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Contraceptive Sterilization in Thailand

Pichit Pitaktepsombati
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I. Introduction

The prevalence of sterilization has been increasing steadily since the 1970's in both developed and developing countries, including the United States, United Kingdom, China, India, and Thailand. In 1979, approximately 90 million couples had been sterilized compared to only 20 million couples in 1970. Excluding China, the two most prevalent methods of contraception are sterilization and the pill (Ross 1985).

Statistics on sterilization acceptors in Thailand indicate a steady increase since 1965. During the three year period 1965-1967 a total of only 36 thousand women were sterilized compared to 160 thousand in 1985 alone. Likewise, the number of vasectomy acceptors increased from 3 thousand in 1973 to 37 thousand in 1985 (Knodel, Chamratrithirong, and Debavalya, 1981). The Population Plan incorporated in the 6th National Social and Economic Development Plan for the years 1987-1991 set a target of 6.65 million new acceptors of contraceptive methods. Among these new acceptors, 950,000 people or 14.3% were expected to undergo sterilization.

As a general policy, the 4th and 5th National Economic Development Plans emphasized providing permanent methods of contraception. The 6th National Social and Economic Plan, however, did not explicitly mention sterilization as the major method. Instead, the operational plan for providing family planning services by the Ministry of Public Health, the implementer, indicated that "both permanent and semi-permanent methods will be promoted among couples with 2 or more children ..."

According to the 6th National Social and Economic Development Plan, the population growth rate will be reduced to 1.3% by the end of the plan (1991) and the rate of current contraceptive prevalence will increase to 75% of currently married women in the reproductive ages. Sterilization has played and will continue to play a major role in reducing the growth rate and in increasing the rate of contraceptive prevalence. Thus, further understanding of the factors that affect the choice of sterilization, including whether tubal ligation or vasectomy is selected, can help program planners in selecting the appropriate combination of IEC, provider training and new facilities to reach these targets. Also, information on regret and its correlates can serve to develop counselling programs targetted at those most likely to experience regret.

The present study utilizes data from the 1987 Thai Demographic and Health Survey (TDHS) to examine various aspects of contraceptive sterilization in Thailand.[1] Following a brief review of trends in sterilization, the analysis examines differentials in sterilization according to a number of background characteristics. The analysis then goes on to compare factors affecting the choice of male or female sterilization. The distribution of cases according to whether they are tubal ligations or vasectomers is examined over time and according to background characteristics. Finally, the correlates of regret are examined.

II. Trends in Sterilization

The first reliable national data on the prevalence of sterilization based on survey data are available for 1969/70. At that time 7.6 percent of currently married women or their spouses were sterilized. As indicated in Table 1, the percentage of couples protected by sterilization increased steadily through 1984 but remained unchanged over the period 1984-1987. The per cent of couples selecting female sterilization also increased through 1984 but has changed little since then. The prevalence of women reporting that their spouses had a vasectomy has increased steadily since 1975. However, this increase in the percentage of couples protected by vasectomy has been much smaller than for female sterilization.

In 1969/70, just over half of all contracepting couples were protected by sterilization. But by 1972/73, the proportion of couples protected by sterilization had declined to 36% and has fluctuated in the range 26% to 43% through 1987. Since 1981, the proportion of contracepting couples protected by sterilization has remained almost unchanged.

III. Factors affecting choice of sterilization

Two of the factors most likely to be associated with the choice of sterilization are age and number of children. The greater the number of children, the more likely couples are to have reached their preferred number of children. Consequently, the greater the likelihood that they are interested in a permanent method of family planning. The older the women the more children she is likely to have and therefore the greater her interest in sterilization. Moreover, younger women, even if they no longer want more children, may delay the decision to choose a permanent method until they are "sure" that they want no more children.

Table 2 presents information on the impact of age, number of children, and on the difference between desired and actual number of children, on the percentage of women protected by sterilization, and on the selection of tubal ligation or vasectomy. The variable "living children relative to preferred number" is derived from two variables, the number of living children and the woman's answer to one of the following two questions: for women with children, "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" and for women without children, "If you could choose exactly the number of children to have in your whole life, how many would that be?" The percentage of couples protected by sterilization increases, as expected, with the woman's age up to the age range 30-34, then remains fairly constant over the range 30-44 and declines for the group 45-49. The pattern of increase for both male and female sterilization follow a similar pattern. At ages under 35, 4-5 times as many women as men are sterilized and the differences are only slightly smaller at ages 35 and over.

As expected, the proportion of women protected by sterilization is very low for those with no child or one child and many of these sterilizations may have been medically indicated. Proportions sterilized increase rapidly up to three living children and then decline for those with larger families. This same pattern is observed for overall contraceptive use as well (Chayovan, Kamnuansilpa and Knodel, 1988). The lower percentages practicing contraception (and sterilized) that are associated with families of increasing numbers of children beyond three probably reflects a selection process whereby couples who do not choose contraception (including sterilization) are more likely to reach higher family sizes than those who do. The prevalence of both male and female sterilization follows a similar pattern except that male sterilization does not decline for couples with five or more children.

