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THE STATUS AND POTENTIAL FOR  
CONTRACEPTIVE STERILIZATION IN EGYPT

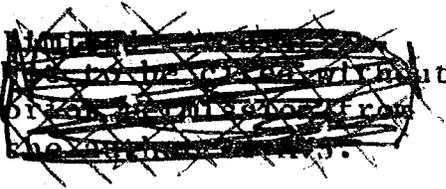
by

Amy Ong Tsui

October 1984

Final report of a study funded by a grant from the Association for Voluntary Sterilization to the Social Development Center (1313 E. 60th Street, Chicago, Illinois 60637 USA). Correspondence should be addressed to the author at the Carolina Population Center, University of North Carolina at Chapel Hill, University Square 300A, Chapel Hill, North Carolina 27514 USA.

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IN EGYPT

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# THE STATUS AND POTENTIAL FOR CONTRACEPTIVE STERILIZATION IN EGYPT

## INTRODUCTION

Egypt's population numbers 47 million currently, up from 38 million enumerated in the 1976 census, and growing at an annual rate of 2.7 percent. Its crude birth rate stands at 43 per thousand population and infant mortality is estimated to be near 102 per 1,000 live births. Annual per capita income in 1982 is U.S. \$690, and over two-fifths of the country's population reside in urban areas, of which Cairo alone commands almost seven million or 15 percent. Current use of contraception among married couples of childbearing age is about 32 percent. The national family planning program, begun in the mid-1960s, has relied on promoting acceptance through the use of four sponsored methods--the oral pill, the IUD, foaming tablets, and condoms. Use of the latter two is minimal and concentrated in the metropolitan areas. The IUD has only recently gained wider use but is often unavailable because of insufficient medical or trained personnel to perform insertions. The oral pill is thus used by four-fifths of all current users, but high discontinuation rates erode its use-effectiveness. Furthermore, misinformation and rumors about contraception abound, services through public health centers and family planning clinics are irregular, and rural areas suffer even more from limited availability of contraceptive supply. In short, Egypt is a developing nation encumbered by the burdens of rapid population growth, and its birth control program has had only mixed success until present.

At least three-quarters of the currently married childbearing population with three or more children want no additional births; but only one half have availed themselves of the means to limit family size. Demand for safe and

effective termination of childbearing is implicit, but meeting this demand will require continued expansion and improvement of present program services. Egypt has also adopted a multifaceted approach in its policy of population control, combining various development with family planning priorities. While this has served to reduce demand for children, reaching those presently motivated has progressed more slowly.

Among the childbearing public, awareness of family planning is almost universal, as is approval of it in concept. Islamic theological doctrine does not pose a major obstacle to its public promotion, and current and past political administrations have encouraged an active role for the national population program. However, even though a host of birth control methods are known and available, contraceptive sterilization (and hormonal injections) are not sanctioned and therefore not sponsored by the public program. In a 1973 assessment, Shanawany writes:

Voluntary sterilization also continues to be religiously and publicly condemned. Although Dr. Abdu Sallam, then Minister of Health, was a vigorous proponent of the idea, the National Assembly refused to promote sterilization along with other methods of contraception in its April-May 1970 meetings, considering sterilization as insulting to humanity. (1973:211-212)

Opposition to the introduction of contraceptive sterilization rests largely on the fundamentalist interpretation of Islamic principles. Omran has written that in general "Islam can provide positive sanctions for the use of all medically sound methods of contraception in order to ensure that the quality of life is maintained" (1973:179). More recently he states:

In Islam there is virtually no explicit prohibition of sterilization as we know it today; hence some scholars (Ulamaa) have assumed its permissibility. . . . Nevertheless, negative attitudes still prevail in most of the Muslim world due to conservative interpretations. Only in cases where further pregnancy endangers the health of the mother, and in cases of transmissible and hereditary diseases, is sterilization not only permissible but required. This gives hope that it may be possible

to make a case for sterilization based on potential health hazards associated with high parity and pregnancy associated with late maternal age. (1980:27)

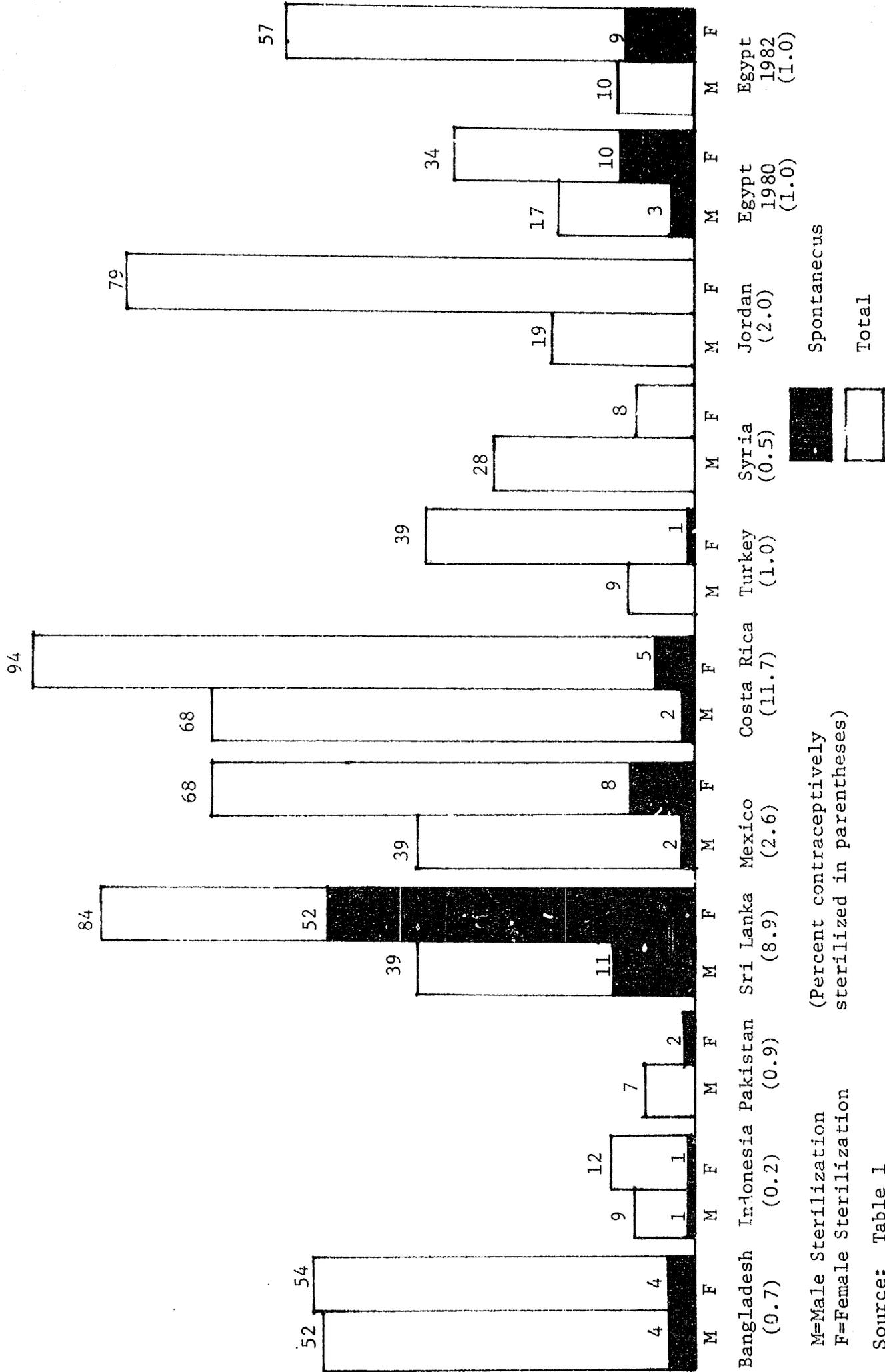
In some quarters, however, sterilization has been wrongly equated with castration (Omran and Omran, 1971). Concern over the use of irreversible sterilization techniques too has muted discussion for its approval. Thus sentiments run strong regarding the method's acceptability and place among other approved contraceptives.

The lack of public sponsorship of voluntary surgical contraception in Egypt is a population policy area that may warrant renewed attention. Demand for limiting child bearing is extant. Substantial benefit can be gained for the national health with wider access to voluntary sterilization. Many parts of the developed and developing world have already taken initiatives to improve the accessibility and availability of the procedure. Health and family planning professionals have long recognized the method as being a most desirable and cost-effective means for achieving desired parity and for preserving the health and welfare of both mother and child (Nortman, 1980).

Table 1 and Figure 1 illustrate the current status of knowledge about male and female sterilization in ten developing countries with Islamic populations including Egypt. Based on results from the World Fertility Survey for currently married women, volunteered knowledge of male sterilization can range anywhere from zero (in Turkey) to 11 percent (in Sri Lanka) and for overall awareness from about 10 percent in several places to near 70 percent in Costa Rica. Spontaneous reporting of female sterilization is generally below 10 percent except in Sri Lanka where half the women mention it as a contraceptive method. Overall awareness is high (80 to 90 percent) in Sri Lanka, Costa Rica and Jordan and low in Syria and Indonesia (8 to 12 percent). Egypt's position, judging by 1982 levels, is moderate

Figure 1

PERCENT OF CURRENTLY MARRIED WOMEN 15 TO 49 YEARS REPORTING KNOWLEDGE OF MALE AND FEMALE STERILIZATION IN SELECTED DEVELOPING COUNTRIES AND EGYPT



M=Male Sterilization  
 F=Female Sterilization  
 (Percent contraceptively sterilized in parentheses)

Spontaneous  
 Total

Source: Table 1

TABLE 1

PERCENT OF CURRENTLY MARRIED WOMEN 15 TO 49 YEARS REPORTING  
KNOWLEDGE OF CONTRACEPTIVE STERILIZATION IN SELECTED  
DEVELOPING COUNTRIES AND EGYPT

Country <sup>a</sup>	Survey Year	Male Sterilization		Female Sterilization	
		Spontaneous	Total	Spontaneous	Total
Bangladesh	1976	4	52	4	54
Indonesia	1976	1	9	1	12
Pakistan	1975	7	--	2	--
Sri Lanka	1975	11	39	52	84
Mexico	1976	2	39	8	68
Costa Rica	1976	2	68	5	94
Turkey <sup>b</sup>	1978	0	9	1	39
Syria	1978	--	28	--	8
Jordan	1976	--	19	--	79
EGYPT	1980	3	17	10	34
	1982	0	10	9	57

a World Fertility Survey results from Martin Vaessen, "Knowledge of Contraceptive Methods", Comparative Studies Number 8, World Fertility Survey, London, 1980. Syria results from Table 4.2.1B of Volume II, First Country Report.

b Ever married women 15 to 49 years

-- = not available

among these selected LDC's, but prominent for the Middle Eastern countries. Actual use levels for male sterilization (Carrasco, 1981) are not high (1 percent or less) but for female sterilization reach 12 percent in Costa Rica. If family size is controlled, the proportion of currently married women with five or more children who have been contraceptively sterilized is 32 percent in Peru and near 20 percent in such places as Costa Rica, the Dominican Republic, Guyana and Jamaica. Thus its use for effective family limitation has definite cross-country and parity-specific appeal.

The perception of a need to consider improved access to permanent surgical contraception is based on the results of two recent surveys taken in 1980 and 1982--the 1980 Egypt Baseline and the 1982 Egypt Follow Up Surveys on Family Life and Family Planning. Awareness of female sterilization in these two surveys increased from 34 to 57 percent and occurred in the absence of any change in its availability.<sup>1</sup> (Awareness of male sterilization is very low and does not show comparable change.)

Until recently there has been little national-level information available in Egypt about the status of contraceptive sterilization and even less on public perceptions of it.<sup>2</sup> This report describes the prevalence of and the differentials in awareness, knowledge, and use of voluntary

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<sup>1</sup>Female sterilizations are available in private hospitals after substantial screening has transpired and at substantial cost. The change reported here is notable in that no other change in awareness of any other contraceptive method is quite as substantial.

<sup>2</sup>A WHO study in Egypt (1972-76) on family formation (Omran and Standley, 1981) is exceptional in this regard. However, overall disapproval of female sterilization was high in this study, possibly for two reasons. One, the respondents were questioned on who should be sterilized (husband or wife) and most answered neither. Second, all respondents, including the 70 percent who had never heard of sterilization, were asked. In the 1980 Baseline survey, 55 percent of those aware of the method were willing to use it.

sterilization. It also attempts to assess the potential demand for permanent contraception and speculates about its potential impact on fertility. An underlying assumption of the study is that the often-cited social obstacles to government sponsorship of voluntary sterilization will not find strong public support in these data. We hypothesize that the observed differences in the degree of familiarity and approval of sterilization are largely a function of those social background variables which determine overall contraceptive knowledge. Such patterns of variation can be effectively addressed and modified with suitable and well-organized programs of contraceptive education.

#### SIGNIFICANCE

Contraceptive sterilization, outside Egypt, has grown to be the most popular form of family limitation in the world (Nortman, 1980; Klinger, 1981; Green, 1978; Bhinwandiwalla, 1978). Men and women have selected this alternative to less permanent means of family planning because of its convenience and cost expediency. Surgical contraceptive technology has benefitted from major advances in the delivery of services on an outpatient basis. Recent development of non-surgical permanent contraceptive methods holds great promise for their acceptability, and their use will be particularly enhanced as the methods become available through community-based distribution systems.

One significant finding in available studies on the socioeconomic determinants of contraceptive sterilization adoption is that there are no consistent ones (Presser, 1970, 1978; Green, 1978). However, in spite of the grassroots response to sterilization's availability, researchers persist in locating indicators of innovation along economic (Simmons, 1974), cultural (Scrimshaw, 1980; Fortier, 1974) and social psychological (David and

Friedman, 1978) lines. The degree to which social class advantages are relevant to the adoption experience may in fact be more a result of differential access to the information and availability of sterilization services as opposed to any innate inability to appreciate the method's technical features. For São Paulo state in Brazil Janowitz et al. (1980) report no education differences in the percent of eligible women who do not want more children and are interested in sterilization. Lack of information about sterilization, however, was a clear barrier to poorly educated women, and improving geographic and economic access would have increased its use. This finding is important because it implies that no predetermined level of socioeconomic welfare must be achieved before contraceptive sterilization will find a receptive audience. Public sponsorship of the method in Egypt could thus result in wide use both in urban and rural areas if there is extant demand for family limitation and adequate contraceptive information. It also suggests that the education process include the medical profession, legislative policymakers and the religious clergy to apprise them of the lack of strong public opposition to the method.

The recent experience in Costa Rica reported by Barrantes et al. (1983) is relevant here. They document a rebound in sterilization rates by 1980 following a short-term decline between 1976 and 1979 with the legislation of stringent guidelines for contraceptive sterilization. Costa Rican law previously had not explicitly allowed sterilization although the method has gained in popularity over the 20 years of its availability. Apparently upon finding its conventional access to effective fertility regulation restricted, public demand for family size control surpassed the political sector's ability to confine sterilization use. However, a necessary social condition

in the Costa Rican case was low-fertility norms. There is evidence of such declining fertility norms in metropolitan and urban areas of Egypt.

Religious conservatism on the sterilization issue is not limited to the Moslem faith. While the Catholic Church has no explicit prohibition of contraceptive sterilization, local clergy opposition to the method has only been dissipated because of the sweeping popularity and use of the method in regions such as Latin America and countries such as the United States and Mexico. Presser reports that strong church opposition in Puerto Rico in fact "served to educate the population about the nature and availability of the operation" (1978:31). Instituting similar change in the principled reasoning of Islamic conservatists will not be easy, but the experience of other developing countries implies it is not impossible. In this study we will be examining the degree to which religious behavior differentiates knowledge about voluntary sterilization.

There are four themes frequently raised in assessing the potential demand and need for contraceptive sterilization services:

- 1) the completion of childbearing at an early life cycle stage of the mother,
- 2) the role of husbands in family limitation decisions,
- 3) the health risks to mother and child associated with excess individual fertility, and
- 4) the perceived health risks of the sterilization procedure.

All four are important and critical issues in Egypt with social psychological underpinnings that have reinforced the conservative reaction to contraceptive sterilization. Three of the four directly concern the health status of the mother and thus may provide acceptable rationale by which to argue for public sanction and provision of sterilization services. Research which explicitly

tests the salience of these points for Egypt will be important for policy change.

Perhaps no other benefits of contraceptive sterilization are more widely documented and discussed than those of health and effective family limitation (Omran, 1980; Green, 1978; Viel, 1980; Westoff, 1980; Westoff et al., 1980) as they avert maternal and child mortality when parity and age run high and also the dependence on abortion. Viel (1980:56), long a proponent of contraceptive sterilization, writes:

If the logical conclusion is drawn that maternal mortality and gynecological illnesses increase with high multiparity, and to this is added the fact that a similar rise can be observed in infant mortality, the attempt to reduce multiparity is not just an aspect of individual medicine designed to protect from pregnancy those women suffering from specific illnesses. It is also a public health problem and protection should be extended to all women of fertile age. (author's emphasis)

It seems less necessary to cite all research support for these arguments as a large body of epidemiological statistics is available to document the mortality risks associated with excessive fertility. The unsuitability of non-permanent contraceptive means for limiting childbearing at a stage when ten to fifteen years of reproductive life remain is well recognized (Bhiwandiwalla, 1978; Brackett and Ravenholt, 1980; Viel, 1980). A WHO study in Egypt on family formation patterns and health interviewed 4,861 ever-married women in rural, urban and metropolitan areas between 1972 to 1976 (Omran and Standley, 1981). It found overwhelming recognition of the benefits of longer birth spacing and large-scale approval of family planning for maternal and child health reasons, especially by high-parity mothers.

