IUD USE EFFECTIVENESS IN AN URBAN GUATEMALAN CLINIC[1]

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Contraceptive continuation rates—the rates at which people continue to use a particular contraceptive method—can be a great help in determining whether a family planning program is effective or whether new contraceptive methods should be introduced. The present article reports on the continuation rates among a group of women who received intra-uterine devices at a large family planning clinic in Guatemala City. In general, their experiences appear to compare favorably with those of IUD users in other areas.

Introduction

A central question in any program of contraceptive services is "What methods of contraception should be provided?" Although cost, availability, and acceptability are major determinants of the answer, successful long-term use of a contraceptive method is recognized as the prime indicator of its value. This means that knowledge of use effectiveness is needed for making the initial decision about whether or not to provide a particular method, as well as for making subsequent decisions when the program is well underway.

In their review and evaluation of national family planning programs, Lapham and Maudlin considered continuation rates important for measuring the scope of program operations and the degree of program success (*1*). For many programs, however, good continuation rate data were not available. And in the specific case of the Latin American countries, very little systematic work had been done to study contraceptive continuation rates (*2*).

In 1971, a study of intrauterine contraceptive device (IUD) use effectiveness was initiated in urban Guatemala in order to document continuation rates for this contraceptive method in a Latin American country. The study examined the first segment of IUD experience among women admitted to a large urban family planning clinic who had their first IUD insertion there between 1 July 1969 and 30 June 1970. Relevant data were recorded and analyzed

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using multiple decrement life table techniques. Demographic data, data on IUD reinsertions, and data on use of other contraceptives following IUD termination were also collected and are presented here.

This study was conducted by the Guatemalan Association for Family Welfare (APROFAM) and the Guatemalan Ministry of Health, with the cooperation of the United States Agency for International Development and the U.S. Center for Disease Control. APROFAM's Central Clinic was chosen as the site for the study because of the large number of IUD users served and the length of time IUDs had been provided there.

Background

APROFAM is a privately sponsored affiliate of the International Planned Parenthood Federation, which both separately and in cooperation with the Ministry of Health has sponsored family planning clinics in Guatemala since late 1964 (*3*). The Central Clinic is both the oldest and largest of these clinics and is located in downtown Guatemala City. The clinic is situated in a large building containing an airy sunlit waiting room, a room for orientation and education with lecture and film facilities, a number of examining rooms, a large record room, offices for the director and the social service staff, a small snack bar, and living quarters for the resident caretaker.

As well as operating daily family planning clinics for contraception, the clinic also sponsors a mothers' club which provides education in nutrition and child care. When the clinic first opened, the major contraceptive method offered was the IUD, and nearly all the patients served during the first year of operation received this device. Even then, however, a few women received oral contraceptives, and since then other methods—including both traditional contraceptives and a long-acting injectable agent—have become available.

In addition to contraceptive care, the clinic provides treatment for minor gynecological problems, cervical cancer screening, and venereal disease screening and treatment. Laboratory services include pregnancy testing and hematocrit determination. Referrals are made for women with major gynecological problems and abnormal cervical cancer cytology, and for those who request prenatal care or voluntary sterilization.

Field services emphasize continuation of contraceptive care and the follow-up of women with abnormal cervical cytology. Field work is carried out principally by social workers, who are capable of providing counseling and who have experience at keeping careful and detailed records of follow-up visits.

Materials and Methods

The cohort of subjects selected for this study was composed of women admitted to the Central Clinic for the first time between 1 July 1969 and 30 June 1970 and who received IUDs during that period. Hereafter, this group of IUD users will be referred to as the 1969 study group.

Records of approximately 3,000 women admitted during the study period were examined. These records showed that 367 women first accepted IUDs during that period. One woman was later found to be incorrectly classified and was therefore excluded from the study. The study group thus consisted of 366 women.

Demographic data collected for the 1969 cohort included each woman's age, number of pregnancies, number of living sons, previous contraceptive use, and stated reason for using contraception. The type and size of the IUD, the date of insertion, the date and type of all terminations, and the date of the last clinic visit were also recorded. All of the 208 women in the 1969 study group who

last visited the clinic before 1 March 1971 were followed up—by attempting to interview them at their last known addresses. These follow-up efforts were completed by March 1972.

Data analysis of IUD use effectiveness involved the use of a multiple decrement life table technique (*4,5*). For purposes of the life table analysis, relevant terminations included pregnancies, expulsions, removals for medical reasons, and removals for non-medical reasons. Three women who either were pregnant at insertion or had an unknown length of IUD use were excluded from analysis. As explained above, women lost to follow-up or released from follow-up, as well as continuing users, were included in the analysis from the date of first insertion to the date of the last determination of the IUD's presence; thereafter they were handled as competing risks according to the method adapted by Potter (*4*). Life table analysis was restricted to first segments of IUD use in order to permit computation of life tables in terms of several demographic variables. Only net life table rates are reported. Rates of reinsertion per 100 first segment terminations were calculated, as were rates of method change.