The proportion of couples sterilized is much higher among those reporting that the number of living children is at least equal to the preferred number although there is little difference between those meeting and exceeding their preferred target. But why should anyone choose to be sterilized who has less than the preferred number of children? There are a number of explanations. Some women or their husbands are sterilized because pregnancy may endanger the health of the woman. Such couples may very well not have reached their preferred family size. But, probably more important, some women may change their mind about the number of children that they prefer after they or their spouse has been sterilized. As economic conditions in Thailand have improved, some couples may have felt that they could support more children now than they did at the time that they made the decision to terminate childbearing. Finally, women may have responded to the question about the preferred number of children without really taking into consideration their ability to support children, but may have been engaging in wishful thinking "about what could have been."

As in most other countries in Asia, with the exception of India and Nepal, the percentage of women who have had a tubal ligation is much higher than the percentage of their partners who have had a vasectomy. At ages under 35, 3-5 times as many women as men are sterilized and the differences are only slightly smaller

at ages 35 and over. Similar differences are found with respect to the number of living children except that for women with none or one child, both tubal ligation and vasectomy are rare.

Table 3 presents information on the proportion of women protected by sterilization according to both age of the woman and the number of living children, and to age and living children relative to preferred. In general, controlling for the number of living children, the proportion sterilized reaches a maximum in the age range 30-44. The jump in the proportion sterilized from the age group 25-29 to the age group 30-34 may be explained by women wishing to delay making a final decision about their fertility (as mentioned earlier) or by the difficulty of arranging for a sterilization if women are below some threshold age. Controlling for age, the proportion sterilized increases through 3 children, is similar or lower for women with four children, and is generally lower for those with five or more children.

The percentage sterilized also increases, at least through the age group 30-34 and then remains roughly the same controlling for whether the woman has reached, exceeded or not met her preferred family size. Consider the group that has fewer than the preferred number of children. For younger women, those under 30, the proportion sterilized is very low; but, for those over 30, where the interview is likely to have occurred at a longer interval since the sterilization, and where women have had more of a chance to engage in "wishful thinking", the proportion sterilized is fairly high (24-33%).

IV. Other characteristics and the choice of sterilization

Table 4 provides information on the percentage of women who are protected by sterilization because either they or their husbands have been sterilized according to a number of characteristics. Also, these percentages are presented for those women who have at least two children. The percentage sterilized is higher in urban than in rural areas, and is lowest in the South with the second lowest rate in the North; the highest percentage sterilized is in the other central region (other than Bangkok). The percentage of women with a sterilization is lowest in the South where the Moslem population predominate and the percentage of spouses with a vasectomy is lowest in the Northeast. Although the percentage of women with a female sterilization is higher in urban than in rural areas, the percentage of their spouses with a vasectomy does not vary with residence.

There is no association between the wife's education and female sterilization or vasectomy. However, among women with at least two children, there is a strong association between education and tubal ligation. This difference in the relationship between education and female sterilization for the two groups of women may be explained by the increase in number of years of education among successive cohorts of women. Therefore the higher the woman's education, the younger she is likely to be and the fewer the number of children she is likely to have. Selecting for women with two children will "control" for this effect. However, among women with two or more children, there is a U-shaped relationship between education and vasectomy.

As with the wife's education, the relationship between husband's education and sterilization is strongest for the sub-group of women with at least two children. The difference in proportions with a female sterilization varies from a low of 19% for husbands in the lowest education group to 48% for the highest education group. As with the wife's education, there is no strong relationship between husband's education and vasectomy although there is some suggestion of a U-shape; percentages sterilized are highest in the lowest and highest education groups. This difference may be related to the lack of a rural-urban difference in proportions of husbands sterilized; men in the lowest education group are most likely to be rural residents, whereas, men in the highest education group are most likely to be urban residents.

The next section of the table shows the relationship between socioeconomic status and sterilization. The index of SES is based on vehicle possession, toilet facilities, and type of flooring. It takes into consideration the number of different types of vehicles but only quality of the other two indicators. As anticipated, the relationship between SES and sterilization is similar to that between husband's education and sterilization. This is because the number and quality of the family's possessions is related to the earning power of the husband which is in turn related to his education. The main difference is that there is no relationship between SES and vasectomy.

Women who are Moslems are much less likely to be sterilized themselves or to be married to a vasectomized man. This is consistent with the prevailing belief among Thai Moslems that sterilization is proscribed by Islam (Knodel, Chamratrithirong and Debavalya, 1987).

The percentage of women who have been sterilized is much higher for those whose last delivery was a cesarean one than for women with a normal delivery. The very high percentage sterilized among those with cesarean sections may be explained by a number of factors. Women with cesarean sections are more likely to have experienced problems in their most recent delivery and some of these may have led to sterilizations for medical reasons. Also women with a third or fourth cesarean section will often be sterilized because of the dangers of uterine rupture in pregnancies of high gravidity. Finally it should be remembered that most sterilizations are postpartum and while some of the women with home deliveries (included in the normal group) can return for a postpartum sterilization, access to sterilization for these women is limited. This speculation is discussed below.