The accommodation of another primary obstacle--the husband--whether his opposition is real or assumed, is also focussed in this and other studies. "Machismo" in Hispanic cultures has been identified as a significant

deterrent not only to female sterilization but also to vasectomy adoption (Presser, 1978; Scrimshaw, 1980). Fortier (1974) has stridently chastised the patriarchal system for creating unnecessary barriers to effective fertility regulation:

Men, not women . . . have the predominant voice in setting politics and laws governing abortion. . . . We . . . therefore assume that a powerful conscious motive, the fear of sexual freedom for women and a powerful unconscious motive underlies it. This unconscious motive may well be that pregnancy epitomizes men's potency in their own eyes. If they grant women the right to dispose of this proof of their potency, they may feel robbed of it and as such of their masculinity. (1974:22)

With more statistical grounding, Bhatia, Faruque and Chakraborty (1980) found that of 1975 women who decided against sterilization and who had first discussed it with someone other than their husbands, 95 percent subsequently sought their spouse's approval and 72 percent of them were then discouraged by their husbands. Religious reasons and uncertainty of the health effects of the operation formed the majority of the disapprovals. Janowitz et al. (1983) also note the husband's objections as a foremost reason for not pursuing an intended sterilization in a postpartum hospital follow-up of some 700 Honduran women.

While there is not an extensive body of research to draw upon with respect to the husband's role, as a behavioral factor, it is to be appreciated. The WHO study mentioned earlier did find that in response to questions regarding who should be sterilized, many women thought the wife should because the husband would refuse. Since Islamic culture is male-dominant, the present study provides an opportunity to observe the extent of sex differences regarding the potential status of contraceptive sterilization.

Fears and misperceptions about the side effects of sterilization are a final theme and characteristic in almost all situations of active birth control efforts. Perceived health risks constitute a significant deterrent to the use of sterilization in the Brazil, Bangladesh, and Honduran studies cited earlier. Analyses of the 1982 Follow Up Survey data (CAPMAS, et al; 1982) show that 22 percent did not know enough about the safety of the method to respond, but 17 percent felt female sterilization carried very harmful effects for the mother's health. The proportions are higher for male sterilization with 35 percent uninformed and 22 percent perceiving significant health risks. The perceived reliability of sterilization was also less than perfect; only 77 and 55 percent of the respondents replied that female and male sterilization methods respectively were very reliable for averting pregnancy. In general there is evidence that situations where access to contraceptive sterilization is severely constrained are characterized by prevailing rumors and misbeliefs.

There is substantive as well as policy value to measuring the importance of the four social and health issues supporting contraceptive sterilization. Do men and women perceive health risks associated with excessive pregnancy differently? Do men view sterilization less enthusiastically than women? Is sterilization seen as a reliable and safe operative procedure? And can sterilization meet a demand for permanent contraception from couples with completed families who still have ten or so years of potential childbearing to pass through without experiencing unwanted births? How relatively important are these points in influencing the level of awareness and willingness to use sterilization? These are all individually-oriented questions which do not attempt to deal with the broader environment of method availability (although for Egypt availability is an irrelevant

consideration). The analytical efforts are preliminary and seek to provide empirical support for improving contraceptive sterilization services using a large body of public opinions, not simply those of adopters. Thus the study responds to a prevailing call for research on the behavioral antecedents, especially the social and psychological components, of permanent contraceptive innovation (see Newman and Klein, 1978).

There are then three purposes directing this research: 1) to assess national need in Egypt for permanent surgical contraception based on demographic and personal health imperatives, 2) to provide substantive information regarding social psychological perspectives on sterilization and unmet demand for contraception, and 3) to fill a void in public opinion survey data for constructing a research base enabling policy change.

#### DATA

Although Egypt is fortunate in having the benefit of a number of national sample surveys on fertility and family planning (the most recent including the 1980 Egypt Fertility Survey of the World Fertility Survey program, and the 1980 and 1982 Rural Contraceptive Prevalence Surveys), most have not collected the needed information to examine the four issue areas noted above. All have assessed basic knowledge and use of sterilization but have not examined the differentials in detail nor obtained the requisite data to measure public opinion. The Baseline and Follow Up Survey data analyzed here aim at filling this gap and are recent enough to claim relevance.

A mass media campaign on population communication conducted by the State Information Service of Egypt (SIS) between 1980 and 1982 required that two national sample surveys be fielded to evaluate change in family planning awareness. The two surveys concentrated on such measurement but also collected substantial information about contraceptive behaviors.

## The 1980 Egypt Baseline Survey on Family Life and Family Planning

Interviewed 2,001 currently married men and women with age restrictions of 15 to 44 years placed on the women or on the wives of the sampled men. The survey was conducted by a team of junior faculty from Cairo University under the supervision of an American non-profit research group (the Social Development Center), with the sampling design constructed from the 1976 census results. Household enumeration was performed concurrently with sample selection, and interviews were collected between January and June 1980. The Baseline questionnaire included items on family size motivations, attitudes about population growth, misconceptions of contraception, religious behavior, sex preference of children, personal, spouse and social approval of family planning, contraceptive availability and mass media communication habits.

The 1982 Egypt Follow Up Survey on Family Life and Family Planning was conducted by the Population Studies and Research Centre of the Central Agency for Public Mobilisation and Statistics (CAPMAS) in collaboration with SIS. The same CAPMAS unit had been responsible for the 1980 Egypt Fertility Survey (EFS). Using the EFS sampling frame, CAPMAS drew a self-weighted probability sample of 5,298 dwellings obtaining completed interviews with 3,283 currently married men and women (with the same age restrictions for women as in the Baseline). The Baseline questionnaire was modified with three quarters of the original questions retained, new ones added, and the order of questioning re-arranged. Data collection for the Follow Up Survey took place between December 1981 and March 1982.

Unfortunately, for the purposes of this study, the four attitude items on sterilization previously used in the Baseline were excluded in the Follow Up. Although other measurements of female and male sterilization behaviors are available from the two surveys, the exclusion of the attitudes items is a

particular loss in view of an apparent and marked increase over the two years in awareness of sterilization. Examination of these items is then limited to the 1980 data base.

In some quarters, there has been criticism over the quality of the 1980 survey. Comparisons of the demographic and socioeconomic composition of the 1980 and 1982 surveys, the 1980 rural Contraceptive Prevalence Survey, and the 1976 census indicates minor differences. The sampling deficiencies pertain to non-systematic selection of rural dwellings by neglecting those scattered outside the hamlets. A bias toward middle-class responses may exist, which would tend to overstate contraceptive prevalence. However, detailed comparisons made in line with this sterilization study do not support the contention that the 1980 survey quality was significantly damaged. Assuming that the 1982 survey is the more accurate one, the main difference lies in the selection of younger respondents with smaller families. To the extent that their dwellings are more conveniently accessed and clustered near town centers, the 1980 survey results would reflect some middle-class bias. Because overall awareness of sterilization methods in 1980 was low, this sampling error is not likely to affect our results significantly. However, the possibility should be borne in mind as we proceed through the findings.

## ANALYSIS RESULTS

### KNOWLEDGE AND ATTITUDES

As seen earlier in Table 1, the level of knowledge about contraceptive sterilization in Egypt relative to those in other developing countries is moderate. However, for the Middle East Egypt's childbearing public is fairly aware particularly given the procedure's lack of availability and unsponsored

status. Table 2 and Figure 2 below confirm that knowledge of female sterilization is more widespread than that of male sterilization and that while there has apparently been no change in awareness of the latter, there has been an appreciable increase in the former. In 1980 two thirds of the childbearing population had no knowledge of the method while in 1982 only 43 percent were uninformed. While there evidently was no change in the proportion able to mention female sterilization spontaneously as a contraceptive method, the proportion recognizing it upon prompting did increase by almost 25 percentage points. In contrast, awareness of male sterilization is only found for 17 percent of the 1980 sample and 10 percent in the 1982 sample.<sup>3</sup>

What is interesting is that very little sex difference in responses is visible in the 1980 levels of knowledge of female sterilization whereas by 1982 there appears to be a marked increase in awareness of the method among currently married females. Thirteen percent more women than men are aware of the method overall but there is little difference in spontaneous reports or reports of actual use between men and women. While there is very little overall awareness of male sterilization as a contraceptive method, there is apparently somewhat greater ignorance of the method among women than men.<sup>4</sup>

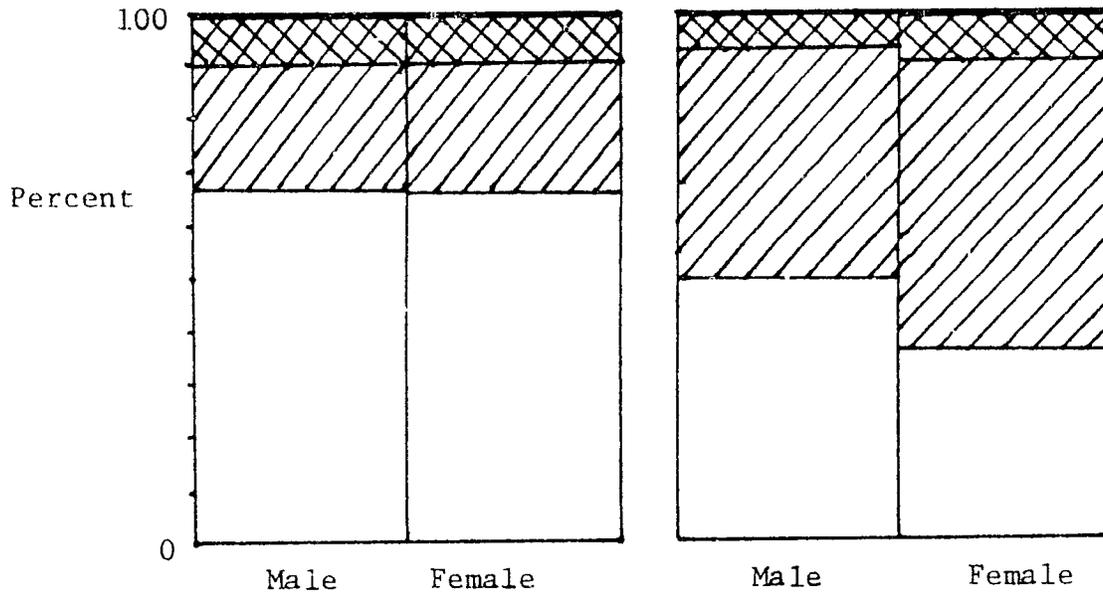
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<sup>3</sup>Only a few women in each survey claimed to have been sterilized. These were probably performed in private hospitals and in some cases obtained outside of Egypt. The cases are examined more closely in the report, but they represent less than one percent of the sample.

<sup>4</sup>Although some sampling deficiencies with the 1980 survey may explain the declining awareness of male sterilization by 1982, i.e., the over-representation of middle class respondents, this bias does not explain the increased awareness of female sterilization for the same time period. If biased, the 1980 awareness level of female sterilization should also be overstated, implying that the change by 1982 is even greater than evidenced. However, the 1980 Rural Contraceptive Prevalence Survey shows almost identical levels of awareness as the rural 1980 Baseline respondents. Until comparisons with other 1982 data become possible, the two levels are presumed to be real and the interim change substantial.

1980 Baseline

1982 Follow-Up



Source: Table 2

Level of Knowledge:



None



Prompted



Spontaneous



Used

Figure 2. Knowledge of Female Sterilization by Respondent's Sex: 1980 and 1982

TABLE 2

PERCENT DISTRIBUTION OF KNOWLEDGE OF FEMALE AND MALE CONTRACEPTIVE STERILIZATION METHODS  
BY SEX OF RESPONDENT: 1980 AND 1982

Level of Knowledge	1980				1982			
	Total	Male	Female	Total	Male	Female	Total	Female
<u>Female Sterilization</u>								
None	65.7	66.2	65.3	43.1	50.3	37.2		
Prompted <sup>a</sup>	23.7	23.5	25.0	47.2	41.5	51.8		
Spontaneous <sup>b</sup>	9.7	9.5	8.8	8.5	8.3	9.5		
Has used	0.9	0.8	0.9	1.2	0.9	1.5		
<u>Male Sterilization</u>								
None	82.9	77.2	89.0	90.2	87.1	92.7		
Prompted <sup>a</sup>	14.6	18.8	10.0	9.4	12.2	7.1		
Spontaneous <sup>b</sup>	2.5	4.0	1.0	0.3	0.6	0.1		
Has used	0.0	0.0	0.0	0.0	0.0	0.1		
(N)	(2001)	(1009)	(992)	(3282)	(1462)	(1820)		

a Recognizes method after prompting

b Mentions method spontaneously

Because of the overwhelming lack of information about male sterilization procedures in Egypt, the remainder of this study will focus only on the status and potential for female sterilization in Egypt.

Is there differential access to information about female sterilization in Egypt? We expect that the level of one's education would be an important factor, as might other variables such as occupation, social class and religiosity. The socioeconomic differences in knowledge are presented in Table 3 by respondent's sex and for both surveys. Significance levels of the  $\chi^2$  test for differences between male and female responses are given, too. There is a clear association between the degree of education and the degree of knowledge about female sterilization in both surveys, but the association is less pronounced for women in the 1982 survey. Over four-fifths of the illiterate men surveyed in 1980 were unaware of female contraceptive sterilization compared to two-thirds of them in 1982. About one third of the men with the highest level of education were unaware in 1980 against 17 percent in 1982.

Having some as opposed to no education appears to be important for women in acquiring information about female sterilization. Thereafter continued improvement in education did not increase their degree of knowledge. Having a primary education thus serves as a dividing point after which about 50 percent of the females sampled in 1980 and 70 percent in 1982 were able either to recognize the method upon prompting or to mention it spontaneously. For men, on the other hand, knowledge increased monotonically with education. Interestingly, while illiterate men and women were equally unaware of female sterilization in 1980, in 1982 almost 20 percent more women had knowledge of the method. Thus, although education differentiates knowledge of

TABLE 3

SOCIOECONOMIC DIFFERENTIALS IN KNOWLEDGE OF FEMALE STERILIZATION  
BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	1980						1982					
	Male (n=1009)			Female (n=992)			Male (n=1462)			Female (n=1820)		
	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>
TOTAL	66.2	23.5	10.3	65.3	25.0	9.7	50.1	41.8	8.1	37.0	51.9	11.0
<u>Respondent Education</u>												
None	83.8	12.1	4.1	78.1	14.9	7.0	67.0	28.1	4.9	48.6	42.4	9.0
Less than primary	71.9	18.0	10.2	72.4	19.6	8.0	47.3	43.9	8.7	27.9	58.4	13.3
Completed primary	69.1	18.9	11.9	60.0	28.8	11.3	38.1	48.4	13.5	15.0	73.8	11.3
Some secondary	60.0	30.8	9.2	38.3	50.0	11.7	26.5	63.2	10.3	15.8	77.2	7.1
Completed secondary	51.2	33.7	15.1	41.7	47.0	11.3	24.7	66.7	8.7	14.2	72.5	13.3
Some college	33.9	50.0	16.1	16.2	48.6	35.1	17.1	61.4	21.4	5.6	69.4	25.0
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01	
<u>Occupation</u>												
Non-manual	44.2	39.1	16.7	34.2	43.0	22.8	39.3	49.9	10.8	22.1	62.1	15.8
Manual	70.2	20.4	9.1	48.8	34.1	17.1	49.4	43.6	7.0	19.4	69.4	11.1
Farm	79.5	14.7	5.8	83.9	11.3	4.8	62.6	30.9	6.5	46.7	44.6	8.7
Not working	64.0	20.0	16.0	65.1	25.8	9.1	--	--	--	38.0	51.3	10.7
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01	
<u>Socioeconomic Rating<sup>b</sup></u>												
Affluent	48.5	33.3	18.2	39.4	44.7	16.0	28.7	64.4	6.8	25.4	64.9	9.7
Upper middle	59.4	29.8	10.8	61.8	28.9	9.3	39.4	49.6	11.1	36.7	51.8	11.5
Middle	72.3	17.9	8.7	74.7	14.7	10.6	52.2	40.1	7.6	36.7	52.4	10.9
Poor	81.1	12.6	6.3	75.1	19.4	5.5	73.7	23.5	2.8	48.6	41.7	3.0
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01	
<u>Religiosity<sup>c</sup></u>												
Level 1	78.2	12.6	9.3	78.7	15.0	6.3	58.8	34.3	6.9	42.9	47.6	9.5
Level 2	66.7	30.8	2.6	52.5	34.9	12.6	42.8	49.8	7.4	28.1	58.7	13.2
Level 3	59.0	30.8	10.2	--	--	--	58.1	32.8	5.1	--	--	--
Level 4	67.5	21.3	11.2	--	--	--	44.3	46.6	9.1	--	--	--
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01	
<u>FP Against Religion</u>												
No conflict	63.3	25.3	11.4	62.2	26.9	10.9	46.9	45.1	8.0	34.1	53.9	12.0
Somewhat against	69.9	21.5	8.6	67.5	14.6	7.9	41.4	45.9	12.7	36.1	53.8	10.1
Definitely against	64.2	26.1	9.2	67.1	22.0	9.9	55.9	37.6	6.5	28.6	57.7	13.7
Don't know	77.4	14.8	7.8	75.2	19.5	5.3	78.5	16.6	4.9	74.5	24.2	1.2
$\chi^2$ significance		ns			ns			p<.01			p<.01	

Notes: <sup>a</sup>Includes those who have used<sup>b</sup>As perceived by interviewer; rating not available for 22% of sample<sup>c</sup>Level index increases with religiosity; only 2 levels constructed for females.  
-- less than 25 cases

sterilization, other events or developments may have increased awareness during this period among both sexes, but particularly among women.

