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**INTERNATIONAL FERTILITY RESEARCH PROGRAM
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**DESIRED FAMILY SIZE:
IMPLICATIONS FOR FAMILY PLANNING PROGRAMS**

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Abstract

DESIRED FAMILY SIZE: IMPLICATIONS FOR FAMILY PLANNING PROGRAMS

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Socio-demographic characteristics of 93,825 women from six geographical areas are analyzed in terms of family size in this report. Data were collected when the women had intrauterine devices inserted or underwent abortion, menstrual regulation, or sterilization. Average desired family size was calculated for women who were sterilized and for women using other contraceptive methods who either wanted no more children or wanted one or more additional children. Data on desired and attained family size were analyzed by geographical areas which were then ranked by education; this ranking coincides with a ranking of these areas by desired family size. In less educated populations, women who had chosen sterilization had on the average a much larger achieved family size than the achieved or desired family size of women who used temporary contraceptives. In addition, a higher proportion of women with more male than female children accepted sterilization. If national family planning programs are to succeed in reducing family size, effective temporary methods of fertility control are essential for couples who will not choose permanent methods until their families are large enough to insure against child loss.

I. INTRODUCTION

A number of studies analyzing desired family size have been done. Studies in diverse population groups have shown that what women say about their desired family size is directly related to the family size they have achieved^{1,2}. Longitudinal studies have demonstrated that preferences and expectations concerning desired family size fluctuate^{3,4,5}. The influence of the existing sex composition of the family on the desire for additional children has also been explored with conflicting results^{6,7}. In some of these studies women were asked about their desired family size, and in others they are asked whether they wanted or expected additional children and the data on achieved fertility and desired or expected fertility were combined. This present study analyzes the achieved and desired family size of women who have selected different methods of fertility control.

II. MATERIALS AND METHODS

The International Fertility Research Program (IFRP) gathers data from an international network of contributing physicians on the safety and effectiveness of fertility control methods. The present study is based on data from 14 geographical areas on women using one of four fertility control measures: an intrauterine device (IUD), menstrual regulation* (MR), pregnancy termination (PT), or female sterilization (FS) (Table I). While the IFRP also collects data on systemic contraceptives and male sterilization, the number of cases available is too small for this analysis.

Socio-demographic information on each patient and medical details about the procedure were collected at the clinic where the procedure was performed and recorded on standard data collection instruments designed by the IFRP. They were then sent to the IFRP for data processing. The socio-demographic information pertinent to the present study includes marital status, age, number and sex of living children, number of additional children wanted, and the educational attainment of the patient.

*Evacuation of the uterine contents within six weeks of the last menstrual period.

TABLE I
DATA AVAILABLE ON FERTILITY CONTROL METHODS BY COUNTRY

	Intrauterine Device	Menstrual Regulation	Pregnancy Termination	Female Sterilization
USA		*	*	*
Europe England Yugoslavia Hungary		*	*	*
Latin America Chile El Salvador Guatemala Colombia Costa Rica	*	*	*	*
Middle East Egypt Iran Turkey	*	*	*	*
India	*	*	*	*
Other Asia Philippines Singapore Hong Kong Indonesia Thailand Korea Malaysia Pakistan Sri Lanka Bangladesh	*	*	*	*

Definitions

Women were classified as "spacers" if they reported wanting additional children. If they reported wanting no more children or if they were undergoing a sterilization procedure*, they were considered "terminators".

*Women sterilized for reasons other than the desire to limit family size were not included in the IFRP studies.

The average desired family size was calculated by adding the present number of children and the number of additional children wanted, if any. The average number of children desired by spacers and terminators in four age groups was found for each geographical area by fertility control method group. From these averages, an age-standardized desired family size was calculated for each group. Patients who responded that they wanted additional children but who did not specify the number wanted were excluded. Women who wanted more than five additional children were treated as if they wanted five. Both of these measurements tend to bias the average desired family size downward.

An ordering of the geographic areas was established by averaging the patients' mean years of education over the four contraception methods. Populations with a mean of more than 10 years of education are termed "more educated", and those with a mean of less than 10 years of education are termed "less educated".