Husband's occupation shows the same relationship to sterilization as does residence. Of particular interest is the fact that there is almost no difference in levels of vasectomy between men engaged in agriculture and those outside of agriculture. Considering that agricultural pursuits often involve heavy physical work, the fear that vasectomy physically weakens men does not seem to have a dominant influence. In contrast, women whose husbands work in agriculture as well as women who work in agriculture themselves are less likely to be sterilized than women whose husbands work outside agriculture or who themselves work outside of agriculture.

V. Child death and sterilization

Uncertainty about the possible death of a child may cause some couples not to choose sterilization. Couples who have already experienced the death of a child may thus be reluctant to get sterilized. Table 5 presents information on the proportion of women or their spouses sterilized by the number of living children and whether a child has died. For sterilized couples, these variables are calculated at the time that the sterilization was done. For non-sterilized couples, it refers to the situation at interview. For women with three or more living children, female sterilization is clearly more likely if there has been no child death than if child loss has occurred. Curiously, vasectomy shows little association with child death.

Why should the results be different for the two types of sterilization? One possibility contributing to this difference is that the information on number of children and child deaths refer to the wife's reproductive history and thus, in cases of remarriages, the husband's reproductive history may be different. This is unlikely to explain the whole difference and thus the lack of association between vasectomy and child deaths remains puzzling. Another possibility is that other factors not controlled for affect the selection of sterilization and may also be correlated with child death. For example, couples in rural areas are more likely to experience the death of a child than are couples in urban areas and while female sterilization is more likely to be selected by urban couples, vasectomy is not associated with residence. To sort out these possible effects, multivariate analysis is necessary. Another possibility is that women selecting sterilization get sterilized at delivery and a high proportion of child deaths occur in the first few days of life and women whose child is sickly or who dies will not select sterilization. Men, on the other hand, who choose sterilization are unlikely to time the surgery so close to the birth of a child, a time when the probability of death is highest.

VI. Place/type of delivery

Either accessibility or selectivity as well as medical factors may affect the decision of a woman to choose sterilization. Women with a birth in the last five years were asked the place of delivery; women with a birth in that period may be divided according to both the type and place of delivery. Table 4 has already shown that women whose last delivery was a cesarean were more likely to be sterilized than were women with a normal delivery (although not all women were sterilized at the time of delivery). What this table also shows is that women who delivered in a hospital were far more likely to get sterilized than were women who

delivered in a health center or at home Although postpartum sterilization is available to women with a home delivery, distance and child care responsibilities may make it difficult for such women to follow through and get sterilized. It is interesting to note that even in the non-hospital delivery group that almost all sterilizations were done postpartum. Even for women who do not deliver in hospital, interval sterilization is rarely selected. (Interval sterilization is expected to be low for this group as all had a recent birth.) On the other hand, selectivity is important; women interested in getting sterilized are likely to choose to deliver in a hospital in part for that reason.

VII. Characteristics of sterilized couples.

This section concerns women who are protected against pregnancy by sterilization either because they or their husbands have been sterilized; in other words, attention now focuses on the numerators presented in the prior tables. Sterilizations may be divided according to type of sterilization, male or female, and of female sterilizations whether the surgery was performed at or close to the time of delivery (postpartum) or subsequent to delivery (interval). If performed at delivery, sterilization can be further divided according to whether the mother had a caesarean or a normal delivery. The results are remarkably stable from year to year with just over 80% of women reporting that they were sterilized, and 20 percent reporting that their husbands were sterilized. These results are very similar to those reported in table 1; one might have expected differences as current survey data would exclude women who have passed age 49 and such women, if sterilized in earlier time periods, may have been more likely to have chosen interval sterilization, a procedure more often selected by older women who have decided to get sterilized after the birth of their youngest child than by women still eligible for interview who would have been quite young at the time of sterilization (e.g. no more than 30 if sterilized in 1970). However, the low popularity of interval sterilization in Thailand may make this effect unimportant.

Table 8 divides sterilizations in a similar manner to that shown in Table 7 and shows the distribution of sterilizations according to various background characteristics. There is little association of age or number of living children with whether the women or her husband is sterilized. But there is an association between age and type of female sterilization. The older the woman is the older are her children and the greater the likelihood that she chooses to be sterilized sometime after she has completed her family. With respect to other background characteristics, however, there is very little variation in the proportion of female sterilizations that are postpartum, which is uniformly high.

There is an important regional variation with respect to choice of male compared to female sterilization; vasectomy accounts for a much smaller proportion of sterilizations in the Northeast than in other regions of the country. The most interesting finding with respect to education and SES is the high proportion of vasectomies among the lowest education group. Perhaps vasectomy services targetted at low SES groups account for this pattern. A similar relationship is found for both husband's occupation and wife's work status, i.e. agricultural work is associated with a higher proportion of vasectomies. Finally, for those few Moslem couples who choose sterilization, husbands are more likely to get a vasectomy than is the case for Buddhists.

The percentage of women sterilized postpartum with a cesarean delivery varies with a number of characteristics. This percentage decreases with the number of living children and, as discussed above, this is probably related to medical reasons playing a greater role in sterilizations among women with two or fewer children than among women with more children. Also CS/sterilizations account for a larger proportion of sterilizations in urban than in rural areas. This may be related to the greater number of hospital deliveries in urban than in rural areas. This explanation may also account for the higher proportion of CS/sterilizations in Bangkok than in other regions. While this explanation undoubtedly accounts for some of the reason why the proportion of CS/sterilizations are highest in the highest education and SES groups, it may not account for all of it. The probability that a woman has a CS may itself be related to education. Further study of the relationship between SES and method of delivery is necessary.

