and it decreased over time as the prevalence of contraceptive use rose.²⁰

Although the present study was carried out in different health centres distributed over the three most populated Jordanian Governorates, we cannot claim that our findings can be generalised beyond the study setting. Despite this limitation, the study results will be useful for family planners and at the service delivery level to improve the overall continuation rate. In common with studies that depend on client memory, a recall bias may be expected mainly with regard to events that occurred a long time ago, such as counselling and reasons for method discontinuation, especially when IUD removal was done outside UNRWA health centres.

In conclusion, the average period of IUD use among the study population was 36 months, and the crude cumulative rate of IUD discontinuation was 17.5% during the first year following insertion. About 32.1% of the study sample continued using their IUD after 5 years. The main reasons for IUD discontinuation were a desire to conceive, side effects, lack of sexual activity, and family opposition to the contraceptive method. There is therefore a need to tackle the problem of discontinuation through effective educational strategies on the process of fertility and contraception. Such a policy will be crucial in correcting misconceptions that limit the effectiveness of family planning programmes. Counselling IUD users, careful screening of candidates to ensure that women who choose IUDs have a lower risk of side effects and complications,

and competency-based training and appropriate infection prevention procedures using non-touch techniques are needed. In addition, policymakers must take into account and include husbands and other family members in family planning objectives and should support the culture of interaction and negotiation between couples. Finally, further large-scale studies at national level to define the underlying causes for IUD discontinuation are needed.

Statements on funding and competing interests

Funding. None identified.

Competing interests. None identified.

References

- 1 Singh R, Al-Amari M. Clinical performance of intrauterine device TCU-380A in Benghazi, Libyan Arab Jamahiriya. *East Mediterr Health J* 2000; **6**(5-6): 1073-082.
- 2 Centers for Disease Control and Prevention (CDC). IUD safety: report of a nationwide physician survey. *MMWR Morb Mortal Wkly Rep* 1974; **23**: 226-231.
- 3 *Population Reports. IUDs - An Update* (Series B, Number 6). Table 1. Performance of copper and LNG IUDs. Selected randomized multicenter comparative trials 1975-1995. Baltimore, MD: Population Information Program, Center for Communication Programs, Johns Hopkins University, December 1995; 6. <http://www.infoforhealth.org/pr/b6/b6.pdf> [Accessed 12 December 2005].
- 4 *Jordan Population and Family Health Survey, 2002*. Calverton, MD: Department of Statistics (Amman, Jordan) and ORC Macro, 2002.
- 5 El-Yahya H. *Report on an Agency-wide Study on Current Practices of Contraceptive Use Among Mothers of Children 0-3 Years of Age Attending UNRWA MCH Clinics*. Amman, Jordan: United Nations Relief and Works Agency (UNRWA), 1997; 29.
- 6 Kirkwood BR. *Essentials of Medical Statistics*. Oxford, UK: Blackwell Scientific Publications, 1988; 191-200.
- 7 Sarma S, Garafalo K, Graves W. Use of the intrauterine device by inner-city women. *Arch Fam Med* 1998; **7**: 130-133.
- 8 El Yahya H. Study on the assessment of discontinuation of modern contraceptive methods. Amman, Jordan: United Nations Relief and Works Agency (UNRWA), 1996.
- 9 Mahdy N, El-Zeiny N. Probability of contraceptive continuation and its determinants. *East Mediterr Health J* 1999; **5**: 526-539.
- 10 Meirik O, Farley T, Sivin I. Safety and efficacy of levonorgestrel implant, intrauterine device, and sterilization. *Obstet Gynecol* 2001; **97**: 539-547.
- 11 Tu P. IUD discontinuation pattern and correlates in four counties in north China. *Stud Fam Plann* 1995; **26**: 169-179.
- 12 Fikree F, Khan A, Kadir M, Sajjan F, Rahbar M. What influences contraceptive use among young women in urban squatter settlements of Karachi, Pakistan? *Int Fam Plan Perspect* 2001; **27**: 130-136.
- 13 Odimegwu CO. Family planning attitudes and use in Nigeria, a factor analysis. *Int Fam Plan Perspect* 1999; **25**: 86-91.
- 14 Trussell J, Vaughan B. Contraceptive failure, method related discontinuation and resumption of use, results from the 1995 national survey of family growth. *Fam Plann Perspect* 1999; **3**: 64-93.
- 15 Al-Dubai D. Characteristics of and self-reported reasons for contraceptive discontinuation among clients attending Government MCH centers in Irbid. Masters thesis, Irbid, Jordan, 1999.
- 16 Pachauri S, Santhya K. Reproductive choice for Asian adolescents, a focus on contraceptive behavior. *Int Fam Plan Perspect* 2002; **28**: 186-193.
- 17 Petta C, Amatya R, Farr G, Chi I. An analysis of the personal reasons for discontinuing IUD use. *Contraception* 1994; **50**: 339-347.
- 18 Lorenzo M. Differences by residence and education in contraception failure rates in developing countries. *Int Fam Plan Perspect* 1993; **19**: 54-59.
- 19 Al-Naaimi A. IUD discontinuation among losses of follow-up from the family planning clinics of the Jordanian Association of Family Planning and Protection. Masters thesis, Irbid, Jordan, 1997.
- 20 Radheshyam B. Effects of sex preference on contraceptive use, abortion and fertility in Matlab-Bangladesh. *Int Fam Plan Perspect* 2001; **27**: 137-143.

JOURNAL ONLINE SUBMISSION AND PEER REVIEW

The Journal has now changed over to an online manuscript submission and peer review system. This can be accessed at <http://jfprhc.allentrack.net> and authors are encouraged to use the system, which will allow the most efficient processing of their paper. Notes for Contributors can also be found on this website.