III. RESULTS

Socio-demographic characteristics in relation to family size are reported for 93,825 women from the United States, Europe, Latin America, the Middle East, India, and other Asian countries. Table II lists the number of cases by procedure and geographical area.

TABLE II
NUMBER OF WOMEN: GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device	Menstrual Regulation	Pregnancy Termination	Female Sterilization	Total
United States	—	3 896	8 273	824	12 993
Europe	3 303	584	4 620	175	8 682
Latin America	340	188	5 299	1 388	7 215
Middle East	2 108	1 358	6 775	1 324	11 565
India	245	2 950	13 439	7 692	24 326
Other Asia	6 314	2 905	13 240	6 585	29 044
Total	12 310	11 881	51 646	17 988	93 825

Age

The mean ages of spacers and terminators in each geographical area by fertility control method used are given in Table III. Within areas, terminators using temporary fertility control methods are about the same age as those who chose sterilization; in 11 of the 27 pairs, however, the mean ages were significantly different. Within each geographical area, spacers are significantly younger than terminators who were using temporary methods.

TABLE III
MEAN AGE: GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device ¹		Menstrual Regulation ¹		Pregnancy Termination ¹		Female Sterilization ²
	Terminators	Spacers	Terminators	Spacers	Terminators	Spacers	Terminators
United States sd ³	—	—	28.3 6.9	22.5 4.3	25.8 7.1	19.9 3.4	31.0 5.8
Europe sd	30.4 5.3	24.4 3.8	32.0 ⁴ 6.5	24.2 4.6	31.0 6.2	22.5 4.1	34.3 5.4
Latin America sd	27.9 6.4	24.4 5.2	28.0 5.7	27.2 4.2	29.4 7.2	23.8 5.8	30.3 5.1
Middle East sd	29.2 5.3	22.2 3.6	30.9 5.7	24.9 4.5	31.5 5.1	23.8 5.6	33.8 4.5
India sd	28.2 ⁴ 5.2	24.0 3.5	29.6 ⁴ 5.6	23.7 3.9	30.0 ⁴ 5.8	24.7 4.4	29.4 4.5
Other Asia sd	31.1 6.8	25.9 5.3	32.3 ⁴ 6.3	25.7 4.5	32.8 ⁴ 5.8	25.6 6.3	32.0 4.8

¹ The ages of spacers and terminators within each group were significantly different ($\alpha = 0.001$).

² The ages of female sterilization terminators and terminators for each of the other fertility control methods were significantly different ($\alpha = 0.001$).

³ Standard deviation.

⁴ The ages of female sterilization terminators and temporary method terminators were not significantly different ($\alpha = 0.001$).

Education

The average educational attainment of the women is presented in Table IV. The areas defined as more educated are the United States and Europe. The areas defined as less educated are Latin America, India, the Middle East, and other Asian countries.

Marital Status

While in most areas more than 80 percent of the women were married, in the United States, Europe, and Latin America, a particularly low percentage of the women having MR or PT procedures were married (Table V).

TABLE IV
MEAN EDUCATION (COMPLETED YEARS):
GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device	Menstrual Regulation	Pregnancy Termination	Female Sterilization	Average
Wife					
United States	—	13.2	11.7	12.7	12.5
Europe	9.5	13.0	9.8	10.8	10.8
Latin America	6.1	7.9	4.4	4.5	5.7
Middle East	3.9	7.4	4.2	2.3	4.5
India	6.6	5.3	6.3	3.4	5.4
Other Asia	7.3	6.6	5.2	6.1	6.3

TABLE V
PERCENT OF PATIENTS CURRENTLY MARRIED:*
GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device	Menstrual Regulation	Pregnancy Termination	Female Sterilization
United States	—	22.9	25.0	83.3
Europe	94.1	33.4	65.4	89.1
Latin America	85.3	50.5	77.8	95.0
Middle East	97.0	95.7	97.8	95.8
India	98.0	97.3	90.4	99.5
Other Asia	99.4	97.2	91.4	99.4

* Includes common-law marriages.