Table 9 provides information on the distribution of sterilizations according to whether the woman reports that she has not reached, has reached, or exceeded her preferred family size. Except for women sterilized before 1968, the results are remarkably consistent over time in terms of the percentage (19% to

25%) of women reporting that they have less than the preferred number of children. However, a reduction in the percentage who had exceeded their preferred number and a concomitant increase in those who have exactly their preferred number is evident.

Table 10 provides information on the distribution of women protected by sterilization according to the relationship between preferred and actual number of living children. The distributions are very similar for male and female sterilization. The most striking relationship with age is with respect to differences in the group for which the actual exceeds the preferred number of children. Women sterilized at age 35 or older are twice as likely as are younger women to report that they had already exceeded their preferred family size when they got sterilized. Also as anticipated, as the number of children increases, the proportion who report that actual exceeds family size preferred increases and the proportion who report that actual is less than preferred decreases. The high percentage reporting that actual is less than preferred in the group with two children and the extremely high percentage in the group with 0-1 child may be explained by the fact that many sterilizations to these women are done for medical and not demographic reasons.

As the wife's education increases the percentage who report that actual family size exceeds preferred decreases. The pattern is similar for husband's education. This finding is probably related to the fact that education is negatively associated with age and the number of children. However, there are no clear relationships with respect to SES.

Sterilization regret

One of the most important issues that policy makers must address is the issue of regret. Counselling programs should pay special attention to men and women who are not appropriate candidates for sterilization. Even with the best counselling, however, some men and women will change their minds and later regret the decision to have been sterilized. Also even if it were determined that young age or low parity were associated with regret, those findings should not be used to restrict sterilizations to those not in such identified risk groups, but only to indicate that such individuals may need more extensive counselling. If criteria for sterilization were too restrictive, some persons would end up regretting that they did not receive the method that they wanted or received it later than they wanted.

The percentage of women who are classified as regretters is dependent on the question posed on regret (Warren, et al., 1988; Haupagalle, et al., 1989). In this survey, the question posed on regret is as follows: Do you regret that you (your husband) had the operation not to have any more children? Eleven per cent of women responded positively, 10% in rural areas and 13% in urban areas.

Table 11 presents information on the percentage of women who say that they regret having been sterilized by background characteristics controlling for residence. Regret is much higher for women who had a tubal ligation than for women whose husbands had a vasectomy. Studies in Asia show that men with vasectomies are more likely to regret than are females with tubal ligations (Philliber and Philliber, 1985). These results, however, are not comparable to ours as only women were interviewed in this survey. Why are women more likely to regret if they had the surgery themselves? Table 10 showed that the distribution of women according to preferred vs. actual number of children is similar among women who were sterilized and women whose husbands were sterilized indicating that differences in number of children probably do not explain the findings.[2]

Both the possible range of responses to the question on regret and the fact that only women were asked about it may explain this result. Regret among women with tubal ligations may occur either because they want more children or because of pain and inconvenience associated with the surgery or health problems subsequently attributed to it. However, regret among women whose husbands had had a vasectomy is unlikely to be associated with pain and inconvenience so that "side effects" of the method do not become a factor in regret and regret likely occurs only because of desire for additional children. Unfortunately the survey did not specifically ask women the reasons why they regretted either their own or their spouse's sterilization so this hypothesis can not be explored.

Women who had a cesarean section for their last delivery are more likely to regret than are other women. However, in urban as compared with rural areas, the level of regret is lower for the CS group and is similar to that found for women with interval sterilizations. In rural areas, home delivery is more common and CS is probably restricted to women at very high risk. Such women may disproportionately have sterilizations for medical reasons. In urban areas, CS is more common and some women may be having a routine CS. Therefore, the group in urban areas may be made up of a smaller proportion that have sterilizations for medical reasons. Why regret should be higher for women with interval sterilizations is not clear.

As anticipated, regret is strongly and negatively associated with the number of living children and is highest for women who report that they have fewer than their preferred number of children. The death of a child subsequent to sterilization is also a factor associated with regret. In this study, regret was almost three times higher among women one of whose children died subsequent to surgery than among women none of whose children died. Regret among women with a child death subsequent to sterilization was also much higher in a group of sterilized Sri Lankan women (Hapugalle et al., 1989)

The education of the woman was positively associated with regret; however, once residence was controlled for this relationship was apparent only in rural areas. Similarly, while education of husband was also positively associated with regret, once residence was controlled for this association remained only among rural residents. Regret was not associated with SES. Regret was higher among women whose husbands occupation was non-agricultural as compared with agricultural. This difference was greater than the rural-urban difference in regret. Region and religion also appear to be important correlates of regret. Regret is far lower in the North than in other regions and highest among Moslems and lowest among Christians.

In order to control for regret associated with sterilizations likely to have been carried out for medical reasons, we reran Table 11 dividing sterilizations into two groups: less than two children at time of sterilization or sterilized concurrently with CS, and all others. As anticipated regret was far higher in the former group (22.4%) as involuntary sterilization are likely to be high than among all other women (9.5%). However, no significant changes in the associations between the variables in Table 11 and regret occur when the analysis is limited to women among whom reasons for sterilization are likely to be "voluntary" and not medical.