Controlled by occupation, the degree of awareness of female sterilization is highest among those engaged in non-manual occupations and lowest for farm occupations. Specifically, the largest proportions of those able to mention female sterilization spontaneously as a contraceptive method are found among those men and women in non-manual jobs in both surveys. Similarly the highest proportions of those who had never heard of the method are to be found among farming men in both surveys and farming women in 1980. (The majority of Egyptian women do not work outside the home; effectively the relation between knowledge and occupation for them is the distribution of knowledge across all women. However if they do work, knowledge does vary with occupation.)

Social class differences operate similarly with education. The interviewer's evaluation of the respondent's socioeconomic standing, as rough an approximation as it may be and allowing for temporal variation between the two surveys, does differentiate sterilization knowledge. Again overall female awareness of voluntary female sterilization in 1982 remains substantial in spite of changes in socioeconomic standing.

We have attempted to gauge religious behavior in both surveys because it portends to occupy an important ideological role in any future policymaking on permanent surgical contraception in Egypt. However, the final measures are not comparable across sexes because religious prescriptions for praying and mosque visitation are very different for men versus women. In addition the 1980 survey questioned respondents about their daily praying routine while the 1982 survey inquired about their regular praying routine. Thus the 1982 survey allows a wider margin for complying with prayer requirements.

With this in mind, we have constructed religiosity measures that are sex-specific. Males, who preferably should pray five times a day and visit the mosque daily, are scored from one to four where level four represents the most faithful compliance with these prescriptions. Level one essentially implies neither regular (or daily) praying nor frequent mosque visitation. For women the distinction is between regular and irregular praying (or daily and non-daily) since mosque visitation is more the exception than the rule.<sup>5</sup>

In the last panel of Table 3 we see that in both surveys religiosity did not directly affect men's awareness of female sterilization. In 1980 in fact a higher percentage of men who were least regulated in their praying and mosque visitation habits were unaware of the method while those most behaviorally religious were somewhat more informed. Likewise no clear association appears for men in the 1982 survey. Women who prayed regularly were more likely to report the sterilization method spontaneously and more likely to recognize the method after prompting in both surveys. Thus on the basis of these measures, there does not seem to be any clear cut relationship between religious behavior and knowledge of female sterilization.

One might expect fundamental Islamic convictions to deter acceptance of sterilization as an appropriate contraceptive. In this case, religious behaviors do not seem to vary awareness of the method. However, because these are behaviors and not attitudes and awareness rather than acceptance, of the measures, the relationship may still be quite viable. Another measure shown in the table is based on whether the respondent felt that there was any religious proscription to the use of family planning.

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<sup>5</sup> Moslem women, whose freedom of movement is confined in many ways, are not required to visit the mosque daily. In addition mosques are to maintain separate devotion areas for the sexes. Since many mosques, especially rural ones, do not have these facilities, female visitation is infrequent.

In general a strong majority of the respondents in either survey found no conflict between their religious beliefs and family planning. However, the association between this attitude and knowledge of female sterilization statistically insignificant in 1980 is significant in 1982. Among male respondents in 1982, 56 percent who felt family planning was definitely against their religious beliefs reported having no knowledge of female sterilization against 47 percent who saw no conflict. Among female respondents the proportion with no knowledge of sterilization was higher among those seeing no conflict than among those finding conflict between family planning and their religion. Among both men and women, the few unable to give an opinion were also clearly unaware of contraceptive sterilization. In sum there is no strong public opinion evidence supporting a religious proscription of family planning or explicitly the use of voluntary female sterilizations for birth limitation. At best the results here are mixed.

As a final note, there are significant sex differences in the reporting of female sterilization knowledge. Since these men are effectively husbands and the women wives, the lesser knowledge of husbands about female sterilization may present a significant obstacle to the wife's acceptance. As mentioned earlier, other studies have noted that women assume husbands will object to sterilization. Given their apparent lack of information, the husbands probably do. Differences in socioeconomic background also affect men's degree of knowledge about the method more than women's. This suggests quite seriously that while voluntary female sterilization might find a ready audience among women, acceptance by their spouses could require inputs of a type other than contraceptive information to alter their convictions.

Demographic differences in knowledge of female sterilization in terms of age, current parity, region and desire for more children are given in

Table 4. Neither age nor current family size appear to differentiate knowledge distinctively among men or women. Age differences are significant; however, the pattern is not always direct, except for females in the 1982 survey. Regional differences are in the expected direction with metropolitan residents exhibiting the most awareness and upper rural residents the least. Again the 1982 sex differences appear.

One expects that motivation to terminate childbearing is related to awareness of a method enabling this objective. Such is the case in both years for both sexes except among men in 1980. The relationship for women is much stronger in 1982 than 1980, when 70 percent of the women who wanted no more children were aware of the method compared to half of those who wanted more. This association is examined further in later tables.

From Tables 3 and 4, it appears that awareness of female sterilization varies more with socioeconomic background, perhaps because these factors differentiate access to method information, than with life cycle descriptors such as age and parity. Certainly interest in family limitation, which spans the middle and older ages and the moderate and larger family sizes, is related to awareness of sterilization.

Past contraceptive experience may also be related to knowledge of sterilization, particularly as it might affect exposure to family planning information. In Table 5 ever use, use of modern methods, and first use in the past five years are examined for their differentiating effects. The latter variable is available only from the 1982 survey and does not significantly differentiate knowledge. Ever use of family planning does increase awareness in both surveys. In 1980 only about 55 percent of the past users were not familiar with the sterilization method compared with over three-quarters of those who had never used. Little sex difference is seen.

TABLE 4

DEMOGRAPHIC DIFFERENTIALS IN KNOWLEDGE OF FEMALE STERILIZATION  
BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	1980				1982							
	Male (n=1009)		Female (n=992)		Male (n=1462)		Female (n=1820)					
	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>				
TOTAL	66.2	23.5	10.3	65.3	25.0	9.7	50.1	41.8	8.1	37.0	51.9	11.0
<u>Respondent's Age</u>												
15-19 yrs	--	--	--	66.7	26.7	6.7	--	--	--	53.1	42.1	4.8
20-24 yrs	70.0	20.0	10.0	78.4	15.1	6.5	55.6	38.1	6.3	44.9	47.7	7.4
25-29 yrs	67.0	24.2	8.8	61.3	27.6	11.1	53.1	40.8	6.1	36.6	52.8	10.6
30-34 yrs	57.0	32.3	10.8	60.4	29.5	10.1	50.0	41.1	8.9	30.0	58.6	11.4
35-39 yrs	66.5	22.7	10.8	60.8	27.0	12.2	44.9	42.4	12.7	31.9	52.9	15.3
40-44 yrs	64.7	22.8	12.6	68.1	25.5	6.4	45.2	48.1	6.6	35.1	50.2	14.8
45-49 yrs	72.4	20.7	6.9	--	--	--	42.5	49.3	8.2	--	--	--
50 yrs or more	72.6	17.8	9.6	--	--	--	62.5	31.3	6.3	--	--	--
$\chi^2$ significance		n.s.			p<.05			p<.01				p<.01
<u>Number of Living Children</u>												
0	67.4	21.7	10.9	68.4	25.3	6.3	45.3	49.1	5.7	46.9	41.8	11.3
1	61.1	26.2	12.7	67.1	22.6	10.3	53.6	39.6	6.8	40.2	51.6	8.1
2	58.8	30.5	10.7	68.4	22.5	9.1	45.0	45.5	9.6	36.4	55.1	8.4
3	57.6	31.6	10.8	59.1	30.7	10.2	51.0	37.0	12.1	34.9	54.4	10.7
4	68.8	22.5	8.8	62.7	28.0	9.3	48.9	41.7	9.4	33.7	54.3	12.0
5	84.0	11.8	4.2	62.6	25.3	12.1	49.2	45.8	5.0	29.4	56.4	14.1
6 or more	70.3	16.9	12.7	60.3	20.4	10.3	55.5	36.7	7.8	37.7	48.7	13.5
$\chi^2$ significance		p<.01			n.s.			n.s.				p<.01
<u>Region of Residence</u>												
Metropolitan	61.2	29.2	9.6	52.6	34.7	12.7	36.8	52.6	10.6	16.4	73.4	10.3
Lower urban	50.0	33.0	17.0	38.6	46.5	14.9	44.3	46.1	9.6	27.4	59.9	12.7
Lower rural	72.1	17.2	10.7	71.9	20.8	7.3	48.6	43.2	8.2	32.4	54.0	13.5
Upper urban	59.8	27.1	13.1	62.9	20.0	17.1	47.3	40.5	11.2	31.2	51.3	17.6
Upper rural	73.4	20.3	6.2	81.6	14.2	4.2	71.3	25.7	3.0	68.2	27.2	4.6
$\chi^2$ significance		p<.01			p<.01			p<.01				p<.01
<u>Desire for More Children</u>												
Yes	68.9	21.2	10.0	72.5	19.6	7.8	55.8	37.6	6.6	50.1	42.5	7.4
No	64.7	24.8	10.4	61.2	28.1	10.7	46.9	44.0	9.1	29.7	57.3	13.0
$\chi^2$ significance		n.s.			p<.01			p<.01				p<.01

TABLE 5

CONTRACEPTIVE BEHAVIOR DIFFERENTIALS IN KNOWLEDGE OF FEMALE STERILIZATION  
BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	1980				1982								
	Male (n=1009)		Female (n=992)		Male (n=1462)		Female (n=1820)						
	None Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None	None Prompted Spontan <sup>a</sup>	None	Prompted Spontan <sup>a</sup>	None Prompted Spontan <sup>a</sup>					
TOTAL	66.2	23.5	10.3	65.3	25.0	9.7	50.1	41.8	8.1	37.0	51.9	11.0	
Ever Use of FP													
Yes	57.5	30.3	11.2	52.8	34.0	13.2	38.9	50.6	10.4	21.7	64.2	14.2	
No	75.3	16.4	8.3	79.3	15.0	5.7	61.1	33.0	5.9	53.8	38.6	7.6	
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01		
Number of modern methods ever used													
Never used FP	75.3	16.4	8.3	79.3	15.0	5.8	61.1	33.0	5.9	53.8	38.6	7.6	
No modern	--	--	--	--	--	--	55.1	40.8	4.1	44.7	51.1	4.3	
One	61.1	27.7	11.2	60.6	26.8	12.7	43.2	47.8	8.9	23.3	61.4	15.3	
Two	49.5	35.1	15.4	46.3	42.5	11.2	27.2	58.2	14.6	14.2	71.7	14.2	
Three plus	41.4	48.3	10.3	14.0	65.1	20.9	24.4	56.1	19.5	9.2	75.0	15.8	
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01		
First FP use in past 5 years <sup>b</sup>													
Yes	--	--	--	n.a.	--	--	42.5	47.0	10.5	19.8	68.2	12.0	
No	--	--	--	n.a.	--	--	37.8	51.8	10.4	22.9	62.5	14.6	
$\chi^2$ significance								n.s.			n.s.		

n.a. not available

-- less than 25 cases

<sup>a</sup> includes those who have used  
<sup>b</sup> of ever users only

In 1982 39 percent of the male and 22 percent of the female past users had not heard of female sterilization compared to 61 and 54 percent of the male and female never users respectively. Thus previous contraception enables awareness and sex differences have appeared as awareness has increased.

Awareness also increases with trial of modern contraception in both surveys. The differences range from about 60 percent unaware of sterilization by users of only one modern method to 40 percent among users of three or more modern methods. In 1982 the range is from about 33 to 15 percent respectively, again with sex differences altering this picture noticeably.

It should be mentioned that spontaneous reporting of female sterilization, the highest level of familiarity measured here, rarely rises above 15 percent and achieves this level usually among older, higher parity and contraceptively experienced women. Only among highly educated women (a minority group) does spontaneous reporting reach levels appreciably higher than 20 percent. It should also be recalled that the nonsanctioned status of the method might suppress spontaneous reporting since its prevalence does not change much between the two surveys in spite of the dramatic increase in prompted awareness.

Our expectation has been that influences on knowledge of sterilization originate more from variables that differentiate access to information than from the ability to appreciate the method's benefits; this appears supported by the data. Knowledge of the method is responsive to socioeconomic differences but also to differences in motivation to limit fertility and past contraceptive behaviors. Other studies have shown that contraceptive need based on the desire for no further childbearing is widespread among the childbearing public suggesting that awareness of sterilization is not

necessarily limited to those middle and upper class couples who have innovated in the past. Although awareness is the lowest among the poor and Upper rural residents, their desire to limit family size is equally strong in comparison with other subgroups in the population. Thus, an underlying implication of these patterns in knowledge differentials is that any effort to improve sterilization's availability must be enhanced with a strong contraceptive information program. It is also worth noting that the potential obstacle of religious opposition has not materialized empirically. At least at the grassroots level, familiarity with female sterilization is not bounded by religious behavior.

#### Perceptions of Safety and Reliability

This section focusses on reliability and safety perceptions of those who have heard of female sterilization as a contraceptive method in 1980 and 1982. Most perceive the procedure to be both safe to the woman's health and reliable in preventing pregnancy. Table 6 shows that overall about one half (51 percent in 1980 and 49 percent in 1981) felt the procedure was safe and about three-quarters (70 percent in 1980 and 77 percent in 1982) felt it was reliable. In both years as well, reported levels of safety and reliability by female respondents were higher than for males. A substantial proportion in each year also reported not knowing how safe or reliable the method was.

There appears to be an increasing trend in the perception of the method's reliability judging both from the overall gain in reliable as well as decline in "don't know" responses. A smaller proportion uninformed of sterilization's safety appears in 1982 as versus 1980, but there is no comparable gain in reported safety. In fact while 46 percent of the male respondents in 1980

TABLE 6

PERCENT DISTRIBUTION OF PERCEPTIONS OF STERILIZATION'S SAFETY  
AND RELIABILITY AMONG RESPONDENTS AWARE OF THE METHOD BY SEX:  
EGYPT 1980 AND 1982

Perception	1980			1982		
	Total	Male	Female	Total	Male	Female
(N)	(667)	(330)	(337)	(1868)	(727)	(1141)
<u>Total</u>	100	100	100	100	100	100
<u>Safety</u>						
Not harmful at all	51	46	57	49	36	57
Somewhat harmful	6	6	6	12	15	10
Very harmful	8	8	7	17	21	15
Don't know	35	40	30	22	28	18
<u>Reliability</u>						
Reliable	70	63	77	77	66	84
Reliable to some extent	4	5	3	4	7	2
Not reliable at all	1	1	1	3	3	3
Don't know	25	32	19	16	24	10

felt the procedure involved few health risks, in 1982 only 36 percent responded accordingly.

This decline in perceived safety can be attributed in large part to different question wording used in 1982, which unfortunately was not detected until after the survey. In the course of translation into Arabic, the questionnaire asked how harmful (as opposed to how safe) for a person's health it was to use female sterilization. The inadvertent stress on harmful effects has in all probability produced the lower perception of the method's safety. Assuming there has been an induced bias, we believe that had the question been phrased similarly with 1980, a noticeable gain in perceived safety would have been detected. Also note that female responses held steady at 57 percent and there was a decline in "don't know" answers.

Even accounting for measurement difference, the survey results still indicate that the medically documented, near-perfect reliability and minimal health risks associated with the contraceptive sterilization procedure are not widely known in Egypt, even among those familiar with the method. The method is considered more reliable than it is safe, and men are less informed than women. In sum, the general perceptions are not fully optimal.

Tables 7 through 9 examine the socioeconomic, demographic and contraceptive behavior differentials in the perceived levels of sterilization's reliability and safety for 1980 and 1982. There is a surprising lack of outstanding and significant differentiation in perceptions of safety and reliability by any of the variables shown for either year. Socioeconomic variation in perceived reliability by males in 1980 is particularly absent although some marginally significant variation is found by occupation, social class and religiosity in 1982. Female perceptions of sterilization's reliability are similarly uniform regardless of socioeconomic background except perhaps when varied by education in 1982.