Table 1. Age distribution and average number of past pregnancies among women in the 1969 Central Clinic study group in Guatemala City.

Age group	Women in each age group		Average No. of past pregnancies
	No.	%	
15-19 years	28	7.7	2.0
20-24 "	105	28.7	2.9
25-29 "	100	27.3	4.0
30-34 "	72	19.7	5.4
35-39 "	47	12.8	7.0
40-44 "	12	3.3	8.3
≥ 45 "	2	0.5	6.5
Total	366	100.0	4.3

Table 2. Women in study group, classified by number of pregnancies at admission to the Central Clinic.

Number of past pregnancies	Women in each category	
	No.	%
0-1	36	9.9
2-3	129	35.4
4-5	107	29.4
6-7	43	11.8
8-9	36	9.9
≥10	13	3.6
Unknown	2	—
Total	366	100.0

Results

Cohort Characteristics

Over 50 per cent of the study group members were between 20 and 29 years of age, and almost 75 per cent were between 20 and 34. Over 90 per cent had had two or more pregnancies (see Tables 1 and 2). Approximately one-third of the women had used contraception before. All of them were asked to state the reason for using contraception, and could select either "to have no more children" or "to space the children" as answers. These statements indicated that 63 per cent of the respondents began using contraception at the Central Clinic to have no more children, while the remaining 37 per cent wanted to space their children (see Table 3).

Of the 366 women, 87.4 per cent received size D Lippes loops at first insertion, and 6.8 per cent received size C Lippes loops. The remaining women (5.8 per cent) received Lippes loops of unknown sizes or a device of unknown type and size. Both size C and size D Lippes loops are 30 mm in diameter, but loop D is more rigid than loop C.

Life Table Analysis

Table 4 summarizes the net cumulative continuation rates per 100 first insertions. It also shows (for first segments only) the net cumulative termination rates resulting

Table 3. Use of contraception prior to admission by women in the 1969 study group, and answers chosen by study group members to explain reasons for using contraception.

	No.	%
Past use of contraception:		
Used contraception previously	121	35.2
Did not use contraception previously	223	64.8
Unknown	22	
Total	366	100.0
Present reason for using contraception:		
To have no more children	226	63.0
To space children	133	37.0
Unknown	7	—
Total	366	100.0

from pregnancy, expulsion, removal for medical reasons, and removal for non-medical reasons, as well as the total cumulative termination rates. The last column of the table gives the number of women exposed to the risk of IUD discontinuation at the start of the ordinal month for which the rates are reported. This article will only report continuation and total termination rates for months with 50 or more women exposed.

The cumulative continuation rate at the end of the first 12 ordinal months was 72.1 per 100 first insertions. Two years after insertion, an estimated 56 per cent of the subjects were still continuing IUD use. The median length of IUD use was 27 ordinal months.

The termination rates for specific types of discontinuation are shown in columns 2-6 of Table 4. Only 2.2 per cent of the women became pregnant during their first 12 months of IUD use, while 3.2 per cent became pregnant within two years of insertion. Approximately 10 per cent of the women expelled the IUD during the first year of use, and about 13 per cent had expulsions during the first two years of use. Eleven per cent of the women had the IUD removed for medical reasons in the first year, and 19 per cent had medical removals within two years. Overall, medical removals produced a higher net cumulative termination rate than any other single type of discontinuation. Expulsions were responsible for the next highest net cumulative rate of termination. Four and a half per cent of the women had removals for nonmedical reasons during their first year, and almost 9 per cent had non-medical removals during the first two years of IUD use.

Table 5 shows cumulative continuation rates among age groups 15-24, 25-29, 30-34,

Table 4. Net cumulative life table rates per 100 first insertions for the first segment of IUD use (1969 study group, Central Clinic, Guatemala City).

Ordinal month	Pregnancies per 100	Expulsions per 100	Removals (medical) per 100	Removals (non-medical) per 100	All removals per 100	Total No. discontinued per 100	Total No. continued per 100	No. exposed each month to risk of discontinuation
1	0.0	0.8	2.8	0.3	3.1	4.0	96.0	363
2	0.6	2.9	3.1	0.9	4.0	7.5	92.5	331
3	1.2	4.4	3.4	1.2	4.6	10.2	89.8	311
4	1.2	5.9	4.0	1.5	5.5	12.6	87.4	298
5	1.2	6.5	5.6	1.8	7.4	15.1	84.9	285
6	1.5	6.9	6.5	2.4	9.0	17.3	82.7	268
9	1.8	9.8	8.5	3.4	11.9	23.6	76.4	226
12	2.2	10.2	11.0	4.5	15.5	27.9	72.1	199
15	2.2	11.4	13.0	5.7	18.7	32.3	67.7	170
18	3.2	12.4	15.5	6.2	21.7	37.3	62.7	117
21	3.2	12.4	17.4	6.8	24.2	40.0	60.1	85
24	3.2	13.3	19.0	8.5	27.5	44.0	56.0	62

Table 5. Cumulative continuation rates per 100 first insertions,* by age group and ordinal month of use, among members of the 1969 study group.