Further analyses of these data could be useful to program personnel and counsellors so that they could have more precise estimates of how background characteristics affect the probability of regret. These could then be used in determining how to allocate resources to provide more counselling for couples in high risk groups in an effort to reduce regret.

VIII. Discussion

The prevalence of sterilization has grown rapidly in Thailand over the past two decades with the percentage of women protected by sterilization having risen from 7.6% in 1969/70 to 27.9% in 1987. About 80% of sterilizations are tubal ligations and the remaining 20% are vasectomies. The failure of the percent sterilized to increase over the period 1984-87 may indicate that sterilization has reached a plateau in Thailand. Over one third of women with two children and half of those with three children are protected by sterilization. Given the relatively high current prevalence of sterilization, it will be interesting to observe if significant increases in these percentages will continue to occur over the next several years. Quite possibly, with the availability of long-acting temporary methods like NORPLANT, there may be a decline in the choice of sterilization among women with two and three children.

Although this report did not fully analyze the reasons why some couples opted for female sterilization while others chose vasectomy, the survey findings do suggest that accessibility of services may play a role. While the prevalence of female sterilization is positively correlated with education and SES, the prevalence of vasectomy is not. Moreover, the prevalence of female sterilization is far higher in urban than in rural areas (particularly when the comparison is limited to women with two or more children) while the prevalence of male sterilization is roughly equal in the two residence groups. If the prevalence of sterilization is to

increase in the coming years, then it may be necessary to expand service delivery programs to reach those in rural areas and those with less education and of lower SES.

Most tubal ligations in Thailand are postpartum sterilizations. The percentage of women with a sterilization is much lower among women whose last delivery was at home than among women with a hospital delivery. While selectivity or confounding may partially account for this relationship, it is also likely that lower accessibility to hospitals makes it more difficult for rural women compared to urban women to get sterilized. The recent decision of the Ministry of Health to train nurse-midwives at community and provincial hospitals to do postpartum sterilization should make it easier for rural women to arrange to get sterilized. Even if women deliver their babies at home, they will be able to come in during the next few days and be sterilized. This effort may result in an increase in sterilization in rural areas.

About 10% Of postpartum sterilizations are done at the time of cesarean section. Many of these are undoubtedly for medical reasons. However, the survey results hint at some potentially disturbing findings. The proportion of CS/sterilizations is strongly associated with education and SES status; among women whose husbands have more than a secondary school education, 40% said that their last delivery was a cesarean section. While differences in place of delivery (home vs. hospital) associated with these characteristics may play a role in accounting for this relationship, it may also be that the cesarean section rate is positively associated with SES. While there is no indication that these CSs are carried out to facilitate sterilization, unnecessary CSs endanger the health of mothers.

Because sterilization is usually considered to be an irreversible procedure, there is a great deal of interest in determining the level and correlates of regret. Such information could be useful in designing counselling programs with special efforts targetted at those most likely to experience regret. In this survey, 11% of women protected against pregnancy by sterilization reported that they regretted having been sterilized. Regret was especially high among those women who likely underwent sterilization for medical reasons, including many of those with two or fewer children and many of those whose last delivery was a cesarean section. Since many of these sterilizations were not done for contraceptive reasons, regret in this group will not be sensitive to counselling aimed at helping couples make contraceptive choices. Regret was also very high among women who had a child die subsequent to the sterilization. Since the prediction of which women will have a child die subsequent to sterilization is not easy, this component of regret also is difficult or impossible to reduce. However, for the majority of couples considering a permanent method of contraception, a counselling program particularly targetted at couples in which regret is likely to be high, could reduce this level. With contraceptive sterilization such an important method in Thailand, efforts to keep regret low should work toward maintaining a favorable environment for sterilization.

NOTES

1 The TDHS was carried out by the Institute of Population Studies at Chulalongkorn University as part of the international program of Demographic and Health Surveys sponsored by the Institute for Resource Development at Westinghouse. Fieldwork took place during March through June 1987 and involved interviews with a nationally representative sample of 6,775 ever-married women aged 15-49. The sample was designed to provide independent estimates for the four major regions of Thailand and the Bangkok Metropolitan Area, as well as for the urban and rural sectors collectively. A more detailed description is available in the country report (Chayovan, Kamnuansilpa and Knodel, 1988).

2 To further explore reasons why regret was low among women whose husbands had been sterilized as compared with cases in which they themselves had been sterilized, Table 11 was rerun controlling for who was sterilized. In almost every cell, regret was higher among women who themselves had been sterilized as compared with women whose husbands had been sterilized.