Terminators and Spacers

The proportions of spacers and terminators are compared within each geographical area (Table VI).* The majority of women in almost all temporary method patient groups were terminators rather than spacers, although the relative proportions varied widely. The exceptions were among the menstrual regulation and abortion patients in the United States and among menstrual regulation

*All female sterilization patients are terminators. They are included in this analysis.

TABLE VI
 PATIENTS USING PERMANENT (TERMINATORS) OR TEMPORARY (SPACERS)
 FERTILITY CONTROL METHODS: GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

Geographic Area	Intrauterine Device		Menstrual Regulation		Pregnancy Termination		Female Sterilization
	Terminators	Spacers	Terminators	Spacers	Terminators	Spacers	Terminators
United States	—	—	43.8	56.2	49.3	50.7	100.0
Europe	74.9	25.1	26.6	73.4	60.1	39.9	100.0
Latin America	54.4	45.6	59.6	40.4	55.8	44.2	100.0
Middle East	80.9	19.1	80.2	19.8	67.7	32.3	100.0
India	57.6	42.4	67.0	33.0	55.1	44.9	100.0
Other Asia	58.7	41.3	66.0	34.0	59.1	40.9	100.0

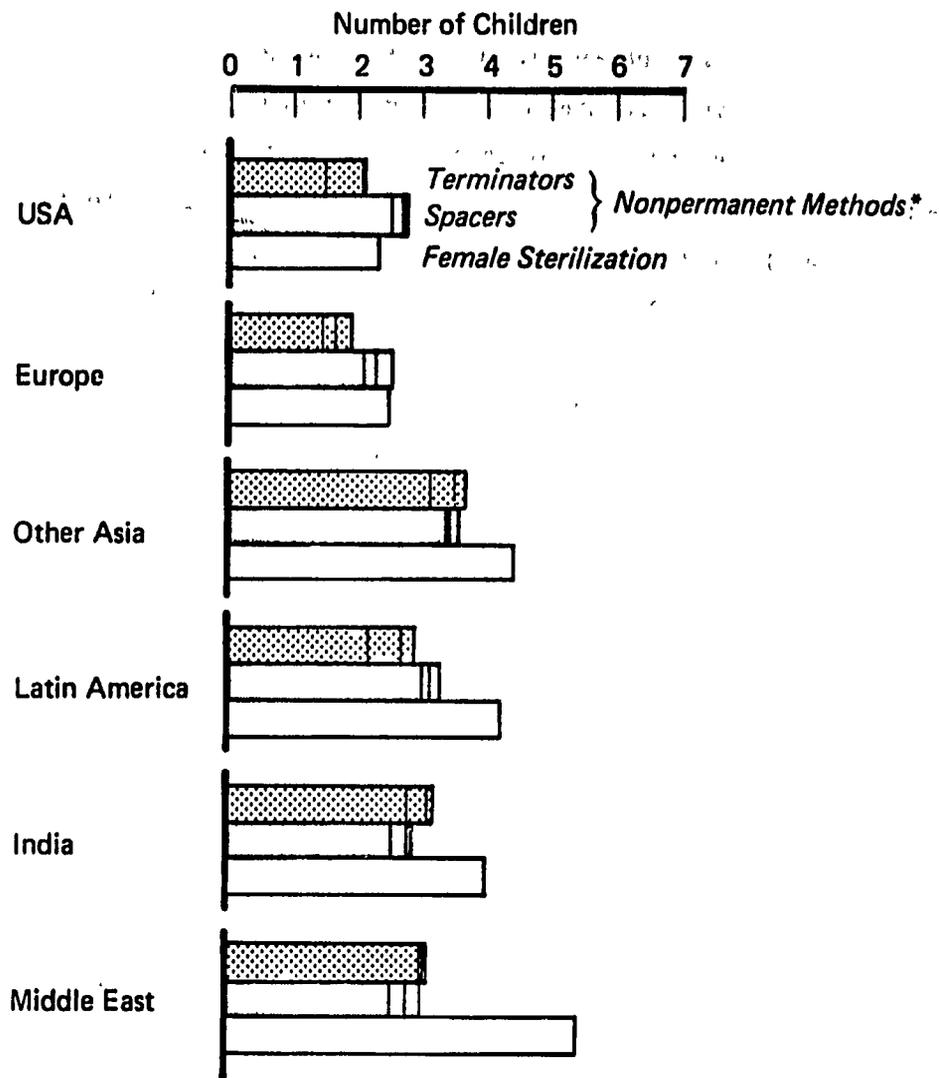
patients in Europe. The samples with the most spacers also had the highest percentages of unmarried patients.

