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Dr Milof Macura
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Contraception, according to some scholars, now matches the increasing age of women at marriage as a cause of Sri Lanka's declining crude birth rate. This study analyzes data from the Sri Lanka Fertility Survey not published in the Survey's First Report in order to identify the determinants of contraceptive use and to estimate the births averted by female sterilization, Sri Lanka's main contraceptive method (CM).

Discussed in turn are the use of modern reversible CM's (the pill, IUD loop, and condom); female sterilization; year of ^{reversible} CM's or sterilization; CM first used; a comparison of Survey results with data from the Sri Lanka Family Health Bureau; the reasons for non-use and determinants of ever-use of contraception; current contraceptive use (using multivariate analysis); and the effect of contraception on fertility.

The following conclusions were reached: (1) While contraception is a growing force in Sri Lanka, delay in age of marriage is still the greatest cause of the country's declining birth rate. (2) Modern CM's are widely known, but are actually used by only a minority of exposed women. The reasons given for non-use are seldom convincing. (3) The loop has a fairly good retention record, but that for the pill is poor, partly because of problems in support of its use. (4) Female sterilization protects as many exposed women as all other CM's combined and averts a substantial number of births. In general, women who had been sterilized had particularly high fertility in the years preceding sterilization, ^{immediately} ~~and so~~ immediately after their last birth, and had used ^{no previous method.} (5) There has been a considerable shift from traditional to modern CM's. (6) There is a significant geographical and ethnic variation in contraceptive use. Use is highest in the capital, Colombo, and is relatively high in the central highland area (although not in the tea estates). Use is much less among the Tamils and Moors (who have, however, a lower fertility rate) than among the Sinhalese (especially Christian Sinhalese) and varies strongly and directly with female education. (7) A woman's fertility during the first 5 years of marriage appears to be a key determinant of contraceptive use.

A 17-item list of references (1968-80) is appended.

Most women who had been sterilized demonstrated particularly high fertility in the years preceding sterilization, were sterilized immediately after their last birth, and had used no previous CM. (.)

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NOTE ON THE AUTHOR

George E. Immerwahr was assigned to Sri Lanka by the World Health Organization during 1973-76 to assist the Family Health Bureau of the Sri Lanka Ministry of Health in the evaluation of the Family Health Programme, having previously served in the USAID population programme in India.

During his WHO assignment, he collaborated with his counterparts in the Family Health Bureau in designing, conducting and analysing the results of the 1975 Family Health Baseline Survey referred to in this report. He later assisted in the editing of the Sri Lanka Fertility Survey (WFS) data.

1 Introduction

It has been widely publicized in recent population literature that Sri Lanka, although one of the developing countries with very low per-capita income, has a crude birth rate well under 30, and that this low rate results largely from relatively late marriage. While Sri Lanka apparently never had a large proportion of married females at ages under 15, it has had in recent years a very marked decline in the proportions married at ages between 15 and 35, as may be seen from Table 1.

Table 1. Percentage of Females Ever Married, by Age, and Singulate Mean Age at Marriage

Age	1946	1953	1963	1971	1975
15-19	24.6	24.3	15.0	10.6	8.1
20-24	70.6	67.5	58.7	46.8	43.3
25-29	88.2	87.2	82.9	75.4	71.4
30-34	93.4	92.5	91.7	89.9	88.8
35-39	95.7	94.6	95.2	94.2	94.7
40-44	95.9	95.0	95.7	95.3	96.3
45-49	96.6	95.6	96.1	95.7	97.7
50+	96.7	96.0	96.1	95.8	97.6
Singulate Mean	20.8	20.9	22.1	23.5	25.1

Sources: Population Censuses, 1946-1971. Sri Lanka Fertility Survey, 1975.

The relative contributions of rising age at marriage and reduction in marital fertility to the decline in the crude birth rate have been studied by several scholars, the most recent example being Alam and Cleland (forthcoming). They conclude that up until 1970, some 60 per cent of the decline is attributable to marriage postponement but that, between 1970 and 1975, the effect of decreasing marital fertility has matched the effect of the continued increase in female age at marriage.

In broad terms, this shift in the relative importance of the two factors accompanies the increasing emphasis on the promotion of family planning services. Although family planning had been made available through the Family Planning Association as early as 1953, a national family planning programme was not inaugurated until 1965. Family planning activities also received external assistance, first through the Swedish aid programme, and later under a UNFPA programme which began in 1973.