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Table 1 Percentage of women or spouse sterilized and percentage currently using contraceptive methods among currently married women aged 15-44, 1969-87

Year of survey	Sterilization			All methods	% of contraceptors protected by sterilization	% female sterilized of all sterilized couples
	Male	Female	Either			
1969/70	2.1	5.5	7.6	14.8	51.4	72.2
1972/73	2.8	6.8	9.6	26.4	36.4	70.8
1975	2.2	7.5	9.7	36.7	26.4	77.3
1978/79	3.5	13.0	16.5	53.4	30.9	78.8
1981	4.2	18.7	22.9	59.0	38.8	81.7
1984	4.4	23.5	27.9	64.6	43.2	84.2
1987	5.5	22.4	27.9	67.5	41.3	80.2

Source: Adapted from Chayovan, Kamnuansilpa and Knodel, 1987, Table 4.7, p. 57

Table 2 Percentage of women or spouse sterilized, by age of woman, number of living children, and number of living children relative to preferred number of children, among currently married women aged 15-49

	Method of sterilization		
	Female	Male	Either
Age of women			
15-19	0.4	0.1	0.6
20-24	4.4	1.0	5.5
25-29	17.2	3.3	20.4
30-34	33.3	7.3	40.6
35-39	32.0	8.4	40.4
40-44	32.8	10.2	43.0
45-49	26.3	7.6	33.9
Number of living children			
0	0.1	0.7	0.7
1	1.6	1.7	3.3
2	27.1	7.5	34.6
3	40.6	8.7	49.3
4	36.9	7.2	44.1
5+	31.0	7.3	38.3
Living children relative to preferred number			
Less than preferred	10.9	2.9	13.8
Equal to preferred	33.0	7.4	40.3
Greater than preferred	34.2	9.6	43.8
Total	22.8	5.7	28.6

Table 3 Percentage of women or spouse sterilized by age of woman and number of living children, among currently married women aged 15-49

Number of living children	Age of woman						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
0	0.3	0.9	0.7	0.0	(2.1)	(2.3)	-
1	0.0	0.4	1.5	6.3	13.9	16.4	(17.4)
2	-	15.6	29.7	45.0	39.2	44.4	36.4
3	-	(27.9)	43.0	58.8	49.6	45.8	45.4
4	-	-	36.0	42.0	47.2	48.0	40.3
5+	-	-	-	53.4	40.4	45.3	29.9
Living children relative to preferred number							
Less than preferred	0.2	1.6	10.9	24.2	32.6	30.6	30.0
Equal to preferred	(5.9)	18.9	32.5	52.6	40.3	46.0	38.5
Greater than preferred	-	(29.9)	47.4	51.9	48.2	46.3	33.0

Notes: Results based on less than 20 unweighted cases are not shown; results based on 20-49 unweighted cases are enclosed in parentheses. The results shown are based on weighted calculations.

Table 4 Percentage of women or spouse sterilized, by selected characteristics, among all currently married women aged 15-49 and among those with at least two living children

	All women			2 or more living children		
	Female sterilization	Male sterilization	Either	Female sterilization	Male sterilization	Either
National	22.8	5.7	28.6	32.8	7.7	40.5
Rural-urban residence						
Rural	21.9	5.7	27.6	30.5	7.5	38.1
Urban	27.1	5.9	33.0	45.2	8.6	53.8
Region						
Bangkok	24.1	6.9	31.0	40.9	10.3	51.2
Other central	26.1	9.6	35.7	37.2	12.8	50.0
North	19.4	6.0	25.4	30.2	8.8	39.0
Northeast	25.5	2.8	28.3	34.7	3.7	38.4
South	14.5	5.6	20.0	19.1	7.3	26.4
Wife's education						
0-3 years	20.6	8.1	28.7	25.3	9.4	34.7
4-6 years	23.5	5.2	28.7	33.4	6.7	40.3
Secondary	21.0	5.8	26.9	41.4	11.3	52.7
Beyond secondary	21.9	6.3	28.2	45.6	11.7	57.3
Husband's education						
0-3 years	15.9	7.4	23.3	19.0	8.8	27.7
4-6 years	23.8	5.5	29.3	32.7	7.1	39.8
Secondary	21.0	5.6	26.6	40.3	9.3	49.5
Beyond secondary	24.6	6.8	31.3	47.7	11.7	58.4
Wealth level						
Lowest	17.9	6.1	24.0	24.0	7.9	32.1
Low	22.0	4.4	26.3	31.1	5.9	37.0
Middle	21.7	5.8	27.5	32.5	8.0	0.5
High	29.1	8.4	37.5	42.0	11.5	53.5
Highest	29.2	7.1	36.3	43.4	9.2	52.5
Religion						
Buddhist	23.8	5.7	29.5	34.3	7.7	42.0
Moslem	8.0	2.7	10.7	10.9	3.8	14.7
Christian	19.4	17.3	36.8	28.5	26.9	55.3

Table 4 (continued)

	All women			2 or more living children		
	Female sterilization	Male sterilization	Either	Female sterilization	Male sterilization	Either
Type of delivery						
Caesarean	50.3	2.2	52.4	71.3	2.9	74.2
Normal	24.3	6.5	30.8	31.2	7.9	39.1
Husband's occupation						
Agricultural	20.2	5.7	25.9	27.4	7.5	34.9
Non-agricultural	26.7	5.7	32.4	41.8	8.1	49.9
Wife's work status						
Working-agricultural	18.5	7.1	25.5	24.9	8.8	33.3
Working-nonagricultural	30.1	6.1	36.3	44.8	8.6	53.3
Not working	21.7	4.3	26.1	32.5	6.1	38.6

Notes: Results based on 20-49 unweighted cases are shown in parentheses. The results shown are based on weighted calculations.