Desired Family Size

Desired family size standardized for age was calculated for the terminators and the spacers within each geographical area (Table VII). The geographical areas were then ranked by education (Figure 1). When desired family size groupings are compared among areas, the desired size tends to increase among patient groups of decreasing educational attainment. In the more educated populations, desired family size does not differ discernibly among women using the various methods of contraception. In the less educated populations, the desired family

TABLE VII
 FAMILY SIZE: GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device			Menstrual Regulation			Pregnancy Termination			Female Sterilization
	Terminators	Spacers		Terminators	Spacers		Terminators	Spacers		Terminators
	Desired Size	Desired Size	Achieved Size	Desired Size	Desired Size	Achieved Size	Desired Size	Desired Size	Achieved Size	Desired Size
United States	—	—	—	1.50	2.55	0.74	2.08	2.72	0.93	2.36
Europe	1.96	2.29	1.21	1.45	2.56	0.90	1.70	2.10	0.69	2.44
Latin America	2.67	3.33	1.84	2.92	3.06	1.54	2.27	2.96	1.51	4.20
Middle East	3.12	2.65	1.46	2.98	2.87	1.49	3.11	3.19	1.52	5.41
India	2.77	2.58	1.47	3.20	3.36	1.68	3.07	2.77	1.38	4.04
Other Asia	3.50	3.54	2.10	3.13	5.33	2.12	3.73	3.38	1.51	4.36



* Menstrual regulation, intrauterine device, pregnancy termination.

Figure 1. Desired Family Size by Geographic Area and Fertility Control Method.

size for women choosing IUDs or MR or PT procedures is about the same in each geographical area and is lower than for the women choosing sterilization.

For this study, desired family size was determined by adding the patient's existing number of children and the additional number wanted. This analysis assumes that the woman who says she wants no more children does not already have more than she wants and that she is accurately reporting how many she wants. The first assumption is less likely to be true in less educated areas. The second assumption is noted because in areas such as the United States and Europe a

large percentage of the women are unmarried and may not be able to accurately evaluate their possible future desire for children. Although quite young, they often reported no desire for children. The first assumption is substantiated for terminators using IUDs, MR, or PT by the fact that in India, the Middle East, and other Asian populations the desired family size reported by terminators is quite close to that reported by spacers. For sterilized women, however, the assumption is unacceptable. Sterilized women had an average of one to two more living children than users of temporary methods reported wanting. The second assumption is not true for more educated populations. Figure 1 shows that terminators in these populations want substantially fewer children than spacers.

Figure 1 shows that among women using temporary methods, women in the more educated populations studied want on the average 2 to 2½ children, while women in the less educated populations want on the average 2½ to 3½ children. Desired family size does not appear to differ very much within the more and less educated populations for women using IUDs, MR, or PT for fertility control.

Sex of Living Children

The ratio of the number of women with more male than female children to women with more female than male children was considered to indicate possible sex preference (Table VIII). The preponderance of women with more male than female children suggests that male children were favored, at least by the women in these studies. In this sample, the distribution of the ratios seems to be the same in more and less educated populations. A Wilcoxon nonparametric test was

TABLE VIII
RATIO OF WOMEN WITH MORE MALE THAN FEMALE CHILDREN
TO WOMEN WITH MORE FEMALE THAN MALE CHILDREN:
GEOGRAPHIC AREA BY FERTILITY CONTROL METHOD