Ordinal month	Age groups							
	15-24		25-29		30-34		≥ 35	
	No. of subjects †	Rate per 100	No. of subjects †	Rate per 100	No. of subjects †	Rate per 100	No. of subjects †	Rate per 100
1	133	96.9	99	96.9	71	94.3	60	95.0
2	120	89.6	89	93.6	65	94.3	57	95.0
3	109	87.1	86	89.2	65	92.8	51	93.1
4	105	82.9	80	89.2	63	91.3	50	89.4
5	97	80.3	79	86.9	61	89.8	—	—
6	91	78.5	74	84.5	59	86.8	—	—
9	77	71.2	62	77.4	50	80.5	—	—
12	69	65.4	50	70.4	—	—	—	—
15	57	59.2	—	—	—	—	—	—
18	—	—	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—
24	—	—	—	—	—	—	—	—

*Rates are for first segment of IUD use only.

†The number column indicates the number of women exposed to the risk of IUD discontinuation in each ordinal month.

— Less than 50 women exposed at the start of the month.

and over 34 for selected ordinal months. None of the differences between adjacent age groups are substantial. Nevertheless, except for the first ordinal month, the cumulative continuation rates for women 15 to 24 years of age are consistently, though not substantially, lower than the corresponding rates for any other age group.

As Table 6 indicates, the cumulative continuation rates at the end of six months were almost identical for women with three or four pregnancies (87.2) and those with five or more pregnancies (87.0). In contrast, women with fewer than three pregnancies at admission had a six-month cumulative continuation rate of 70.3 per 100 first insertions.

No twelve-month cumulative continuation rate is shown for women with fewer than three pregnancies, because there were too few women (41) in the sample to make a valid comparison; but women with three or four pregnancies had a continuation rate of 77.6 per 100 insertions at the end of 12 months, while those with five or more pregnancies had a continuation rate of 79.8. After the first nine months, women with five or more pregnancies had generally higher cumulative continuation rates than women with three or four pregnancies. The median length of IUD use was 16 ordinal months for women with up to two pregnancies, 27 ordinal months for women with three or four pregnancies, and over 33 ordinal months for women with five or more pregnancies.

There was essentially no difference at six months between the cumulative continuation rate for women who had previously used contraception (82.9 per 100 first insertions) and the rate for those with no previous contraceptive use (81.7 per 100 first insertions).

Except during the first month of IUD use, those women who used contraception to stop having children had consistently higher continuation rates than women who wanted to space their children (see Table 6). The difference in continuation rates between the two groups was 9.8 per 100 first insertions at ordinal month 12 (75.5 vs. 65.7) and 12.0 per 100 first insertions at ordinal month 15 (72.3 vs. 60.3). Cumulative continuation rates for women with two

Table 6. Cumulative continuation rates per 100 first insertions,* by selected characteristics of 1969 study group.

Ordinal month	No. of pregnancies preceding insertion					
	0-2		3-4		5 +	
	No. of subjects †	Rate per 100	No. of subjects	Rate per 100	No. of subjects	Rate per 100
3	72	80.0	117	94.3	121	92.5
6	59	70.3	99	87.2	109	87.0
9	—	—	86	81.6	90	81.8
12	—	—	80	77.6	78	79.8
15	—	—	—	—	71	78.6
18	—	—	—	—	—	—

Ordinal month	No. of living sons			
	0-1		2 +	
	No. of subjects	Rate per 100	No. of subjects	Rate per 100
3	139	85.5	168	94.4
6	119	77.5	146	87.8
9	103	71.3	120	81.3
12	90	64.7	107	79.1
15	80	60.1	90	75.2
18	55	57.1	62	68.1
21	—	—	—	—
24	—	—	—	—

Ordinal month	Reason given for using contraception			
	To have no more children		To space children	
	No. of subjects	Rate per 100	No. of subjects	Rate per 100
3	194	92.2	111	85.3
6	171	85.6	91	76.7
9	140	79.1	81	71.4
12	125	75.5	69	65.7
15	111	72.3	56	60.3
18	72	64.7	—	—
21	55	62.6	—	—
24	—	—	—	—

*Rates are for first segment of IUD use only.