Table 5 Percentage of women or spouse sterilized, by number of living children and number of child deaths, among currently married women 15-49

Number of living children and number of child deaths (For sterilized couple, number of living children and child deaths at time of sterilization)	Method of sterilization		
	Female	Male	Total
1 living child			
No deaths	1.3	1.6	2.9
1 or more deaths	1.9	2.7	4.6
2 living children			
No deaths	26.6	7.4	34.0
1 or more deaths	25.2	7.0	32.3
3 living children			
No deaths	43.6	8.8	52.4
1 or more deaths	29.2	9.2	38.4
4 living children			
No deaths	40.2	7.7	47.9
1 or more deaths	24.8	5.9	30.7
5 living children			
No deaths	36.3	6.9	43.2
1 or more deaths	22.8	8.0	30.7

Table 6 Percentage of women sterilized, and percentage of sterilization done postpartum by place and type of delivery among currently married women aged 15-49 who gave birth during five years prior to the survey

	% Sterilized		
	All women	Women with two or more living children	Of female sterilizations, % postpartum
Hospital	27.0	44.1	93.8
Caesarean	35.8	64.4	98.8
Normal	26.0	42.0	92.9
Health center/clinic	10.2	15.5	(78.6)
Home or other	12.3	15.7	93.4
Total	19.7	29.0	92.7

Table 7 Percent distribution of type of sterilization, percentage of female sterilizations done postpartum, and percentage of postpartum female sterilizations that are associated with Caesarean section, by year of sterilization, among sterilized couples in which the wife is aged 15-49

Year of sterilization	Type of sterilization			Of female sterilization, % postpartum	Of postpartum female sterilization, % Caesarean
	Female	Male	Total		
Before 1968	(61.6)	(38.4)	100	(66.1)	(19.2)
1968-72	79.3	20.7	100	83.5	12.7
1973-77	81.3	18.7	100	85.3	8.6
1978-82	80.8	19.2	100	81.1	10.5
1983-87	80.0	20.0	100	81.8	10.7
Total	80.0	20.0	100	82.0	10.4

Notes: Results based on less than 20 unweighted cases are not shown; results based on 20-49 unweighted cases are enclosed in parentheses. The results shown are based on weighted calculations.

Table 8 Percentage of sterilized couples with vasectomy, percentage of female sterilizations done postpartum, and percentage of postpartum female sterilizations associated with Caesarean section by selected characteristics, among sterilized couples in which the wife is aged 15-49

Characteristic	Of sterilized couples, % with vasectomy	Of female sterilizations, % postpartum	Of postpartum female sterilizations, % Caesarean
Total	20.0	82.0	10.5
Age of woman			
under 25	18.7	(93.4)	(6.9)
25-34	17.3	87.9	9.5
5 or over	22.2	76.4	11.6
Number of living children			
0 or 1	(56.7)	-	-
2	21.6	80.4	16.9
3	17.7	86.9	7.9
4 or more	17.7	80.5	5.3
Rural-urban residence			
Rural	20.6	82.6	8.4
Urban	17.9	80.0	18.1
Region			
Bangkok	22.4	82.5	20.9
Other central	26.8	81.7	11.5
North	23.8	79.1	9.3
Northeast	10.0	83.6	6.4
South	27.8	81.0	15.3
Education of woman			
0-3 years	28.1	77.0	9.2
4-6 years	18.1	83.0	8.3
Secondary	21.7	80.5	19.1
Beyond secondary	22.4	82.9	39.9
Education of husband			
0-3 years	31.9	73.7	14.2
4-6 years	18.7	83.3	8.3
Secondary	21.0	80.5	13.0
Beyond secondary	21.7	79.9	26.5
Religion			
Buddhist	19.3	81.9	10.4
Moslem	25.6	(85.5)	(17.7)
Christian	(47.1)	(81.6)	

Table 8 (continued)

Characteristic	Of sterilized couples, % with vasectomy	Of female sterilizations, % postpartum	Of postpartum female sterilizations, % Caesarean
Wealth level			
Lowest	25.3	88.7	5.2
Low	16.7	82.2	7.8
Middle	21.0	79.8	9.7
High	22.4	80.0	13.4
Highest	19.5	82.1	21.2
Husband's occupation			
Agricultural	22.1	82.2	6.9
Nonagricultural	17.7	82.0	14.3
Wife's work status			
Working - agricultural	27.7	82.0	8.9
Working - nonagricultural	16.9	81.4	15.8
Not working	16.6	82.8	6.9

Notes: Results based on less than 20 unweighted cases are not shown; results based on 20-49 unweighted cases are enclosed in parentheses. The results shown are based on weighted calculations.

Table 9 Percentage distribution of sterilized couples according to the number of living children compared to the preferred number of children, by year of sterilization

Year of sterilization	Number of living children compared to preferred number of children			
	Less than preferred	Equals preferred	Exceeds preferred	Total
Before 1968	(10.9)	(51.7)	(37.4)	100
1968-72	25.1	36.6	38.3	100
1973-77	19.3	39.1	41.5	100
1978-82	23.4	42.6	34.0	100
1983-87	24.3	51.8	23.9	100
Total	22.7	45.4	31.9	100

Note: Results based on 20-49 unweighted cases are shown in parentheses.