TABLE 7

SOCIOECONOMIC DIFFERENTIALS IN PERCEIVED RELIABILITY AND SAFETY  
OF FEMALE STERILIZATION BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	Percent Reporting Sterilization Is							
	Reliable				Safe			
	1980		1982		1980		1982	
	Male	Female	Male	Female	Male	Female	Male	Female
<u>Total</u>	62.7	76.5	72.3	86.3	45.6	57.2	36.0	57.2
<u>Respondent Education</u>								
None	68.9	82.6	74.0	83.4	57.5	56.0	39.7	57.0
Less than primary	62.8	77.3	70.4	87.8	44.4	61.3	30.9	58.0
Completed primary	63.9	69.9	76.9	92.6	52.1	47.6	48.1	54.4
Some secondary	61.5	61.1	72.5	97.9	53.9	44.4	31.4	79.2
Completed secondary	65.1	80.3	70.0	85.4	42.6	67.7	31.9	50.5
Some college	55.5	80.7	70.6	91.2	32.4	67.7	38.3	47.1
$\chi^2$ significance	ns	ns	ns	p<.05	ns	ns	ns	p<.01
<u>Occupation of Husband</u>								
Nonmanual	60.3	80.7	69.4	87.5	37.6	62.3	34.0	59.3
Manual	65.6	71.9	80.1	86.8	49.6	52.5	42.1	53.6
Farm	60.4	79.6	68.6	84.7	49.2	60.0	32.8	58.7
$\chi^2$ significance	ns	ns	p<.05	ns	p<.01	ns	p<.05	ns
<u>Socioeconomic Rating<sup>a</sup></u>								
Affluent	51.6	71.9	75.4	92.7	36.4	57.9	37.1	63.0
Upper middle	59.4	74.6	75.8	85.9	39.4	61.7	36.7	58.1
Middle	56.0	78.6	64.8	83.3	53.8	36.6	34.4	56.6
Poor	75.8	73.4	82.2	90.3	57.2	53.1	36.8	49.3
$\chi^2$ significance	ns	ns	p<.05	ns	ns	p<.01	p<.01	ns
<u>Religiosity<sup>b</sup></u>								
Level 0	65.5	72.4	75.3	87.4	43.2	49.2	25.6	53.7
Level 1	52.9	79.5	71.1	86.8	39.3	50.0	38.0	58.1
Level 2	66.4	78.2	72.9	85.6	50.4	62.5	36.6	57.0
Level 3	66.7	72.1	--	--	50.0	65.1	--	--
$\chi^2$ significance	ns	ns	p<.05	ns	p<.01	ns	p<.01	ns

<sup>a</sup>As perceived by interviewer; rating not available for 22 percent of sample

<sup>b</sup>Level represents lessening religious opposition to family planning, i.e. highest score means respondent finds no religious opposition to family planning and is moderately (or weakly) religious

TABLE 8

DEMOGRAPHIC DIFFERENTIALS IN PERCEIVED RELIABILITY AND SAFETY  
OF FEMALE STERILIZATION BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	Percent Reporting Sterilization Is							
	Reliable				Safe			
	1980		1982		1980		1982	
	Male	Female	Male	Female	Male	Female	Male	Female
<u>Total</u>	62.7	76.5	72.3	86.3	45.6	57.2	36.0	57.2
<u>Respondent's Age</u>								
15-19 years	--	--	--	74.3	--	--	--	56.8
20-24 years	--	64.2	81.5	84.2	--	42.8	44.4	50.8
25-29 years	69.0	84.8	78.5	85.6	37.9	60.0	36.2	53.9
30-34 years	61.6	69.8	72.4	88.5	51.9	51.2	33.6	59.1
35-39 years	69.4	80.4	72.9	85.9	40.6	65.2	41.9	58.4
40-44 years	62.2	--	66.7	92.3	48.0	--	34.3	67.5
45-49 years	56.3	na	75.5	na	37.5	na	35.0	na
50 years or more	64.1	na	66.0	na	53.9	na	32.6	na
$\chi^2$ significance	p<.05	p<.05	ns	ns	ns	ns	ns	ns
<u>Number of Living Children</u>								
0	56.7	65.4	76.5	84.3	32.1	60.0	36.0	52.8
1	57.4	78.0	68.2	84.4	36.8	57.1	34.1	57.9
2	64.8	68.9	72.0	88.8	50.7	39.7	27.4	53.7
3	60.0	83.1	69.6	85.9	47.7	61.9	39.8	54.1
4	63.2	79.6	77.9	85.9	42.9	66.1	39.5	63.1
5	--	70.5	73.9	87.8	--	58.8	45.2	61.4
6 or more	64.0	83.3	68.0	86.6	54.9	59.6	32.0	59.3
$\chi^2$ significance	ns	p<.01	ns	ns	ns	ns	ns	ns
<u>Region of Residence</u>								
Metropolitan	78.3	74.3	71.0	90.9	47.6	52.5	45.5	50.2
Lower urban	58.1	76.1	77.0	89.7	41.1	59.0	24.2	67.7
Lower rural	62.8	83.9	72.5	82.6	48.2	57.9	33.0	63.5
Upper urban	62.8	76.3	71.4	88.3	47.6	63.2	41.4	54.0
Upper rural	58.1	68.2	71.1	82.0	40.7	58.1	34.5	47.5
$\chi^2$ significance	p<.05	ns	ns	p<.01	ns	ns	p<.01	p<.01
<u>Desire for More Children</u>								
Yes	60.3	71.1	72.7	83.3	35.7	54.6	35.4	54.5
No	64.0	78.8	72.0	87.6	50.7	58.4	36.2	58.5
$\chi^2$ significance	ns	p<.05	ns	ns	p<.01	ns	p<.05	ns

na = not applicable  
-- = less than 25 cases

TABLE 9

CONTRACEPTIVE BEHAVIOR DIFFERENTIALS IN PERCEIVED RELIABILITY AND SAFETY  
OF FEMALE STERILIZATION BY SEX OF RESPONDENT: 1980 AND 1982

Background Variable	Reliable				Safe			
	1980		1982		1980		1982	
	Male	Female	Male	Female	Male	Female	Male	Female
<u>Total</u>	62.7	76.5	72.3	86.3	45.6	57.2	36.0	57.2
<u>Ever Use of FP</u>								
Yes	64.2	77.1	71.9	88.8	46.3	58.0	37.0	58.9
No	60.2	75.5	72.8	81.8	44.5	55.3	34.3	54.1
$\chi^2$ significance	ns	ns	ns	p<.01	ns	ns	ns	ns
<u>Number of Modern Methods Ever Used</u>								
Never used FP	60.2	75.5	72.8	81.8	44.5	55.3	34.3	54.1
No modern	--	--	--	84.6	--	--	--	41.5
One	62.9	77.1	73.9	88.2	49.3	55.4	36.4	62.7
Two	70.9	77.8	64.9	90.5	38.7	62.5	37.7	57.4
Three or more	--	75.7	81.3	91.3	43.8	54.1	53.1	52.2
$\chi^2$ significance	ns	ns	ns	p<.01	ns	ns	ns	p<.05
<u>First FP Use in Past 5 Years<sup>a</sup></u>								
Yes	na	na	71.0	85.3	na	na	30.7	47.7
No	na	na	71.9	85.5	na	na	38.5	55.4
$\chi^2$ significance			ns	ns			ns	ns

<sup>a</sup>Includes those who have used

na = not available

-- = less than 25 cases

The minimal variation may be a function of the structural and demographic factors that influence awareness of sterilization and, hence, inclusion in this select subsample. These individuals may have been briefly exposed to some information about sterilization, allowing them to form preliminary attitudes toward its acceptability as a means of contraception. However, the lack of any strong variation by background can indicate that the learning process has not progressed further.

In particular, perceptions of the method's health risks are constant across socioeconomic groupings in both years with occupation and religiosity contributing some significant variation for males in both years and social class in 1982 only. Among females, the percentage reporting sterilization to be safe varies with social class only in 1980 and with education only in 1982. An especially interesting pattern, even if statistically insignificant for males, is the lower level of perceived safety found among better educated men and women in this year although their levels of reported reliability are similar with other education groups.

Demographic variation in the perceived reliability and safety of sterilization is not uniform by any of the four factors shown in Table 8. Respondent's age appears to influence reported reliability but not in a direct fashion and is significant only in 1980. Parity and the desire for more children seem to increase perceived reliability by female respondents significantly in 1980 but not in 1982. Further, regional variation is significant only among males in 1980 and females in 1982 although the percentage differences are not strong. Perceptions of sterilization's safety find no significant variation by age or parity for either sex in 1982. Region of residence does favor higher levels of reported safety among male respondents in the metropolitan area and urban Upper Egypt. However, the

highest safety levels for females is in Lower Egypt at 68 and 64 percent for urban and rural areas respectively. Although statistically significant, the perceived safety by males who desire no more children is very close to the level for those who desire more.<sup>6</sup>

In Table 9 very little significant differentiation again is found except for variance in reliability perceptions of 1982 female respondents by past use of modern contraception. Ever as opposed to never users of family planning are more likely to report sterilization as a reliable method and the level increases with the number of modern methods tried. Perceived safety is also influenced accordingly by this last variable in 1982.

In the little socioeconomic, demographic or contraceptive behavior differentiation found in perceptions of reliability and safety among those familiar with the method, the strongest difference evidenced is that by respondent's sex. Particularly disparate perceptions between males and females can be found in 1982 by region of residence. Outside of rural Upper Egypt, females familiar with the method share similar levels of perceived safety, ranging from 50 to 68 percent, but males are particularly skeptical in Lower Egypt ranging between 24 and 33 percent. We are limited in this report in pursuing this anomaly to any great detail.<sup>7</sup> The gender gap does clearly suggest that spousal relations and communication on the matter of family limitation constitute an important area for study, and one particularly germane in decisions to terminate pregnancy risk.

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<sup>6</sup>It is worth recalling here that test statistic used in these tables (chi-square), while appropriate, is sensitive to sample size, i.e. larger samples will inflate the chi-square value and thus lower the alpha level.)

<sup>7</sup>We examined the education-sex-region specific levels in perceived safety and found males in Lower Egypt with incomplete primary schooling to be the most negative. There may be an interviewer effect associated with this select group.

In terms of whether familiarity of sterilization is affected by the perceived levels of safety and reliability, Table 10 indicates it is. Here the proportions who mention the method spontaneously are high if they perceive it as being safe or reliable. The relationship is noticeably stronger in 1980 than in 1982 although it is only statistically significant for each sex in the latter year. No difference in sex responses is visible except perhaps for perceived safety in 1980. Note, however, that the respondent base is smaller in 1980 than 1982. The diffusion of information about voluntary sterilization by the later year may have reached more of the mass public thereby attenuating the specialized flow that characterized the early group of informed persons. A positive association between perceived safety and reliability of and in-depth familiarity with the method, nonetheless is clear.

#### Role of the Husband

The sex differences in the responses seen thus far give substantial evidence that husbands and wives often do not share the same bases of contraceptive information and subsequently similar attitudes and motivations. Such behavioral disparity is likely to be only enhanced regarding the acceptability of contraceptive sterilizations. In this section, we proceed from the accumulated evidence that men are less informed than women about voluntary sterilization, that among those who recognize the method, men are less likely to perceive it as a reliable and safe procedure, but that both men and women express an equally strong interest in terminating childbearing, and ask: To what extent can spouse support for family planning influence sterilization awareness?

Three factors are used here to examine the spouse's role--whether the respondent has talked with his/her spouse about family planning, whether the

TABLE 10

AMONG RESPONDENTS WHO HAVE HEARD OF VOLUNTARY STERILIZATION  
 PERCENT WHO MENTION IT SPONTANEOUSLY BY REPORTED RELIABILITY  
 AND SAFETY OF PROCEDURE AND BY SEX AND SURVEY

Reliability/ Safety	1980		1982	
	Male	Female	Male	Female
(N)	(330)	(336)	(717)	(1141)
<u>Reliability</u>				
Reliable	35.7	31.8	17.6	19.0
Unreliable	--	--	--	10.5
Don't know	18.3	16.9	11.0	6.8
$\chi^2$ significance	ns	ns	p<.01	p<.01
<u>Safety</u>				
Safe	40.8	32.3	21.4	22.4
Not safe	26.5	17.8	15.1	9.9
Don't know	19.0	25.5	11.4	11.7
	p<.01	ns	p<.01	p<.01

-- = less than 25 cases

spouse approves of family planning for limiting family size, and spousal concurrence on desires for additional children. Table 11 relates these measures with knowledge of sterilization, testing the general hypothesis that spousal support for family planning will enhance awareness and knowledge of voluntary sterilization. The results confirm our expectations and more strongly in 1982 than 1980. They are also more marked for wives than for husbands. For example, in 1980 58 percent of the men who report talking with their wives about family planning report no knowledge of sterilization against 82 percent if they did not communicate with their wives. The relationship is similar for women in that year. However, in 1982 of the men who did not discuss family planning with their spouses, 68 percent are uninformed about sterilization against 41 percent who did. The respective non-awareness figures for wives who did not and did talk with their husbands are 60 and 29 percent.

Similarly if the spouse approved of using family planning for limiting births,<sup>8</sup> the level of familiarity of sterilization increased. For men in 1980 the percent who recognized the method after prompting was 27 given spouse approval compared to 9 given spouse disapproval; again similar levels are obtained for women. However, in 1982 among men whose wives approved of family planning for limiting the proportion recognizing was 48 percent versus 27 percent if wives were reported to disapprove. Conversely among wives reporting husband's approval, 59 percent recognized the sterilization method where only 33 percent recognized if husbands disapproved.

Concurrence on fertility preferences also enhanced awareness of sterilization. When both spouses wanted more children, a higher percentage of

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<sup>8</sup> Respondents were also asked about spouse approval of family planning for birthspacing.

TABLE 11

PERCENT DISTRIBUTION OF KNOWLEDGE OF FEMALE STERILIZATION BY MEASURES OF SPOUSE SUPPORT  
FOR FAMILY PLANNING AND SEX OF RESPONDENT: 1980 AND 1982

Measures of Spouse Support for FP	1980						1982									
	Male			Female			Male			Female						
	(N)	None	Prom <sup>1</sup>	Spon <sup>2</sup>	(N)	None	Prom	Spon	(N)	None	Prom	Spon				
<b>Total</b>	(1009)	66.2	23.5	10.3	(992)	65.3	25.0	9.7	(1462)	50.0	41.8	8.1	(1820)	37.0	51.9	11.0
<b>Has Talked with Spouse about FP</b>	(661)	58.1	29.3	12.6	(663)	58.2	31.2	10.6	(970)	41.3	48.8	9.9	(1316)	28.6	58.6	12.8
Yes	(339)	82.0	12.1	5.9	(327)	79.8	12.2	7.9	(481)	68.4	27.0	4.6	(494)	60.1	34.2	5.7
No																
$\chi^2$ significance							p<.01				p<.01				p<.01	
<b>Spouse Approves of FP for <u>Individual</u> Family Size</b>	(818)	62.2	26.5	11.2	(791)	61.8	28.1	10.1	(1122)	42.9	48.0	9.1	(1375)	28.4	58.9	12.7
Approves	(38)	73.7	21.1	5.3	(17)	--	--	--	(58)	84.5	12.1	3.4	(50)	50.0	34.0	16.0
Neutral	(88)	85.2	9.1	8.0	(82)	79.3	13.4	7.3	(118)	68.6	27.1	4.2	(139)	58.3	33.1	8.6
Disapproves	(60)	88.3	8.3	3.4	(101)	80.2	10.9	8.9	(155)	77.4	16.8	5.8	(250)	71.2	27.2	1.6
Don't know																
$\chi^2$ significance							p<.01				p<.01				p<.01	
<b>Husband-Wife Desire for <u>More Children</u></b>	(325)	68.3	22.5	9.2	(312)	73.4	18.3	8.3	(515)	55.0	38.6	6.4	(633)	50.4	41.7	7.9
Both want more	(606)	63.9	25.2	10.9	(571)	60.9	28.2	10.9	(875)	46.6	44.5	8.9	(1005)	28.2	58.3	13.5
Both want no more																
Respondent wants more, spouse no more	(38)	73.7	10.5	15.8	(45)	66.7	28.9	4.4	(28)	71.4	17.9	10.7	(33)	36.4	63.6	0.0
Respondent wants no more, spouse wants more	(35)	80.0	17.1	2.9	(63)	63.5	27.0	9.5	(31)	48.4	35.5	16.1	(123)	38.2	52.0	9.8
$\chi^2$ significance							ns				p<.05				p<.01	

1 prompted

2 spontaneous

respondents had never heard of female sterilization. In 1980 this relationship is significant for female respondents only but in 1982 is significant for both sexes. As an example, in the later survey among those wives who with their husbands wanted more children, half reported no knowledge of sterilization. However, if both husband and wife desired no further children, only about one-fourth had never heard of the method.

What is also interesting in this table is the level of sterilization knowledge when spouse fertility intentions are not concurrent. In this regard, 1982 results are more informative than 1980's. When wives do not wish further children, although their husbands do, they are more likely to be aware of the sterilization than husbands (male respondents) who wish no more children but feel their wives do. Among the proportionately fewer cases where the respondent desires more children but says the spouse does not, the level of sterilization awareness is clearly lower when the respondent is male rather than female. It is worth stressing, however, that the predominant class of fertility intentions is a concordant one--with both partners interested in ending childbearing. When both desire more, the demand largely stems from incomplete family formation.

Subsequent sections of this report will continue to show sex differences in responses that highlight the husband's role.