†The numbers column indicates the number of women exposed to the risk of IUD discontinuation in each ordinal month.

— Less than 50 women exposed at the start of the month.

or more living sons at admission were consistently higher than those for women with less than two living sons. Rates for these respective groups of women at 12 months were 79.1 and 64.7 per 100 first insertions. This difference of 14.4 per 100 first insertions is more substantial than the largest differences associated with any other observed demographic variables.

Table 7 shows the number of first segment expulsions and removals, as well as the numbers and percentages of these terminations that were followed by reinsertion of another IUD, use of another contraceptive method, or sterilization. Overall, 14.7 per cent of the women who terminated IUD use had another IUD inserted, and 44.0 per cent chose another form of contraception

Table 7. Protection obtained against pregnancy by members of the 1969 study group following first segment expulsions and removals.

Type of termination	No. of terminations	Protective procedures followed						Total protected	
		Reinsertion		Other contraceptive method		Sterilization			
		No.	%	No.	%	No.	%	No.	%
Expulsion	39	17	43.6	9	23.1	0	0.0	26	66.7
Removal (medical)	51	0	0.0	32	62.7	1	2.0	33	64.7
Removal (non-medical)	26	0	0.0	10	38.5	0	0.0	10	38.5
Total	116	17	14.7	51	44.0	1	0.9	69	59.5

involving injection, foam, condom, diaphragm, or oral methods. Less than 1 per cent of the women who terminated IUD use were surgically sterilized. Of the women who expelled the IUD, 44 per cent obtained another one and 23 per cent adopted some other contraceptive method. Of those whose IUDs were removed for medical reasons, 63 per cent adopted another method and 2 per cent underwent sterilization. And of those whose IUDs were removed for non-medical reasons, 39 per cent adopted another contraceptive method. Overall, nearly 60 per cent of all the women with expulsions and removals were protected against pregnancy following their first segment IUD termination.

Concluding Comments

These results show that IUD use effectiveness in the Central Clinic compares favorably with IUD experience elsewhere. Table 8 shows cumulative continuation rates (for first segments only) reported by the present study, by the Cooperative Statistical Program (CSP) studies in the United States (*6*), and by studies of women in Taichung, Taiwan (*7*) and Alajuela, Costa Rica (*8*). Since nearly all the IUDs inserted in Guatemala City's Central Clinic were size C and D Lippes loops, the comparisons in this table are restricted to studies in which such devices were used.

The Taichung rates are lower than rates

Table 8. Results of several studies, showing cumulative continuation rates per 100 first insertions for first IUD segments, by study and ordinal month of use.

Ordinal month	Taichung (Lippes, sizes B, C, and D)*	CSP (Lippes D)	CSP (Lippes C)	Alajuela Costa Rica (Lippes C and D)	Central Clinic Guatemala City (Lippes C and D)
12	65.0	71.5	—	72.3	72.1
24	47.7	58.2	55.3	57.5	56.0
36	—	48.8	—	46.2	**
48	—	42.2	—	37.0	**
60	—	37.9	—	—	**

— = Rate not stated.

* = Size B has a slightly smaller diameter than the other two. Sizes C and D have the same diameter, but C is slightly less rigid than D.

** = Less than 50 women exposed to risk of discontinuation.

found in the other studies. Demographic data are not available for the Taichung women, but in general the women in the Taichung study were older than Guatemalan women. The Taichung study also contained a larger percentage of rural women.

Tietze's CSP rates (*6*) are based on combined data from many studies; both the one-year and the two-year cumulative continuation rates for size D Lippes loops, as well as the two-year rate for size C Lippes loops, are similar to the corresponding rates observed in Guatemala. The rates for Alajuela, Costa Rica, a neighboring Central American country, are also very similar.

Experience with the IUD at the Central Clinic in Guatemala City indicates that the IUD is an effective method of contraception in urban Guatemala. IUD use at the Central Clinic compares favorably with IUD experience elsewhere. Cumulative continuation rates are similar to both the rates found by the U.S. CSP studies of Lippes loops (sizes C and D), and the rates found by a more recent and geographically closer study in Costa Rica.

SUMMARY

Contraceptive continuation rates—the rates at which people continue to use a particular contraceptive method—can be a great help in determining whether a family planning program is effective or whether new contraceptive methods should be introduced. Until now, very little systematic work has been done to study contraceptive continuation rates in Latin America. The present article reports the results of one of the few existing studies on this subject, which examined the IUD experiences of women admitted to a large family planning clinic in Guatemala City. The study showed that these experiences compared favorably with the IUD experience of groups previously studied in Costa Rica, Taiwan, and the United States.

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