Table 10 Percent distribution according to number of living children relative to preferred number of children by selected characteristics, among sterilized couples in which the wife is aged 15-49

Characteristic	Living children compared to preferred number			Total
	Less than preferred	Equals preferred	Exceeds preferred	
Total	22.7	45.4	31.9	100
Method Used				
Female sterilization	22.5	46.4	31.2	100
Male sterilization	23.8	41.3	34.9	100
Age of Woman				
Under 25	23.8	59.9	16.3	100
25-34	27.3	52.3	20.4	100
35 or over	19.1	39.0	41.9	100
Number of Living Children				
0 or 1	79.7	15.3	5.0	100
2	36.8	59.1	4.2	100
3	18.8	49.3	31.8	100
4 or more	8.9	31.8	59.2	100
Rural-Urban Residence				
Rural	22.8	46.2	30.9	100
Urban	22.3	42.0	35.7	100
Region				
Bangkok	25.0	36.5	38.6	100
Other central	25.3	43.7	31.0	100
North	19.0	54.5	26.5	100
Northeast	22.8	46.0	31.2	100
South	19.8	40.3	39.9	100
Education of Wife				
0-3 years	26.2	37.9	35.9	100
4-6 years	21.5	46.5	31.9	100
Secondary	22.4	48.9	28.7	100
Beyond secondary	32.7	43.7	23.6	100
Education of husband				
0-3 years	28.7	36.0	35.3	100
4-6 years	22.0	46.0	31.9	100
Secondary	22.7	44.7	32.6	100
Beyond secondary	22.3	50.1	27.6	100

Table 10 (continued)

Characteristic	Living children compared to preferred number: Less than preferred	Equals preferred	Exceeds preferred	Total
Religion				
Buddhist	22.1	45.9	32.0	100
Moslem	(25.3)	(29.0)	(45.7)	100
Christian	(50.4)	(32.7)	(16.9)	100
Type of delivery				
Caesarean	35.9	42.6	21.5	100
Normal	21.3	45.8	32.9	100
Wealth level				
Lowest	20.3	44.7	34.9	100
Low	23.4	49.6	27.0	100
Middle	24.2	41.5	34.3	100
High	18.2	44.3	37.6	100
Highest	25.6	42.9	31.4	100
Women's work status				
Working-agricultural	21.8	46.7	31.5	100
Working-nonagricultural	23.6	46.6	29.8	100
Not working	22.8	43.2	34.0	100
Husband's Occupation				
Agricultural	22.4	47.3	30.3	100
Nonagricultural	23.1	43.3	33.7	100

Table 11 Percentage who regret sterilization by selected characteristics among currently married women age 15-49 who are sterilized or whose spouse is sterilized

	Total	Rural	Urban
Total	10.9	10.4	12.6
Method of sterilization			
Female	11.7	11.2	13.3
Male	7.7	7.3	9.5
Type of female sterilization			
Postpartum	11.3	11.1	12.1
Normal	10.0	9.8	11.0
Caesarean	22.1	24.9	17.0
Interval	13.5	12.2	17.8
Living children			
0-1	31.0	(36.2)	-
2	16.8	16.3	18.4
3	9.5	9.1	10.9
4	6.4	6.5	6.0
5+	4.7	4.2	7.6
Living children compared to preferred number			
Less than preferred	34.7	34.6	35.0
Equals preferred	3.2	2.5	6.1
Exceeds preferred	4.8	4.4	6.2
Number of children dying subsequent to sterilization			
None	10.2	9.7	(12.0)
One or more	27.7	(27.2)	(29.8)
Region			
Bangkok	15.0	-	15.0
Other central	14.6	15.1	9.6
North	3.7	3.1	8.4
Northeast	10.3	10.3	9.7
South	11.9	12.4	10.2
Education of wife			
0-3 years	7.9	7.6	9.3
4-6 years	10.9	10.4	13.6
Secondary	11.2	12.7	9.9
Beyond secondary	20.2	(26.3)	15.4
Education of husband			
0-3 years	6.3	6.2	(6.4)
4-6 years	11.0	10.4	14.8
Secondary	10.9	12.9	8.5
Beyond secondary	13.8	(10.2)	16.4

Table 11 (continued)

	Total	Rural	Urban
Religion			
Buddhist	10.8	10.4	12.5
Moslem	(22.3)	(23.5)	(20.5)
Christian	(3.1)	-	-
Wealth level			
Lowest	12.2	11.7	-
Low	8.1	7.3	13.1
Middle	13.5	13.8	12.7
High	7.9	7.4	9.0
Highest	15.7	17.5	13.7
Husband's occupation			
Agricultural	8.5	8.4	(15.9)
Nonagricultural	13.8	14.6	12.6
Wife's work status			
Working-agricultural	7.8	7.9	-
Working-nonagricultural	13.6	13.2	14.4
Not working	10.9	11.1	10.1

Notes: Results based on less than 20 unweighted cases are not shown; results based on 20-49 unweighted cases are enclosed in parentheses. The results shown are based on weighted calculations.