	Intrauterine Device		Menstrual Regulation		Pregnancy Termination		Female Sterilization
	Terminators	Spacers	Terminators	Spacers	Terminators	Spacers	Terminators
United States	-	-	1.13	0.98	1.12	1.27	1.23
Europe	1.43	1.23	1.09	1.69	1.18	1.13	1.31
Latin America	0.86	1.01	0.73	0.75	1.04	1.13	1.10
Middle East	1.10	1.38	0.98	1.31	1.17	1.18	1.63
India	1.44	1.50	1.22	1.08	1.58	1.30	1.86
Other Asia	1.10	1.22	1.34	0.99	1.61	1.28	1.30

performed by ranking all the ratios, yielding the Z-statistic comparing the rankings of the ratios of each fertility method for the more and less educated populations. It was not significant at the 0.05 level ($0.13 < 1.96$). No difference is found in this study in the ratios for the more and less educated populations. The effect of education within geographic areas, however, was not tested.

The ratio of women with more male than female children is high for women who accept sterilization in all areas. The Wilcoxon test comparing the ranks of the ratios for the sterilized women and for those using other methods was performed. The resulting Z-statistic is $1.65 > 1.85$. The hypothesis that there is no difference is rejected in favor of the hypothesis that a higher ratio of the sterilization patients have more male than female children than women using other contraceptive methods. The number of ratios used for the sterilized women in this analysis was less than the recommended number for the Z-statistic, so the rejection of the null hypothesis should be considered borderline.

IV. DISCUSSION

When standardized for age, desired family size among women using temporary methods of contraception was found to be $2\frac{1}{2}$ to $3\frac{1}{2}$ children for women in the less educated populations and 2 to $2\frac{1}{2}$ children for women in the more educated populations. Desired family sizes for these groups were similar. Much greater differences occurred between either of these groups and populations who accept sterilization in the less educated areas (4 to $5\frac{1}{2}$ children).

The goal for family planning programs serving women in less educated populations should be not so much to lower desired family size as to increase the women's ability to maintain their family size through making acceptable temporary methods readily available. In the less educated populations, terminators who used permanent or temporary methods of contraception were similar in age, but the sterilized women had much larger families. Spacers, on the other hand, were significantly younger but desired the same family size as terminators using temporary methods. Therefore, we can hypothesize that women in the less educated populations who chose sterilization were unable to maintain their desired family size and chose sterilization only after they had more children than they wanted. Among women in the more educated populations, spacers and terminators

showed a great age difference, while desired family size did not differ for terminators using permanent and temporary methods.

It is particularly important for family planning programs to encourage the use of temporary contraceptive methods in areas where populations are less educated and where infant mortality is generally high⁸. Our data suggest that in such areas completed family size can be reduced if temporary contraceptive methods are promoted among women who have achieved their desired family size. In deed a large percentage of the women in this study using temporary methods considered themselves terminators. If only permanent methods of contraception are promoted, the women are likely to accept these methods only after they have exceeded their desired family size, and possibly only after they have exceeded their desired number of male children as a safeguard against the possibility of infant mortality. If a woman has been using a temporary contraceptive, she can have another child if one of her children should die; thus she need not have more children than she wants just to prepare for this possibility.

The preference for male children can be seen in the increased ratio of women with more male children among sterilized women. Surprisingly, between women in the more and in the less educated populations, there is no significant difference in the ratio of women with more male children to women with more female children. Thus to the extent that male preference affects family size, it is as much a factor for family planning in the more as in the less educated populations.

From the perspective of program implications, the logistics of continuing the supply of temporary methods might at first appear overwhelming. However, innovative projects such as household distribution of oral contraceptives are demonstrating that this logistical hurdle can be overcome.

Sterilization services will, however, still be an important part of family planning programs. For a woman who has already exceeded her desired family size sterilization is the best alternative. If a reversible method were available, it would also be a more acceptable alternative for the woman who is at her desired family size. As infant mortality declines, the need for reversibility becomes less important. Even if these contingencies are met, family planning pro-

grams will need to continue to offer temporary methods so that women can plan the timing of each birth and thus ensure healthier children.

For these women since in many cases temporary methods are not available, terminators in less educated populations have only two options--permanent sterilization or more children. Temporary methods of contraception are more likely to be accepted by women at lower parities than sterilization and thus should prove to be more successful in reducing the overall family size in the long run.

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