Many details of the early family planning activities, particularly those of the Family Planning Association and the Swedish aid agency SIDA, are given by Abhayaratne and Jayawardene (1968), Nycander (1971), and Wright and Perera (1973). The contraceptive methods first made available were foam tablets, condoms and diaphragms, and in the 1960's pills and IUD's were introduced. Government participation, even though legally established in 1965, was not active until 1968, when the Family Planning Bureau was established within the Ministry of Health. The Bureau is now called the Family Health Bureau. The programme itself is called the

Family Health Programme; it is concerned with all aspects of maternal and child health, including pre-natal and post-natal care, health education, nutrition and immunization, as well as with family planning. Activities are carried out not only by several hundred local health clinics but also by about 3,000 Public Health Midwives who call on women of childbearing age in their homes, instruct them in family planning methods, sell condoms, and prescribe and sell pill packets.

The Family Planning Association continues to function, though largely in research and promotional capacities. It piloted the use of the injectable depo provera and introduced mobile vasectomy teams in the tea-estates. SIDA also continues to assist, but its main function in recent years has been to donate most of the pills, condoms and IUD's used in the government programme; it has also constructed a new headquarters building for the Family Health Bureau. A non-profit contraceptive marketing service was commissioned by the International Planned Parenthood Federation in 1973. It put on the market "Preethi" condoms late in that year and "Mithuri" oral contraceptives late in 1976; the condoms were already selling very well before the Sri Lanka Fertility Survey (SLFS) field work began, so that their use was reflected in the survey.

The national programme has been substantially supported since 1973 by the United Nations Fund for Population Activities (UNFPA), which has also assisted several other activities in Sri Lanka supportive of family planning; these include the following:

- (a) a programme for strengthening nursing and midwifery education in regard to family planning and related services;
- (b) programmes of population and family planning education through unions and employers, both in urban areas and in the plantations;
- (c) population education in the schools;
- (d) demographic education and research in the University of Sri Lanka and teaching of population dynamics and family planning in the medical schools;
- (e) a communication strategy programme to promote family planning through the media; and
- (f) provision for more effective surgical facilities for sterilizations and other procedures.

The Family Health Bureau is the administration and co-ordination centre for all family planning activities, supervising all organized personnel engaged in family planning work except for personnel of the Family Planning Association and the Colombo Municipal Health Department, but even these organizations report to the Bureau and their family planning acceptors are included by the Bureau in the national statistics.

The purpose of this report is to set forth the principal findings of the SLFS on contraceptive usage, other than those already contained in the survey's First Report: to analyse these findings in such a manner as to identify the determinants of contraceptive usage and to estimate the births averted by the principal contraceptive method in Sri Lanka, namely female sterilization.

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2 Contraceptive Knowledge and Use: Major Findings from the First Report

The SLFS First Report* shows a high degree of knowledge of contraception. All but 9 per cent of the 6,810 ever-married women in the survey had heard of at least one contraceptive method, and each of the major modern methods was quite well known. Eighty-two per cent of ever-married women had heard of female sterilization, 79 per cent of the pill, 61 per cent of the loop, 51 per cent of the condom; in fact 90 per cent had heard of at least one modern method. However, only 43 per cent of ever-married women had ever used any method, and only 25 per cent had ever used a modern method. The numbers of women who had used particular methods and who were using such methods at the interview date (August–October 1975) are shown in Table 2.

The totals using a method at date of survey were: 1,155 modern, 798 traditional: these totals may be verified by summing the numbers for individual methods. It would be improper to sum the numbers for methods ever used, since many women (1,262) have used two or more methods. However, a total of 1,707 had used at least one modern method; another 1,255 had never used any modern method but had used at least one traditional method; 3,848 ever-married women had used no method at all.

At the interview date, 628 women reported themselves to be pregnant. A further 642 were not currently married and 831 said that for reasons other than contraceptive sterilization they could not bear a child. The remaining 4,709 constitute the base against which to measure current contraceptive use,

since these women could presumably become pregnant were it not for current contraceptive use, including sterilization. The 1,155 using a modern method comprised 24 per cent of this base and the 798 using a traditional method, 17 per cent. The remaining 2,756, or 59 per cent, were not currently using any method.

Other findings presented in the First Report include the following:

1) The percentage of women who had ever used a contraceptive method increases, as would be expected, with age and with number of children, but only to a certain stage, following which it decreases. With respect to age, the percentage of ever-users decreases after 30–34; with respect to number of living children the percentage decreases after four. This decrease results in part from the fact that the older women had relatively little access to contraception until relatively late in their reproductive period; they had also had less education than their younger counterparts, were more traditional in their background, more likely to have been brought up in an agricultural setting, and had lived their early married lives in a period when there was less interest in, or occasion for, family limitation.

* All data in the First Report were presented on a weighted basis, correcting for the fact that the sampling fraction differed among the 17 different sample strata. The present report also uses the weighted data except where otherwise indicated.