### Health Reasons

In this section attitudes about the health effects of excessive childbearing are examined to show the extent of interrelation with awareness of sterilization and spouse involvement in family planning. As elaborated in an earlier section, there is overwhelming medical and health evidence to support an expanded availability of contraceptive sterilization and avert the deleterious impact of excess fertility on maternal and child health. Child

mortality levels in Egypt although on the decline are among the highest in the developing world; infant mortality levels continue to be high as well. High-risk pregnancy conditions and birth complications jeopardize the mother and infant's welfare. Thus, high-parity women exposed to unwanted pregnancy can not safely insure the prenatal as well as antenatal health of their child. Elsewhere in the developing world, the use of voluntary surgical contraception has already made a major contribution toward lowering such health risks and safeguarding the mother's health and welfare of her living children. Similar benefits are implied for Egypt should voluntary sterilization be introduced.

To what extent does the Egypt childbearing public perceive such risks from excess childbearing and to what degree are the opinions of husbands different from wives? Table 12 shows that there is almost universal public sentiment that many children can harm a woman's health. In the 1980 survey only this and another question on births after woman's age 35 have been asked, but the 1982 survey goes on to ask about the number of pregnancies safe for the woman's health and the ideal age to end childbearing. Men in both surveys are divided in their opinion about bearing children after the mother's age 35; while women clearly perceive this risk by more than 2 to 1.

In 1982 over three-fifths of the women gave three or fewer pregnancies as a safe limit for maternal health compared to one-half of the men. Similarly with respect to the ideal age for a mother to end childbearing, men were evenly distributed over the ages through 40 whereas 46 percent of the women felt ages 30 or younger were optimum. It is not surprising that women who personally experience the physical burdens of reproduction are more cautious about childbearing at an older age. However, these risks are clearly not fully communicated to their husbands who, on the average, find it safe to bear four as opposed to three children, are less persuaded that childbearing after

TABLE 12

PERCENT DISTRIBUTIONS OF HEALTH REASONS TO AVOID EXCESS CHILDBEARING  
BY SEX OF RESPONDENT: EGYPT 1980 AND 1982

Health Reason	1980		1982	
	Male	Female	Male	Female
(N)	(1009)	(992)	(1462)	(1820)
<u>Total</u>	100	100	100	100
<u>Many Children Harmful to Woman's Health</u>				
Yes	94	98	96	97
No	6	2	4	3
<u>Number of Pregnancies Woman Can Have Without Harming Health</u>				
3 or less			47	59
4			25	20
5 to 7		na	19	13
8 or more			6	3
Don't know			4	6
<u>Harmful to Bear Children After Woman is 35 Years Old</u>				
Yes	52	70	49	68
No	43	27	51	32
Don't know	5	3	--	--
<u>Ideal Age for Woman To End Childbearing</u>				
30 years or less			27	46
31 to 35 years			27	20
36 to 40 years		na	27	13
Over 40 years			4	2
Don't know			15	20

na = not available

woman's age 35 is harmful, and permit until age 40 for potential motherhood.<sup>9</sup>

On the other hand, the encouraging aspect of these results is the strong opinion that excess fertility can be harmful. There was also little attitudinal support for having eight or more pregnancies or childbearing after age 40. Thus, these preferences can be taken, in conjunction with the empirically founded demand for ending childbearing, as a sound opinion base on which to explore the acceptability of voluntary surgical contraception.

Table 13 further confirms our hypothesis that concerns about the health risks of excess fertility do enhance awareness of female sterilization. We concentrate here on the more detailed measurements in the 1982 survey. Looking at the health risks of childbearing after mother's age 35, we see that 57 percent of the men who perceived no health risk had never heard of sterilization compared to 42 percent who perceived a risk. Women were more differentiated: if they viewed a risk, there were 31 percent uninformed about, 57 percent recognizing, and 12 percent mentioning sterilization against 46, 45 and 9 percent respectively if they did not view a risk. A similar pattern of differences emerges with the ideal age for ending childbearing where awareness declines as older ages are given and the female levels of awareness are higher than males'.

We also examine the 1982 covariation between spouse support and the health reasons for family planning in Table 14. The informative results again strengthen those shown earlier, i.e. that the husband occupies an important role in fertility regulation decisionmaking. Compared against the total percentages, having talked with one's spouse about family planning, or

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<sup>9</sup> While an upper limit of age 40 in the Western fertility pattern may not seem riskful, in developing countries initiation of childbearing generally occurs before age 20 delimiting a 20-year period of exposure.

TABLE 13

PERCENT DISTRIBUTION OF KNOWLEDGE OF FEMALE STERILIZATION BY HEALTH REASONS FOR FAMILY PLANNING  
AND SEX OF RESPONDENT: 1980 AND 1982

Excess Fertility Measure	1980						1982					
	Male			Female			Male			Female		
	None	Prom <sup>1</sup>	Spon <sup>2</sup>	None	Prom	Spon	None	Prom	Spon	None	Prom	Spon
Total	66.2	23.5	10.3	65.3	25.0	9.7	50.0	41.8	8.1	37.0	51.9	11.0
Many Children Harmful to a Woman's Health <sup>a</sup>												
Yes	65.1	24.5	10.5	64.4	25.7	9.9	48.7	42.9	8.4	35.5	53.2	11.3
No	78.9	14.0	7.0	92.6	7.4	0.0	83.3	13.3	3.3	65.0	31.7	3.3
$\chi^2$ significance		p<.01			p<.01			p<.01			p<.01	
Number of Pregnancies Woman Can Have Without Harming Health												
3 or less							41.2	49.0	9.8	28.6	58.1	13.3
4							46.8	46.0	7.2	40.8	52.4	6.8
5 or more						na	67.6	25.7	6.7	51.0	38.8	10.1
Depends or don't know							74.1	24.1	1.9	71.2	25.2	3.6
$\chi^2$ significance								p<.01			p<.01	
Harmful to Bear Children After Woman is 35 Years Old <sup>a</sup>												
Yes	63.8	25.6	10.6	63.7	26.3	10.0	42.1	49.0	9.0	31.1	56.5	12.4
No	68.2	21.5	10.3	66.9	23.3	9.8	57.0	35.2	7.8	45.8	45.2	9.0
$\chi^2$ significance		ns			ns			p<.01			p<.01	
Ideal Age for Woman to End Childbearing												
30 years or less							39.6	50.3	10.1	25.9	59.3	14.9
31 to 35 years							39.7	51.6	8.6	33.1	54.0	12.9
36 to 40 years							57.7	34.2	8.2	45.0	48.8	6.2
Over 40 years							65.1	31.7	3.2	42.0	52.6	5.3
Don't know						na	71.8	23.0	5.2	63.7	33.0	3.2
$\chi^2$ significance								p<.01			p<.01	

na = not available

<sup>a</sup>Don't know responses not included<sup>1</sup>prompted<sup>2</sup>Spontaneous

TABLE 14

HEALTH REASONS FOR FAMILY PLANNING BY SPOUSE SUPPORT AND RESPONDENT'S SEX: 1980 AND 1982

Spouse Support Variable/ Survey Year	Percent Reporting By Sex That:								
	Many children are harmful to health		Women can have three or fewer pregnancies without harming health		Pregnancy after age 35 is harmful to health		Woman should have last child by age 35		
	Male	Female	Male	Female	Male	Female	Male	Female	
<u>1980</u>									
Total	92.4	96.6			51.8	69.5			
Has talked with spouse about FP	97.0	97.9			56.8	72.4			
Spouse approves of FP for family limitation	95.1	98.0	na		54.6	70.8			na
Both husband and wife want no more children	95.2	98.3			57.1	72.7			
<u>1982</u>									
Total	95.9	96.6	47.0	58.5	49.1	67.9	54.2	66.0	
Has talked with spouse about FP	98.6	98.5	51.2	67.7	51.9	72.2	53.6	73.5	
Spouse approves of FP for family limitation	98.5	98.3	53.3	67.2	53.4	71.8	61.3	77.4	
Both husband and wife want no more children	98.2	98.4	50.1	66.2	51.4	70.9	56.9	72.3	

na = not available

perceiving the spouse's approval for family planning to limit family size, or having spousal concordance on ending childbearing all enhance the perception of health reasons for contraception. (The near universal level of agreement on the first measure limits the possible amount of covariation with other factors.) The percentage point gain in these excess fertility attitudes is greatest for female respondents indicating that their husbands directly figure into family design decisions.

#### Specific Attitudes towards Female Sterilization in 1980

We are able to pursue studying specific attitudes towards female sterilization with 1980 data. In this survey, respondents aware of female sterilization (330 men and 337 women) were asked how complicated they thought the operation was, what effect the procedure might have on the mother's health, whether sterilization was against their religion, and whether they would consider using it. We present the sex-specific responses, selected differentials, and their covariation with some of the rationales that have been discussed for extending the procedure's availability. A multivariate discriminant analysis of who would versus who would not consider using sterilization is calculated last.

While the 1980 level of sterilization awareness is not as high as 1982's and thus those who have heard of the method are socioeconomically selected, it is still of value to pursue their specific attitudes with these unique data. Given the small subsample, it is necessary to interpret these results with caution. It is unfortunate that comparable 1982 data are not available given that the findings thus far suggest substantial change in attitudes and very likely patterns different from those to be seen here would be obtained.

In looking at Table 15, it is worth noting at the outset that a significant percentage of respondents, although reporting awareness of

TABLE 15

PERCENT DISTRIBUTIONS OF ATTITUDES TOWARDS FEMALE STERILIZATION  
BY RESPONDENT'S SEX: 1980 BASELINE SURVEY

Sterilization Attitude <sup>a</sup>	Total <sup>b</sup>	Sex	
		Male	Female
(N)	(667)	(330)	(337)
<u>How Complicated Is Sterilization Procedure</u>			
Quick and simple	45.4	43.8	47.0
Long and complicated	26.1	23.1	28.9
Don't know	28.5	33.0	24.1
<u>Sterilization Procedure's Effect on Health</u>			
Harmful to health	13.8	12.4	15.1
Improves health	16.9	17.6	16.3
No effect	39.9	33.6	46.0
Don't know	29.4	36.4	22.6
<u>Sterilization Against Religion</u>			
Not against	65.5	57.6	73.3
Somewhat against	8.8	11.2	6.4
Definitely against	25.7	31.2	20.4
<u>Would Consider Using</u>			
Definitely yes	42.0	40.4	43.6
Possibly yes	13.5	14.4	12.7
Definitely no	44.4	45.3	43.6

<sup>a</sup>Exact question wordings are: Is female sterilization a quick, simple operation or is it a lengthy, complicated operation?; Is female sterilization harmful to a woman's health, does it improve her health, or is there no change in her health after sterilization?; Would it be against your religion for you (or your spouse) to have this operation once you have had all the children you will ever want?; Once you have had all the children you want and if this operation were available free, would you personally (would you advise your spouse to) ask for this operation if it were available at a good hospital or clinic?

<sup>b</sup>Among those aware of the method

sterilization, is unable to answer two questions regarding detailed knowledge of the procedure. Over one-quarter do not know how complicated sterilization is as an operation or whether it has any effect on the woman's health. Almost half do respond that the procedure is quick and simple, and two-fifths feel it has no health effect. About two-thirds do not find it in violation of their religious beliefs, and about two-fifths would consider using it. Overall, the perceptions of this subsample are quite favorable for the acceptability of sterilization. Still, one-quarter do find it definitely against their religion; and there is a definite polarity in responses regarding potential use, i.e. as many would not consider using it as would. Female respondents are less likely to see a religious conflict or find it harmful to their health; but they are as ambivalent as men in being potential users.

When background differences are controlled in Table 16, the picture is altered in interesting ways. Only woman's age significantly increases the perception that the sterilization procedure is quick and simple. However, socioeconomic background significantly influences attitude about health effects, perhaps because access to accurate information on sterilization often flows along social class lines. Education level, husbands with non-manual occupations, and urban residence increase perceptions of the procedure's safety significantly while age, parity and past family planning use do not. Religious conflict with its use is only a significant factor among males residing in various regions, in particular, urban Upper and metropolitan Egypt. Although women overwhelmingly find no religious obstacles to contraceptive sterilization, the observed differences by age and parity are significant.

An unexpected pattern of difference of statistical significance concerns the likelihood of use. The proportions who would definitely consider using

TABLE 16

SELECTED BACKGROUND DIFFERENTIALS IN ATTITUDES TOWARD FEMALE STERILIZATION  
BY RESPONDENT'S SEX: 1980 BASELINE SURVEY

Background Characteristic	Percent of Those Aware of Method Reporting That:							
	Procedure Is Quick, Simple		Procedure Has No Effect On Health		Procedure Is Not Against Religion		Would Definitely Use	
	Male	Female	Male	Female	Male	Female	Male	Female
<u>Education</u>								
None	50.0	47.4	29.8	39.6	71.7	69.1	66.0	52.7
Less than primary	40.0	43.2	25.7	31.1	60.6	79.1	47.1	45.5
Completed primary or more	43.2	47.7	35.5	52.6	54.5	74.0	34.6	39.0
$\chi^2$ significance <sup>a</sup>	ns	ns	ns	p<.01	ns	ns	p<.01	ns
<u>Husband Occupation</u>								
Nonmanual	43.1	47.9	35.3	58.5	54.4	74.8	25.2	35.2
Manual	45.5	43.8	35.0	37.1	52.5	74.8	44.3	45.6
Farm	44.8	51.9	20.0	42.6	71.2	66.7	64.4	63.0
$\chi^2$ significance	ns	ns	p<.01	p<.01	ns	ns	p<.01	p<.01
<u>Region of Residence</u>								
Metropolitan	41.6	53.1	41.3	52.0	43.6	73.2	21.3	30.3
Lower urban	45.5	44.1	41.8	59.4	69.2	76.5	41.8	39.1
Lower rural	50.6	41.7	27.0	34.9	77.0	75.3	69.3	52.4
Upper urban	46.5	50.0	32.6	47.4	34.9	69.4	11.9	50.0
Upper rural	32.8	44.2	27.4	32.6	55.0	66.7	42.6	59.5
$\chi^2$ significance	ns	ns	p<.01	p<.05	p<.01	ns	p<.01	p<.05
<u>Age</u>								
Under 25 years	31.3	36.7	--	35.5	66.7	61.7	31.3	40.0
25 to 34 years	47.6	45.8	38.0	48.8	59.4	73.9	46.3	49.7
35 to 44 years	45.9	54.8	27.9	47.6	60.3	78.8	37.0	35.9
45 years or more	37.1	na	35.7	na	47.8	na	39.7	na
$\chi^2$ significance	ns	p<.05	ns	ns	ns	p<.05	ns	ns
<u>Living Children</u>								
2 or less	42.5	45.9	36.0	46.7	55.9	70.7	32.9	37.3
3 or 4	46.4	44.0	27.7	50.8	55.9	69.9	43.2	46.4
5 or more	42.6	54.1	38.2	36.5	64.6	83.6	52.2	50.7
$\chi^2$ significance	ns	ns	ns	ns	ns	p<.05	ns	ns
<u>Ever Used Modern FP</u>								
No	45.5	44.2	32.5	46.4	53.7	72.9	40.0	55.2
Yes	42.8	48.1	34.3	45.8	60.1	73.7	40.6	38.9
$\chi^2$ significance	ns	ns	ns	ns	ns	ns	ns	p<.05

<sup>a</sup>Test of association between background characteristic and attitude responses separately for each sex; see Table 15 for response categories to attitude questions.

na = not applicable

-- = less than 25 cases

sterilization are higher among respondents who are uneducated, with farm-occupied husbands, or live in rural Lower Egypt (for men) and Upper Egypt (for women). No significant difference in potential use is found by age or parity. Past contraceptive use's association with willingness to consider sterilization is marginally significant for women; however, it shows greater likelihood of use by never as opposed to ever users. Thus, outstanding in these responses is the higher acceptability of sterilization by the lesser privileged respondents and the apparent reluctance to use by those with social means. This reversal to the conventional flow of modern ideas--from the elite down to the mass public--may identify the upper social class in Egypt as a cultural and religious stronghold. In light of these findings, it is even more unfortunate that 1982 data are absent.

Table 17 correlates these attitudes with perceptions regarding sterilization's reliability and safety, excess fertility attitudes, and extent of spouse support for family limitation as examined in earlier sections. A general comparison with the total levels on sterilization attitudes shows strong inter-attitudinal consistency but little covariance. Only perceptions of the method's reliability and safety visibly improve the favorability of sterilization attitudes among men. For instance, 52 percent of the men who find sterilization to be reliable in preventing pregnancy report it as an uncomplicated procedure compared to 43 percent overall. Likewise if viewed as safe, 68 percent of the males see no religious conflict versus 58 percent overall. Improvements in the female responses are less strong. It is surprising that more favorable responses in the four sterilization attitudes do not appear with respect to excess fertility and spouse support measures.

TABLE 17

ATTITUDES TOWARD FEMALE STERILIZATION BY PERCEPTIONS ABOUT PROCEDURE'S SAFETY  
AND RELIABILITY, HEALTH REASONS, AND SPOUSE SUPPORT FOR FAMILY PLANNING  
AND BY RESPONDENT'S SEX: 1980 BASELINE SURVEY

Perception Variable	Percent of Those Aware of Method <sup>a</sup> Reporting That:							
	Procedure Is Quick, Simple		Procedure Has No Effect On Health		Procedure Is Not Against Religion		Would Definitely Use	
	Male	Female	Male	Female	Male	Female	Male	Female
<u>Total</u>	43.8	47.0	33.6	46.0	57.6	73.3	40.4	43.6
<u>Reliability</u>								
Method is safe	56.6	62.1	50.0 <sup>b</sup>	58.3 <sup>b</sup>	67.6	82.6	52.7	52.1
Method is reliable	52.0	52.0	40.1	49.8	60.4	75.8	45.5	45.6
<u>Excess Fertility</u>								
Many children harmful to health	43.9	47.1	33.3	46.1	57.8	73.6	40.6	43.7
Harmful to bear children after mother age 35	43.2	46.1	31.2	42.3	58.5	71.8	40.0	42.1
<u>Spouse Support</u>								
Talked with spouse about FP	46.6	49.1	35.7	46.4	59.9	76.4	41.2	43.3
Spouse approves of FP for family limitation	45.3	48.5	33.9	47.0	59.7	76.1	42.5	45.0
Both husband and wife want no more children	46.4	50.7	35.2	49.1	59.8	75.9	41.7	41.5

<sup>a</sup>Number of male respondents aware of female sterilization = 330; number of female respondents aware of female sterilization = 337

<sup>b</sup>Although this essentially is a repeated measurement, a covariation appears

Possibly there is a subgroup of individuals responding to these questions uniformly and generating a high degree of attitudinal consistency.<sup>10</sup>

Discriminant Analysis of Willingness  
To Use Voluntary Female Sterilization in 1980

The polarized sentiment towards potential use of sterilization (42 percent would definitely use versus 44 percent who would not) suggests that a suitable multivariate model can be estimated with discriminant analysis. This procedure determines group membership (willing versus unwilling) using six variables--two attitudinal indices measuring favorable support for sterilization and spouse support for family size control, respondent's education, rural area of residence, agricultural occupation for husband, and sex of respondent (male). These factors have demonstrated their differentiating power on the attitude in question. The 14 percent of the cases who are less certain in their willingness to consider using sterilization are excluded from the analysis. Stepwise selection of the discriminating power of the variables, through a maximization of Rao's V,<sup>11</sup> is used. The minimum significance level of increase is set at 0.0, by which two additional factors of nonmanual occupations of husbands and residence in Upper Egypt have not been entered into the analysis.

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<sup>10</sup>We note a repeated measurement of perceived safety to health from sterilization in this table (footnoted b). When inquired within a context of other sterilization questions, the question measures lower perceived safety than when inquired in relation to other contraceptive methods.

<sup>11</sup>Rao's V measures the distance in function space between two groups. Maximizing its value in the stepwise selection of variables with discriminating power attempts to achieve the greatest separation between the groups. In large samples, the change in Rao's V has a chi square distribution with one degree of freedom such that each entered variable can be tested for its informational significance.

The two attitudinal indices are derived from the number of times a respondent replied "yes" or "agree" to a particular series of questions. In the case of sterilization attitudes, the respective answers of "quick and simple", "no health effect" and "not against religion" are counted for the first three questions given at the bottom of Table 15. In the case of spouse support, the pattern of answers screened are "talked with spouse about family planning", "spouse approves of family planning for limitation" and "both spouses desire no more children". Both indices then range in value from 0 to 3. Dichotomous (dummy) variables are established for farming occupations of the husbands/male respondents and respondent's sex if male. (Nonmanual occupations and residence in Upper Egypt are also in dummy form.)

The discriminant function derived from the six variables has an associated eigenvalue of .485, a canonical correlation of .571 and a statistically significant Wilks' lambda of .673, all of which indicate reasonably good discriminating power. Maximization of the Rao's V measure is chosen because it measures the relative contribution among variables to the largest overall separation between the groups (willing and unwilling to use sterilization). The percentage of grouped cases which are then correctly classified with the resulting function is 74.4, suggesting a highly acceptable discriminating model.

The discriminant analysis results are summarized in Table 18 which shows the sequential increase in Rao's V and the standardized and unstandardized canonical coefficients. The standardized coefficients are analogous to the beta weights in multiple regression, while the unstandardized ones and the constants are used to calculate the discriminant function score for each case. Substantively the coefficients show that favorable sterilization attitudes make a predominant and positive contribution to the discrimination between

TABLE 18

SUMMARY STATISTICS OF DISCRIMINANT ANALYSIS OF WILLINGNESS  
TO USE VOLUNTARY CONTRACEPTIVE STERILIZATION  
AMONG RESPONDENTS AWARE OF METHOD IN EGYPT, 1980<sup>a</sup>

Variable Entered <sup>b</sup>	Mean	Standard Deviation	Rao's V	Canonical Coefficients of Discriminant Function	
				Standardized	Unstandardized
Index of Sterilization Attitudes <sup>c</sup>	1.46	1.06	163.0	.867	.930
Rural Resident	.43	.50	234.6	.331	.692
Education Level <sup>d</sup>	2.43	1.78	256.5	-.364	-.212
Index of Spouse Support <sup>c</sup>	1.73	.60	265.3	.193	.322
Respondent is Male	.49	.50	270.1	.134	.268
Husband Occupation in Agriculture	.18	.39	274.0	.133	.349
Constant					-2.582
Percentage of Grouped Cases Correctly Classified	74.4%				
Wilks' Lambda	.673	(Chi-Square = 220.2 with 6 degrees of freedom)			
Canonical Correlation	.571				

<sup>a</sup>Of a total of 667 cases, 567 responded definitely would or would not consider using sterilization. Of the remaining 100 cases, 90 were uncertain and 10 had missing data; both are excluded from the analysis.

<sup>b</sup>All variables statistically significant at  $p < .05$  or better.

<sup>c</sup>Indices range in value from 0 to 3; see text for explanation.

<sup>d</sup>Only a nonmetric measurement of education levels is available and ranges from 0 (no education) to 5 (completed college or more).

groups while educational level makes a significant negative contribution. Thus if one was to predict an individual's willingness to use sterilization, information about his or her educational background would contribute toward a negative score and hence the chance of classification in the unwilling group. Favorable sterilization attitudes, on the other hand, would increase the discriminant function score and the chance of classification in the willing group. Rural residence and spouse support both have intermediately strong and positive influences. The direction of education's effect is in line with differentials seen in Table 16. In fact the discriminant function of these six variables confirms the differentials seen in Table 16, i.e., that potential interest in voluntary sterilization at least in 1980 is located among the rural, farming and uneducated respondents, and among those motivated for family size control.

That this population subgroup should manifest strong potential demand for effective regulation of childbearing is not surprising and furthermore is compatible with trends in other parts of the developing world. The exposure of rural females to health risks associated with high fertility levels is greater than for their urban counterparts, underscoring another important rationale for enabling access to voluntary contraceptive sterilization. In addition to health benefits, the demographic benefits of reduced fertility are likely to be substantial with sterilization access. In the next section we examine sources of demand for and potential fertility reductions with the avoidance of excess fertility through voluntary contraceptive sterilization.

#### DEMAND AND IMPACT

Three areas of potential demand for contraceptive sterilization are examined here: profiles of current acceptors, determinants of unmet need for

sterilization, and measurement of the possible demographic impact on fertility from avoidance of excess fertility. The first area simply investigates any selective features of those reporting successful contraceptive sterilization given a nonsupportive public environment. The second assesses (1) the demand for additional children and its composition, and (2) the relative influences of spouse support, religion, and health reasons on unmet demand for sterilization. In the third area an attempt is made with limited data, to assess the possible impact on fertility levels if excess childbearing is avoided completely through access to voluntary sterilizations.

#### Background of Sterilization Acceptors

In both surveys a small number of respondents reported they or their wives were contraceptively sterilized. In 1980 17 such cases were reported, eight by men; in 1982 40 were reported, 27 by women. We present here just brief descriptions of their background characteristics (shown in Table 19) largely to determine if they are selective in any regard. We do find that in 1980 the majority were urban residents with wives past prime childbearing ages and with four or more living children. Many of the couples represented had husbands engaged in non-manual occupations, and most had tried two or more modern contraceptive methods. Seven of the 17 were rated as having upper middle class or better lifestyles. Thus what appears is a profile of individuals capable of successfully realizing their intentions to terminate childbearing.

In 1982 again the majority were established parents in urban areas with better-than-average standards of living and experience with modern contraception. However, the ability of the illiterate and rural resident to access contraceptive sterilizations seems enhanced by 1982. Half of these

TABLE 19

SELECTED CHARACTERISTICS OF ACCEPTORS OF FEMALE STERILIZATION:  
1980 AND 1982

Characteristic	1980 (N=17)	1982 (N=40)
Sex	8 men reporting wives sterilized; 9 women reporting being sterilized	13 men reporting wives sterilized; 27 women reporting being sterilized
Current residence in urban areas	12	21
Wife's current age between 35 to 44 years	12	30
Have four or more living children	13	29
Considered upper middle class or better	7	19
Husband's occupation is non-manual	13	18
No formal education	6	21
Have tried 2 or more modern contraceptive methods	10	22

cases had no formal education, compared to a smaller proportion in 1980 (and one can safely guess these were women). Unlike 1980, the 1982 profile of the contraceptively sterilized individual then is not overwhelmingly selective.

### Potential Demand for Female Sterilization

A driving motivation behind any potential interest in the contraceptive procedure should be a desire to end childbearing. If this desire is high among those with completed families, it can signify a real potential for contraceptive sterilization acceptance. It is necessary though to recognize that full realization of this potential will require much organized input of program and personal resources. Low demand for further childbearing itself does not fully predict interest in or acceptance of the sterilization procedure. However, assessing the levels desiring no more children can be taken to represent an upper limit to the possible fertility reduction that can be achieved with the complete avoidance of excess births.

#### Desire for Additional Children

We examine first the levels and composition of the desire for additional children. In Table 4 we found that especially in 1982 knowledge of female sterilization was higher if there was a desire to terminate childbearing. In Table 20 we show the general results without sex controlled, which reaffirm the picture that motivation is associated with familiarity about the method. In Table 21 we streamline this picture by focussing on those respondents where the wives are 30 years and older and where there are at least four living children, i.e. the childbearing subgroup that is most eligible to use sterilization. In both surveys this group comprised about one-third of the total sample. Immediately impressive are the high proportions who desire effective limitation of their family sizes. In 1980 this level ranged from 87

TABLE 20

KNOWLEDGE OF FEMALE STERILIZATION BY DESIRE OF MORE CHILDREN:  
1980 AND 1982 (Percent)

Level of Knowledge	1980		1982	
	Want More	Want No More	Want More	Want No More
None	70.7	63.0	52.6	37.3
Prompted	20.4	26.4	40.3	51.7
Spontaneous or has used	8.9	10.6	7.1	11.3
Total	36.0	64.0	37.5	62.5

$\chi^2$  significant at  $p < .01$

TABLE 21

PERCENT DESIRING NO MORE CHILDREN AMONG RESPONDENTS WITH WIVES AGE 30 AND OVER AND WITH AT LEAST FOUR LIVING CHILDREN, BY CURRENT AND PREVIOUS FAMILY PLANNING USE AND AGE: EGYPT 1980 AND 1982

Survey Year and Wife's Age Group	Percent Wanting No More Children				
	Total	Currently Using		Ever Used	
		Yes	No	Yes	No
1980 (N=666)					
30 to 34 yrs (223)	86.5	99.1	73.9	95.8	70.0
35 to 39 yrs (348)	87.9	96.2	78.4	94.0	75.7
40 to 44 yrs (95)	92.6	97.7	88.2	98.2	85.0
1982 (N=1127)					
30 to 34 yrs (353)	86.7	98.6	78.2	97.0	66.9
35 to 39 yrs (364)	93.1	98.9	87.6	97.7	81.7
40 to 44 yrs (410)	94.6	99.0	90.9	97.4	89.2

percent among 30 to 34 year old wives to 93 percent among wives 40 to 44 years old. To the extent that measurement error allows, the 1982 proportions are even greater among wives 35 years and older.

This potential interest can be further examined by controlling for current and previous contraceptive innovation. Expectedly, those currently contracepting are almost uniformly interested in terminating, rather than spacing, childbearing, even among those with wives 30 to 34 years old. Unmet need arises when one examines the levels for those not currently contracepting. Often three-quarters or more of those not currently contracepting desire an end to childbearing. The patterns hold over both surveys and are only slightly mitigated when previous, as opposed to current, contraceptive use is controlled. Thus in this parent subgroup is an important audience for the introduction of female sterilization, not only because of its active status as childbearers but also because of its strong interest to cease childbearing.

The sociodemographic composition of those parents desiring an end to childbearing is seen in Tables 22 through 24. Are these respondents selectively composed of more educated, urbane, and upper social class individuals? The results show clearly not. In terms of education (see Table 22) in 1980 over one third of those wanting no more children are illiterate and in 1982 almost one half. The increase in motivation is greater among husbands than among wives interviewed (a 20-percentage point gain in the former as opposed to a 10 point gain in the latter). Among the lesser educated, women are more likely than men to desire a termination to childbearing.

Similarly, occupational differences find a substantial proportion of the manually-engaged husbands wanting no more children, particularly in 1980. The

TABLE 22

SOCIOECONOMIC DIFFERENTIALS AMONG RESPONDENTS  
WHO WANT NO MORE CHILDREN BY RESPONDENT'S SEX:  
1980 AND 1982

Characteristic	1980			1982		
	Total	Male	Female	Total	Male	Female
<b>Education</b>						
None	36.1	29.6	42.7	49.1	44.6	52.7
Less than primary	13.6	11.3	15.9	29.6	28.4	30.5
Completed primary	20.7	22.8	18.6	7.0	9.3	5.2
Some secondary	7.1	7.3	6.9	3.7	4.1	3.5
Completed secondary	14.5	17.1	12.0	7.4	8.8	6.4
Some college	8.0	11.9	3.9	3.1	4.9	1.7
$\chi^2$ significance			p<.01			p<.01
<b>Husband's occupation</b>						
Non-manual	29.1	28.2	30.1	37.5	36.4	38.5
Manual	44.1	43.9	44.4	29.2	28.0	30.2
Farm	23.9	24.8	23.0	30.5	32.7	28.8
Not working	2.8	3.1	2.5	2.7	2.8	2.5
$\chi^2$ significance			n.s.			n.s.
<b>Socioeconomic Rating<sup>a</sup></b>						
Affluent	12.4	9.8	15.2	8.2	5.7	10.1
Upper middle	44.0	46.8	41.1	37.3	36.8	37.7
Middle	20.8	21.5	20.0	38.5	39.2	37.9
Poor	22.8	21.9	23.8	16.1	18.3	14.3
$\chi^2$ significance			p<.05			p<.01
<b>Religiosity</b>						
Level 1		9.3	41.5		14.5	56.4
Level 2		4.7	58.5		31.5	43.6
Level 3		32.7	--		30.3	--
Level 4		53.3	--		23.7	--
(N)	1280	645	635	2057	913	1144

a As perceived by interviewer. In 1980 information not recorded for 436 (or 22%) of total sample.

TABLE 23

DEMOGRAPHIC DIFFERENTIALS AMONG RESPONDENTS  
WHO WANT NO MORE CHILDREN BY RESPONDENT'S SEX:  
1980 AND 1982

Characteristic	1980			1982		
	Total	Male	Female	Total	Male	Female
Age						
15-19 years	0.4	--	0.8	0.6	--	1.1
20-24 years	5.3	1.1	9.6	6.2	0.9	10.4
25-29 years	12.6	4.0	21.3	15.2	6.7	22.1
30-34 years	22.0	16.0	28.1	20.2	14.1	25.1
35-39 years	26.8	20.8	32.8	20.2	18.1	21.9
40-44 years	16.8	26.1	7.4	19.5	20.3	19.4
45-49 years	6.9	13.7	--	8.2	18.0	--
50 years and over	9.2	18.3	--	9.8	22.0	--
$\chi^2$ significance		p<.01			p<.01	
Number of Living Children						
Zero	0.8	0.9	0.6	0.6	0.1	1.0
One	4.1	3.6	4.6	4.3	4.1	4.5
Two	17.2	16.6	17.8	15.3	13.4	16.8
Three	21.3	20.5	22.2	19.3	18.0	20.5
Four	20.6	20.0	21.3	20.4	20.0	20.7
Five	14.6	15.8	13.4	15.1	17.1	13.5
Six or more	21.4	22.6	20.2	24.9	27.4	23.0
$\chi^2$ significance		n.s.			p<.01	
Region of residence						
Metropolitan	27.1	26.3	28.0	24.1	23.5	24.6
Lower Urban	13.1	12.0	14.1	12.5	12.0	12.0
Lower Rural	30.9	32.0	29.7	36.7	40.4	33.7
Upper Urban	11.0	10.9	11.1	10.0	8.9	11.0
Upper Rural	17.9	18.8	17.1	16.6	15.2	17.8
$\chi^2$ significance		n.s.			p<.05	
(N)	1280	645	635	2057	913	1144

TABLE 24

CONTRACEPTIVE BEHAVIOR DIFFERENTIALS AMONG RESPONDENTS  
WHO WANT NO MORE CHILDREN BY RESPONDENT'S SEX:  
1980 AND 1982

Characteristic	1980			1982		
	Total	Male	Female	Total	Male	Female
Ever Use of FP						
Yes	67.6	65.4	69.8	68.5	67.1	69.5
No	32.4	34.6	30.2	31.5	32.9	30.5
$\chi^2$ significance			n.s.			n.s.
Number of Modern Methods Ever Used						
Never used FP	32.4	34.6	30.2	31.5	32.7	30.4
No modern	0.5	0.3	0.6	4.5	4.1	4.8
One	46.0	47.9	44.1	42.3	43.8	41.1
Two	15.7	12.9	18.6	16.5	15.4	17.4
Three plus	5.4	4.3	6.5	5.3	3.9	3.5
$\chi^2$ significance			p<.05			n.s.
Knowledge of Female Sterilization						
None	63.0	64.7	61.2	37.3	46.9	29.7
Prompted	26.4	24.8	28.1	51.4	44.0	57.3
Spontaneous-- has used	10.6	10.4	10.7	11.3	9.1	13.0
$\chi^2$ significance			n.s.			p<.01
(N)	1280	645	635	2057	913	1144

pattern of differences between the two surveys is not straightforward. Taking these proportions at face value, it would appear that in neither year was the occupational composition of those wanting no more children affected by the sex of the respondent. However, it does appear that the composition of those wanting no more children has shifted from being predominant among those with husbands in manual occupations to being more evenly distributed across all major occupations by 1982.

Although sex differences in the relationship between social class and the desire for no more children are statistically significant, the percentage differences are not great. Again there appears to be a shift toward more middle class respondents desiring no future births in 1982 compared with 1980. However, this result is tenuous since the class ratings are subjective and made by separate fieldstaffs in each survey.

Respondent's age and current family size vary among those interested in terminating childbearing (see Table 23). Surprisingly a nontrivial percentage of young women (beginning at age 25) and young men (beginning at age 35) seek an end to childbearing. Three children appear to be a critical family size for both sexes after which the desire for no more births is strong. No apparent change between the two surveys in terms of these compositional differences and no strong internal differences by sex of respondent are evident.

The regional composition of those interested in ending childbearing is similar over the two surveys. Most of the respondents who desire no future births are located in metropolitan areas and rural Lower Egypt. In both surveys the men in the latter region are more likely than the women to report an interest in terminating fertility.

Table 24 indicates that substantial trial with contraception, including modern methods, characterizes these motivated respondents. Over two thirds have used family planning in the past, a level that is stable over both surveys and not sensitive to the respondent's sex. A sizeable proportion (about one-third) has never contracepted, and of the remainder, most have used at least one modern method.

The bottom panel of the table is somewhat repetitive of earlier findings: given the desire for no more children, the proportion who have never heard of the method declines from 63 to 37 percent over the two surveys. While there are large increases in prompted awareness for both sexes, they are noticeably greater for women.

The relatively similar distributions of these respondents along several characteristics, such as age, parity, and region, are worth noting. They give some reassuring evidence of the reliability of the 1980 survey data. A masking of fundamental changes is possible, but since these variables in the overall population profile experienced little change, the credibility of these results is enhanced.

The husband's role can be highlighted again here. The level of desire for no more children at about 70 percent is similar for both men and women. Increasing awareness of sterilization occurs among both sexes, but more so among women than men. Since other analyses of the 1982 data have suggested that husbands maintain higher fertility ideals and valuation of sons than wives and that their wives perceive these preferences, such couple difference may affect interest in and acceptance of a method, particularly one as permanent as voluntary sterilization. While men may not specifically articulate an opposition to a contraceptive method, their wives may infer one.

Nevertheless, the overwhelming interest among both husbands and wives is in terminating childbearing, which may not be mutually recognized or communicated. This consensus could be made more apparent to the public and its civic leaders as well. If these attitudes are as stable and strong as the data suggest, they constitute an important base of public opinion support on which to mobilize a programmatic effort to introduce voluntary sterilization.

#### Unmet Need for Voluntary Sterilization

Another measure of potential demand for contraceptive sterilization is derived by taking the subset of respondents who state they desire no more children and calculating the proportion aware of sterilization (but not currently sterilized). This we call "unmet need for sterilization" and is analogous to definitions of unmet need for contraception. This measure assumes that individuals who desire to end their childbearing in earnest and who have heard of sterilization constitute a potential source of demand. Janowitz et al. 1983 have analyzed the determinants of unmet demand for sterilization in Honduras but are able to define their measure more specifically, i.e. those women who stated an early interest in being sterilized but at four months after birth had not been sterilized. In the absence of similar detail, we must define sterilization demand more generally and liberally.

In 1980 the level of unmet need for sterilization is 36 percent of respondents not wanting more children and a substantial 63 percent in 1982 (see Table 25). Given its dichotomous nature, we have elected to perform a

MULTIPLE CLASSIFICATION ANALYSIS OF THE DETERMINANTS  
OF UNMET NEED FOR FEMALE STERILIZATION BY SEX OF RESPONDENT: 1980 AND 1982

Independent Variables	1980		1982		
	Number	Adjusted Mean	Number	Adjusted Mean	
<u>Grand Mean</u>		36		63	
<u>Spouse Support for FI (Index)</u>					
0	32	27*	44	48**	
1	113	32	217	49	
2	252	30	325	56	
3	862	39	1467	67	
<u>Index of Religion</u>					
0	272	39	190	63	
1	355	32	1033	63	
2	504	39	830	62	
3	128	32	--	--	
<u>Health Reason Index</u>					
<u>1980</u>	<u>1982</u>				
Yes	0	808a	37	27	46**
No	1	451	36	178	46
	2			426	57
	3			500	61
	4			922	70
<u>Number of Modern FP Methods Used</u>					
Never used FP		414	28**	647	55**
No modern		6	48	90	54
One		578	36	870	65
Two		196	46	339	72
Three or more		65	62	107	73
<u>Education</u>					
None		452	27**	1006	55**
Less than primary		171	33	608	68
Completed primary or more		636	44	439	74
R <sup>2</sup>		.149		.216	

NOTE: Analysis controls for sex, age, husband's occupation and region of residence. Adjusted means reflect the net effects of each variable on percent with unmet need for female sterilization.

<sup>a</sup>In 1980 health reason consists of one item with yes/no response: Can childbearing after age 35 harm the mother's health?

\*Differences within category are significant at  $p < .01$

\*\*Differences within category are significant at  $p < .05$

multiple classification analysis (MCA)<sup>12</sup> of the determinants of unmet sterilization need for 1980 and 1982. This estimation procedure has the particular advantage of generating easily understood results. In Table 25 the five factors of spouse support, religion, health reasons, number of modern contraceptive methods used, and education are analyzed with respondent's sex, age, (husband's) occupation and region of residence (metropolitan versus non-metropolitan) controlled. The spouse support index for 1980 and 1982 is as defined in the discriminant analysis (Table 17). The index of religiosity is the cumulated total of the following responses: "not against (respondent's) beliefs to practice family planning", "nothing in religious books prohibits practice of family planning", and if a male respondent, "does not pray regularly or if prays regularly, visits mosque no more than once a week". If the respondent is female, the religiosity level counted is "does not pray regularly". The range of the religiosity index is 0 to 3 in both years. With the 1982 data a health reason index can be created out of the number of times the following responses are given by each respondent: "having many children can be harmful to a woman's health", "woman can have four or fewer pregnancies without harming health", "harmful to a woman's health to have a baby after age 35", and "ideal mother's age for last child is 35 years". This index ranges then from 0 to 4. The 1980 survey did not contain comparable detail, and there was near universal agreement that many children pose a health risk to the mother. Therefore, we have used only the question

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<sup>12</sup>Multiple classification analysis is a statistical procedure, somewhat similar to regression analysis, for examining the effects of several independent variables, in a multivariate framework, on the dependent variable (see Andrews et al. 1973). The grand mean is the overall mean of the dependent variable in the sample. The adjusted means are the means of the dependent variable associated with each level of the independent variables when all other variables are controlled.

regarding perceived harmfulness of childbearing after age 35 to measure the extent that health reasons may determine an unmet need for sterilization.<sup>13</sup>

The results of the MCA analysis in Table 25 show that this additive model specification explains 15 percent of the variance in 1980 and 22 percent in 1982. In 1980 education, the extent of previous modern contraceptive practice, and spouse support for family planning significantly influenced the level of unmet sterilization need. The net effect of education was to raise the level of unmet need for sterilization from 27 percent among those with no education to 44 percent for those with at least a complete primary education. Similarly, never users of family planning show a mean 28 percent with unmet need for sterilization while those having tried three or more methods show 62 percent. However, the increases in unmet need are not continuous with trial of modern contraceptives.

The same determinants are significant in 1982 with the addition of the health reason index, and all net adjustments to the overall mean are monotonic. Except for previous family planning use, the difference between adjusted means of the first and last categories of factors with comparable significance is similar in 1980 and 1982. For previous use the difference between never users and users of three or more methods is 34 percentage points in 1980 versus 18 in 1982. Change in the magnitude of difference in net adjusted means would suggest the relative importance of that factor over the two years (particularly since sex, age, social class, and regional composition of the samples are controlled). Interestingly, religion does not appear as a significant determinant of unmet need for sterilization in either year given

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<sup>13</sup> Perceived reliability and safety of sterilization were not included as factors in the model because of collinearity with the dependent variable, i.e., only those aware of sterilization were asked about its level of reliability and safety.

the wide-ranging distribution of respondents across index levels. In 1980 of the compositional variables controlled, only husband's occupation shows significant covariation with unmet need for sterilization. In 1982 all but respondent's age are significant.

These multivariate results can be considered in conjunction with those from the discriminant analysis of willingness to use voluntary sterilization. While the baseline differentials in unmet need versus willingness to use sterilization have suggested separate linear combinations of variables for the models, the directions of influence of like determinants can be examined compared prima facie. However, one should recognize that unmet need for sterilization is not synonymous with the expressed interest to consider sterilization use. While the conditions of wanting no more children and having heard of female sterilization delimit a potential market of users, they need not imply commitment to or acceptance of the method.

Although the discriminant analysis with 1980 data cannot be performed for 1982, it has confirmed the positive influence of spouse support for fertility limitation decisions. What is at variance in the MCA analysis is the effect of education. Awareness of sterilization among those wanting no more children is significantly enhanced by education. The discriminant analysis, however, suggested that the more highly educated respondents were least favorably disposed towards its use. Hence, the present measure of "unmet need" may be reflecting the greater likelihood of educated individuals having heard of sterilization as compared to uneducated individuals rather than demand per se. Other selection criteria--such as the present analysis being limited to those not wanting more children, different survey times, and different samples--also may mediate education's role in influencing potential demand for sterilization. It is helpful to be sensitive to any evidence of public

skepticism of sterilization. If the educated elite are unsupportive of contraceptive sterilization, the chances for public sponsorship of the method may be affected accordingly.

#### POTENTIAL IMPACT OF VOLUNTARY STERILIZATION

What level of fertility reduction might be possible with the avoidance of excess fertility? We have reviewed evidence that demand is extant and influenced by a number of important factors. In this section we attempt to measure its impact. The data, however, do not permit a high degree of rigor. We also force the assumption that the maximum potential impact is represented by the avoidance of excess births completely achieved through the use of voluntary sterilization. Clearly the elimination of unwanted fertility can be obtained with other combinations of effective methods. However the optimum use-effectiveness of sterilization simplifies our assumptions and measurements.

The approach is direct--we assess the age-specific level of excess fertility using as criteria either births beyond a reported ideal age for terminating childbearing or the ideal family size. Among ever and future users of contraception, we also measure excess births in a third manner by counting those occurring beyond the family size at the start of contraceptive use. All measures of excess fertility are made only for the 1982 survey. The age-specific proportions of excess births in the past five years can be taken as average annual rates of reduction which are then applied to current marital fertility rates. Total fertility rates are subsequently derived from applying these reductions to women 35 years and older first and then 30 years and older, assuming that the availability of sterilization will be

age-regulated.<sup>14</sup> Finally, with the estimated annual reductions we can project future fertility rates and obtain the proportionate change in current fertility possible under the hypothesis that sterilization eliminated all excess births. The calculations are presented in Tables 25 to 30.

Certain data limitations must be recognized first. The surveys did not collect pregnancy histories and only recorded the age and sex of each living child reported by the respondent. In addition no information on the dates of deceased children's births are available; thus, the estimates of fertility impact may be biased. The effect of infant and child mortality is not accommodated.<sup>15</sup> We use living children age 5 or under as an estimate of births in the past five years and take such children's births that occur beyond the ideal terminating age or whose parity exceeds the ideal as excess. Thus the non-accounting of infant and child mortality affects both the numerator and denominator in estimating excess proportions. The bias is likely to be smaller at the older ages, where our estimates are focussed. The risk of infant mortality increases with mother's age but the likelihood that such births would be considered excess (the numerator) is concurrently higher, thus balancing their absence in the denominator of total births. Finally, we are tabulating these births by the current age of the wife rather than her age at birth. Because the age data are roughly reported, i.e. a majority of the respondents did not give month and year of birth, to attempt to reconstruct the pregnancy history fully and obtain cohort-specific impact would have been futile. In spite of the inability to use more rigorous

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<sup>14</sup>It is likely that any legislation to make sterilization available in Egypt will restrict access initially and serve only those with greatest need.

<sup>15</sup>We also do not attempt to apply mortality rates to inflate the surviving numbers to live births.

TABLE 26

## THREE METHODS FOR MEASUREMENT OF EXCESS FERTILITY BY WIFE'S AGE: EGYPT 1982

Wife's Age Group	Method 1:	Method 2:	Method 3:
	Excess Births Beyond Ideal Age for Terminating <sup>a</sup>	Excess Births = Actual Less Ideal Number <sup>b</sup>	Births After Start of FP Use <sup>c</sup>
Averages and number of Cases (N)			
15 to 24 years	0.01 (765)	-1.72 (788)	-1.28 (678)
20 to 24 years	0.04 (764)	-0.44 (723)	0.06 (643)
30 to 34 years	0.22 (663)	0.74 (602)	0.93 (532)
35 to 39 years	0.54 (530)	1.40 (500)	1.29 (418)
40 to 44 years	0.79 (532)	1.90 (492)	1.13 (372)
Total	0.27 (3254)	0.13 (3105)	0.24 (2643)
Significance level	p<.01	p<.01	p<.01

a Includes childless respondents and respondents with "don't know" or "it depends" answers. If such are excluded (n=884), the means for 15 to 34 year old women change very little, but for 35 to 39 and 40 to 44 the means increase to 0.67 and 1.01 respectively.

b 178 respondents gave no ideal number of children

c By ever and future users only; thus assumes all FP use is for limiting purposes.

TABLE 27

PROPORTION OF BIRTHS<sup>a</sup> IN PAST 5 YEARS IN EXCESS OF IDEAL TERMINATING AGE  
 BY WIFE'S CURRENT AGE (Method 1): EGYPT, 1982

Wife's Current Age Group (Years)	Number of Cases	Births in past 5 Years Beyond Ideal Terminating Age <sup>b</sup>	Total Births in Past 5 Years	Proportion of Excess Births	Annual Proportion of Excess Births
15 - 24	831	5	929	0.5	0.1
25 - 29	751	28	1292	2.2	0.4
30 - 34	634	127	991	12.8	2.6
35 - 39	529	209	590	35.4	7.1
40 - 44	508	169	327	51.7	10.3
Total	3253	538 <sup>c</sup>	4129	13.0	2.6

Births in restricted sense of surviving children  
 Includes respondents who are childless or do not state a definite terminating age  
 95 percent of these births are by respondents currently wanting no more children

TABLE 28

PROPORTION OF BIRTHS<sup>a</sup> IN PAST 5 YEARS IN EXCESS OF IDEAL FAMILY SIZE  
BY WIFE'S CURRENT AGE (Method 2): EGYPT, 1982

Wife's Current Age Group (Years)	Number of Cases	Births in past 5 Years Beyond Ideal Number of Children <sup>b</sup>	Total Births in Past 5 Years	Proportion of Excess Births	Annual Proportion of Excess Births
15 - 24	789	74	935	7.9	1.6
25 - 29	723	304	1300	23.4	4.7
30 - 34	602	482	998	48.3	9.7
35 - 39	500	372	590	63.1	12.6
40 - 44	492	228	327	69.7	13.9
Total	3106	1460 <sup>c</sup>	4150	35.2	7.0

a Births in restricted sense of surviving children

b Excludes those not giving ideal number of children (n=177)

c 96 percent of these births are by respondents currently wanting no more children

TABLE 29

POTENTIAL IMPACT OF VOLUNTARY FEMALE STERILIZATION ON AGE-SPECIFIC  
FERTILITY RATES FOR 20 TO 44 YEAR OLD CURRENTLY MARRIED WOMEN:  
AN ILLUSTRATION OF TWO MEASUREMENT METHODS

Age Group	ASMFR <sup>a</sup>	Percent Excess With		Estimated ASMFR If Sterilization Accessible to Women			
		Method 1 <sup>b</sup>	Method 2 <sup>c</sup>	Age 35-44 Yrs		Age 30-44 Yrs	
				Method 1	Method 2	Method 1	Method 2
20-24	410	0.1 <sup>d</sup>	1.6 <sup>d</sup>	410	410	410	410
25-29	341	2.6	4.7	341	341	341	341
30-34	264	7.1	9.7	264	264	245	238
35-39	158	10.3	12.6	142	138	141	138
40-44	62	2.6	13.9	60	53	60	53
TFR (20-44)	6175			6085	6030	5990	5900
Annual % Decline in TFR				1.5	2.3	3.0	4.5

<sup>a</sup>ASFR's from 1980 Egypt Fertility Survey (CAPMAS, 1983) to which age specific proportions currently married are applied:

Age Group	ASFR	Percent Currently Married
15-19	78.5	21.8
20-24	255.7	62.3
25-29	280.1	82.2
30-34	238.6	90.5
35-39	138.9	87.9
40-44	52.6	84.6

<sup>b</sup>Method 1 assumes fertility beyond reported ideal age for terminating childbearing to be excess

<sup>c</sup>Method 2 assumes fertility beyond ideal number of children to be excess

<sup>d</sup>Includes age group 15 to 19 years

TABLE 30

ESTIMATED TOTAL MARITAL FERTILITY RATES FOR 20 TO 44 YEAR OLD WOMEN  
 GIVEN ACCESS TO VOLUNTARY STERILIZATION AND  
 PERCENT DECLINE USING TWO MEASUREMENT METHODS: EGYPT 1982

Time Period	Estimated TMFR (20-44) <sup>a</sup>		Percent Decline in TMFR (20-44) <sup>b</sup>					
	If Sterilization Accessible to Women Aged 35-44 Years		If Sterilization Accessible to Women Aged 30-44 Years		If Sterilization Accessible to Women Aged 30-44 Years			
	Method 1	Method 2	Method 1	Method 2	Method 1	Method 2		
3 years	5903	5763	5644	5395	4.4	6.7	8.6	12.6
5 years	5729	5504	5315	4931	7.2	10.9	13.9	20.1
10 years	5315	4906	4575	3937	13.9	20.6	25.9	36.2

a Exponential formula used (TMFR<sub>t</sub> = TMFR<sub>0</sub> e<sup>rt</sup>); for annual rates, see previous table

b Beginning TMFR (20-44) assumed to be 6175 (see previous table for source and description of methods)

demographic techniques, we feel the effort is still informative and worthwhile. With all three approaches to measuring excess births, the finding is the same--such "excesses" are disproportionately higher among older wives, the group which stands to benefit the most from sterilization's availability.

Table 25 presents the three measurements of excess births. Respondents were asked to give their ideal age for terminating childbearing. (The median was 35 years.) Living children born after the stated age were then counted as excess births and averaged for each age group of the wife.<sup>16</sup> The second method counts living children beyond the family size reported as ideal by the respondent. The third method assumes that all contraceptive adoption is for limiting purposes only and that births beyond the family size at the time of first use would be unwanted. While this overstates the case, it is nonetheless of interest to compare the results with those from the other two methods. This latter information is available only from those asked about their family sizes when family planning was begun (ever users) or when it will be begun (intending users).

The average number of excess births varies from 0.13 using ideal family size to 0.27 and 0.24 using the other two criteria.<sup>17</sup> The difference between actual and ideal numbers of births yields a larger variation in excess fertility across age groups and should be evaluated considering the survey context that often elicits ideal family size responses of two or three children (whether they are actually ideals or not). Fertility deficits are

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<sup>16</sup>These calculations were performed separately for women only to locate six-specific response biases, and none were found.

<sup>17</sup>Virtually all births counted as excess were births to respondents who at the time of survey reported wanting no more children.

thus apparent at the younger ages of wives, i.e., where their current parity is below their excess criterion; and there are substantial excesses at the older ages. For example, an average as high as 1.9 excess children is found among wives 40 to 44 years old by Method 2. The important implication of these numbers is not so much their magnitude, even though they are substantial, but rather that all three measures confirm the reality of excess fertility with increasing age. Older women have children that they might otherwise have opted not to have if given alternatives. Since these births are based on information about living children, the possibility exists that excess fertility levels were higher. The health consequences from these unwanted fertility levels give sufficient concern to reconsider the availability and sponsorship of permanent surgical contraception.

Because of the selective sample involved in measuring excess fertility by Method 3, the remaining assessments of potential impact will be illustrated with Methods 1 and 2 only. In Tables 27 and 28 (Methods 1 and 2 respectively) we have calculated for each five-year age group the number of excess births and the total number of births in the five years prior to the 1982 survey to determine the proportion of excess births. An annual percentage is then derived by dividing by 5. Using Method 1 the proportion of excess births over the five years ranges from being negligible for women under 25 years to 52 percent for women 40 to 44 years. By Method 2 the proportion is higher, although still expectedly small among younger women, and reaches 70 percent for the oldest age group. Annually the figures suggest that 2.6 percent of all births by Method 1 and 7.0 percent by Method 2 can be seen as excess.

We have taken these age-specific proportions of excess births for ages 30 and older and applied them directly to age-specific marital fertility rates

available for Egypt. At least preliminary access to sterilization is assumed from two age points--for women 35 years and older and for women 30 years and older.

In Table 29 the estimated reduced ASMFRs are shown for women 20 to 44 years. If sterilization became available on demand to women 35 years and older and eliminated all excess births in the present year, the marital TFR would have been 6085 by Method 1 and 6030 by Method 2 instead of 6175. If sterilization became available to women 30 years and older and resolved their excess births this year, the marital TFR by Method 1 could have been 5990 and by Method 2, 5900. Thus the annual reduction in the marital TFR could range between 1.5 to 4.5 percent, which although not immediately dramatic would accumulate in impact with subsequent years.

This impact is projected in Table 30. Depending on whether excess is measured by Method 1 or 2 and whether access to voluntary sterilization is made available to women 30 or 35 years and older, the potential reduction in marital TFRs ranges from 4 to 13 percent after three years. In five years' time the percent decline in fertility could be between 17 and 20 percent and in ten years time between 14 and 36 percent. In five years the marital TFR could then be between 4.9 births to 5.7 births per married woman, and in ten years between 3.9 births to 5.3 births per married woman.

These hypothetical fertility rates assume that the annual reductions from eliminating excess births have exponential impact. An alternative, and perhaps more preferable, method would be to estimate the remaining lifetime fertility in these women. This would then represent a potential impact for voluntary sterilization. Our method simply eliminates a certain percentage of births and assumes that the reduction rate approximates the cumulative cohort effect over remaining years of childbearing. The maximum impact of

voluntary sterilization on fertility may actually be higher as we assume only currently married women will use the procedure. However, without the benefit of pregnancy history data, assessment of cohort fertility change can not be made.<sup>18</sup>

It is significant that these measurements of fertility reduction are reasonable and substantial over time. While negligible at first, there is considerable decline in fertility with later years. The avoidance of excess marital fertility, if fully optimized by use of sterilization, can result in an average TMFR decline of 17 percent in 10 years when the procedure is available to women 35 years and older or 31 percent for women 30 years and older. The percentage decline in the non-marital TFR may actually be larger because there is disproportionate weighting in the TMFR given to fertility of currently married women and under 24 years of age. They, however, would not be very likely to be interested in sterilization at present.

Again, although this exercise has been directed at demonstrating the potential benefits of voluntary sterilization in Egypt, the elimination of excess births need not be obtained solely by this means. Any combination of effective contraceptive methods can make substantial inroads into resolving the problem of excess childbearing. However, permanent surgical contraception represents the most cost-effective and efficient means and relieves subsequent demands on contraceptive supply and servicing.

#### SUMMARY AND IMPLICATIONS

Voluntary contraception sterilization is the way of family limitation for over 90 million couples in the world. It has become the most popular means of

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<sup>18</sup>Such an accounting should also accommodate the impact of female mortality. The contrast between these two methods is akin to that between mathematical and component methods of projection.

contraception, a trend equally strong in the developing as well as developed world and one that has emerged despite variance in legal and religious sanctions. Changing public attitudes toward the method during the 1970s have had a major influence on its acceptability. Equally important, though, has been the concurrent development of safe, simple and inexpensive techniques of permanent surgical contraception enabling treatment on an outpatient basis. The local availability of these techniques has resulted in acceptance by over half of the couples of reproductive age in such countries as Costa Rica, Panama, Korea, and Taiwan. It has also been instrumental in protecting the health of many mothers exposed to the risk of unwanted pregnancy and the welfare of their living children. Continued medical research to secure reversibility promises even higher levels of use.

Contraceptive sterilizations are not readily available in the Arab Republic of Egypt; and while not strictly illegal, they are neither publicly sponsored, promoted nor sanctioned. Islamic doctrine, which has been interpreted to permit the use of modern birth control, is also interpreted to disallow sterilization because of the permanent loss of fertility. Sterilizations may be performed only under exceptional circumstances. An alternate supporting opinion, however, has been expressed by Islamic scholars at a 1971 conference in Rabat.

This study has been directed at providing a research base by which an evaluation or re-evaluation of sterilization's status in Egypt may be guided. It has examined knowledge of the method, attitudes toward its safety and reliability, potential demand and potential demographic impact. It uses survey data collected nationwide in 1980 and 1982.

The degree of familiarity with female sterilization that prevailed among the childbearing public changed between 1980 and 1982. Only a negligible

percent of the sample in each year reports being sterilized and less than 10 percent mention female sterilization spontaneously as a method of contraception. However, although two-thirds had never heard of the method in 1980, by 1982 one-fifth more were aware. Detailed analysis finds a larger increase in awareness among women than men.

Respondent background characteristics play a role in both years. The 1982 differences indicate that: variations in knowledge are stronger by social class than by demographic or contraceptive status factors; almost two-thirds of those wanting to bear no more children have heard of female sterilization; family planning is not perceived to be in conflict with respondents' religious beliefs; and even among the minority who find a conflict, 44 percent of the men and 71 percent of the women have heard of female sterilization. Among men, a larger percentage (56) of those who prayed regularly and visited the mosque at least daily have heard of the method compared to 41 percent of those least regulated in their religious habits.

Voluntary female sterilization is perceived quite favorably although it is seen as being more reliable than safe. Three-quarters of the childbearing-aged couples think it is reliable but only one-half feel it does not entail a health risk. Although these levels fall short of reflecting the actual medical reliability and safety of the method, they represent fairly sophisticated knowledge given the environment of restricted access.

With respect to the specific attitudes surveyed in 1980 among those who had heard of sterilization: almost one-half thought the procedure was quick and simple; two-fifths felt it did not affect the woman's health; two-thirds did not feel it against their religion to have the procedure if all the children desired had been born; and two-fifths would ask for the operation if they had all the children they wanted and the operation was available free and

at a good hospital or clinic. These responses are representative of a select group, generally urban and educated individuals, who are familiar with the method in 1980. When the attitudes are examined against their background characteristics, education, nonmanual occupations for the husbands, and urban residence do increase knowledge of the operation's complexity and health effects. However, perception of no religious conflict and willingness to use the method are greater among the uneducated, farming, and rural residents, especially females.

Couple agreement on childbearing desires and birth control intentions is an important part of family planning behaviors in most societies. In Egypt where male dominance is traditional, the support of husbands for contraceptive use is more keenly felt by wives. We find a clear relation in 1982 between spouse support for family planning and the likelihood of knowing about female sterilization, one which is stronger for women than men. If the respondent has discussed family planning with the spouse, if the spouse is reported to approve of family planning for limiting purposes, and if both partners desire no more children, the gain in proportions having heard of sterilization ranges from 3 to 9 points for men and 8 to 9 points for men. The 1980 results are similar although not as strong.

Further evidence of the salience of the husband's role in birth control decisions has been found in examining the 1982 level of awareness of sterilization respondents whose spouses are discordant on future childbearing plans. The sample husbands who want more children, while reporting their wives do not, are almost twice as likely to have no knowledge of sterilization than the sample wives who are not interested in further childbearing but perceive their husbands are. Awareness of voluntary sterilization appears to

be enhanced by having the husband's general support for family planning and concurrence on family size desires.

In both years there is almost universal public recognition that bearing many children can be harmful to the mother's health. Moreover, three-fifths of the respondents felt it was harmful for a woman to bear children after age 35. Not surprisingly the difference in these attitudes by respondent sex is large: 70 percent for women and 50 percent for men. In 1982 two additional questions on the health effects from bearing children have been asked, and the results are that over half of the respondents feel women could experience three pregnancies without harming their health and that three-fifths gave 35 years or less as an ideal age for ending childbearing.

Again large sex differences in responses are apparent among women perceiving health risks more strongly than men. They suggest that husbands are not fully sensitive to the detrimental effects of prolonged childbearing on their wives' health. Male respondents in particular are more likely to give a large number of pregnancies and an older age for ending childbearing. For the general purpose of enhancing fertility regulation behaviors in Egypt, regardless of the birth control method used, it will be beneficial to increase male awareness of the health burdens imposed on females by excess childbearing. Indeed, the study found that where spouse communication on family planning existed, the male consciousness about the health impact was heightened.

Evidence is also found that the recognition of excess childbearing's impact on maternal health is related to awareness of female sterilization. The percent of men and women aware of sterilization increases by about ten percentage points if only three pregnancies are considered safe or an ideal age of 35 or less for ending childbearing is given.

A driving motivation between any potential interest in contraceptive sterilization should be a desire to end childbearing. Approximately one-fourth of the 1982 sample involved couples where the wife was 35 to 44 years old with at least four living children. Ninety-three percent of them wanted no more children but only one-half were currently using a modern form of family planning. If one includes couples with wives 30 to 34 years as well, the interest in terminating childbearing remains above 90 percent, with 46 percent protected by effective birth control. Of these couples, 72 percent of those currently contracepting are aware of sterilization compared to 46 percent of those not contracepting.

The composition of couples who desire an end to childbearing reveals the following key results: one-half have no formal education; over one-half come from poor or middle class backgrounds; three-fifths have four or more children; one-half of the men follow strong religious habits of daily prayer and mosque visitation; and over three-fifths have tried family planning with one-fifth having tried two or more methods. A more detailed examination of factors influencing awareness of sterilization among respondents no longer interested in bearing children identifies educational level, spouse support for family planning, perceived negative impact on health from excess fertility, and past contraceptive use as significant and important. Religious beliefs and behaviors are not found to have a major influence.

The findings suggest that demand for a safe and effective means of family limitation is extant and that specific knowledge of the female sterilization method is influenced by a number of important factors. An attempt is also made to measure the potential impact of current marital fertility levels if excess births can be eliminated. Although the survey data do not permit rigorous estimation, they do allow two subjective definitions of excess births

as those to a respondent (or his wife) occurring 1) after the stated ideal age for terminating childbearing or 2) in excess of the stated ideal family size. The second definition is more liberal but the substantive implication from both measures is the same. Essentially, although the proportion of excess births is higher among wives aged 35 and older, their marital fertility rates are lower relative to those of the younger aged wives. Thus the short-term (three-year) impact on the marital total fertility rate from improved access to contraceptive sterilization by couples with wives aged 35 and older is a reduction of only about five percent. Extrapolating the annual rate of reduction, due to the avoidance of excess fertility, over ten years lowers the marital birth rate by about 15 percent. Large reductions are estimated if either the more liberal definition of excess births is used or access to sterilization is extended to wives no younger than age 30. The measured fertility reduction over time may be viewed as both reasonable and substantial: if sterilization access is reasonable, they would have been achieved at a high level of cost-effectiveness.

Recent estimates of infant and child mortality levels in Egypt show alarming relationships with mother's age, birth order and most notably, the duration since the last birth. Overall 13 percent of all children born alive between 1975 and 1980 have died before their first birthday and almost one-fifth by the fifth birthday. If the mother was between ages 40 and 49 at the time of birth; the respective proportions who perished were 16 and 21 percent. If the child was the seventh birth, the percentages increased an additional point to 17 and 22. However, if the child was born less than two years after the nearest sibling, there was a one in five chance of mortality before age one and a one in four chance before age five. The deleterious consequences of high fertility on children's well-being is uncomfortably

evident in these statistics taken from the 1980 Egypt Fertility Survey of the World Fertility Survey program. In combination with the risks posed to maternal health and welfare, high fertility presents a major challenge to national efforts to improve the status of women.

With additional empirical evidence of public interest in preventing additional births and of the increased awareness of contraceptive female sterilizations, there seems to be some basis for considering or reconsidering its availability in Egypt. While the upward shift in public awareness does not guarantee acceptance, it indicates an attitude trend, similar to that which preceded the adoption of sterilization in other major parts of the developing world. Moreover, while high levels of demand to control family size can be addressed by the use of other modern methods of fertility regulation, supplying this need would likely involve a considerable expansion of present organized efforts by both public and private service providers. Improving access to permanent surgical contraception, in contrast, has cost-efficient advantages, which may be particularly attractive when program resources are limited or their geographic availability constrained.

This study has found significant awareness of female sterilization in Egypt in spite of its unsponsored status and restricted access. There is a lack of in-depth knowledge, however, reflected in public perceptions of a non-trivial health risk associated with the procedure and its less-than-perfect reliability. There are otherwise reasonably favorable attitudes regarding its acceptability especially within the underprivileged sectors of the population. It is noteworthy that religious beliefs at the grassroots level have not been found to affect attitudes negatively. From a demographic benefits point of view, the expected impact of sterilization on fertility through the prevention of excess births is not major. Thus the

demographic rationale would not serve effectively as a basis for considering a policy change. Although such benefits are forthcoming, the findings on three other rationales, which have figured in sterilization decisions globally --protection of maternal health, the desire to limit family-size, and husband's support --may be more salient bases from which to seek a change in sterilization's status. There is clear demand among the Egyptian childbearing public for a safe, effective, and inexpensive means to prevent unwanted births. At a minimum its satisfaction is important for preserving maternal health status and the long-term development and welfare of children. If the current restrictions on permanent surgical contraception are liberalized, the study results do strongly suggest that it be accompanied by a well-designed and well-implemented health education program involving both husbands and wives.

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