Table 2. Distribution of Women by Ever-Use and Current Use of Specified Methods of Contraception

Method	Women who have ever used method		Women using method at interview date		
	Number	Per cent of ever-married women	Number	Per cent of currently exposed women*	Per cent of current contraceptive users
Modern					
Pill	558	8.2	95	2.0	4.9
Loop	521	7.7	290	6.2	14.8
Condom	324	4.8	141	3.0	7.2
Female sterilization †	590	8.7	566	12.0	29.0
Male sterilization	44	0.7	44	0.9	2.3
Injectable	50	0.7	19	0.4	1.0
Other scientific (foam, diaphragm, etc.)	23	0.3	0	0	0
Sub-total	—	—	1,155	24.5	59.1
Traditional					
Douche	104	1.6	1	0.0	0.0
Rhythm (safe period)	1,474	21.7	490	10.4	25.1
Withdrawal	430	6.3	90	1.9	4.6
Abstinence	809	11.9	214	4.5	11.0
Other traditional	18	0.3	3	0.0	0.2
Total	—	—	1,953	41.4	100.0

* "Exposed" women are those who are currently married, fecund, and non-pregnant.

† 24 of the sterilized women were no longer married at interview date.

Source: First Report Table 4.4.1, modified.

2) The percentage of ever-users was highest for: (a) the highest education levels (64 per cent for women with university education); (b) zone 1, Colombo City (57 per cent); (c) urban generally (53 per cent) in comparison with rural (44 per cent) and tea estates (22 per cent); (d) among religions, Christians (51 per cent) followed by Buddhists (49 per cent), Hindus and Muslims (each 27 per cent).

Although the First Report contains a wealth of descriptive detail concerning contraceptive knowledge and use, much of the data available from the survey was not included. The rest of this paper will concentrate on those aspects not already covered, or attempt more refined analysis of topics, such as current use, which were discussed in the First Report.

3 Use of Modern Reversible Methods

The SLFS questionnaire included a number of questions from the WFS Family Planning Module, and in addition each woman who had reported use of pill, loop or condom was asked the following:

- a) the first source of her information about the method,
- b) in what year she first used the method,
- c) for how many months the method was first used, and
- d) the reason for discontinuing the method (if it was discontinued).

Women reporting pill use were also asked if there were problems in getting supplies, and those reporting condom use were asked whether any other method was used with the condom.* The answers to questions (a) and (b) and also other details of users are tabulated in Table 3 and selected continuation data in Table 4.

The pre-coded answers to question (a) were: (1) medical or paramedical person at a family planning clinic; (2) family planning worker calling at home; (3) medical or paramedical person at some other place; (4) husband; and (5) other. A family planning clinic was probably construed to mean any health clinic offering maternal-child-health services, and a family planning caller to mean a public health midwife, as these midwives (there are about 3,000 of them) specialize in MCH services. A medical or paramedical person at some other place would generally mean a hospital doctor, nurse or midwife, and since about 70 per cent of Sri Lanka's births are in hospitals, some women learn first about family planning while in hospital at the time of confinement.

Except for a specific question on loop expulsion, question (d) was an open-ended question, but answers to it were later coded under a coding scheme developed from a 10 per cent sample of the responses. For each of the three methods, the code showed how many women terminated use because of accidental pregnancies or the desire for another child, with other answers as tabulated in Table 4b. Where two or more reasons for discontinuance were given, only the first was tabulated.

Questions (b) and (c) specifically asked about first use of a method; question (c) also specified continuous use in the case of the pill, regular use in the case of the condom. It appears from the results, however, that the question as to continuous or regular use was not always understood. Among the 95 pill users shown in Table 4b as still on the pill, for example, were 11† whose pregnancy history shows one or more births between the year of first use and the interview date; and corresponding interruptions are apparent for 14† loop and 8† condom cases where use up to the interview date was shown. There were several other inconsistencies in the data; for example, 5† cases where a woman reported having stopped the pill because of pregnancy when no birth was shown in her pregnancy history in either the year she stopped or the following year; there were also several women who claimed to have started on the pill or loop in years before the pill or loop became available.

These various misinterpretations of the questions and inconsistencies in the answers are neither surprising nor serious; they illustrate, of course, the difficulty of obtaining, from a single round survey, precise data relating to a long period of years. Perhaps, however, there might have been more careful probing of the replies, and in particular a closer linkage of these questions with the woman's pregnancy history.

In this connection, it should be noted that, in the Sri Lanka questionnaire, the women were asked to state the first contraceptive method they had ever used and how many living children they had at that time. Details on the responses to

these questions are given in Table 9, to be discussed later. The answers to these questions might be compared with the answers to year of first use of pill, loop or condom, but only when such a method was the first method used, and then only with a further complication because the question on children relates to living children, not live births.

It will be seen from Table 3 that the most common first source of information about pill or loop was a family planning clinic, though this does not necessarily mean that the woman visited the clinic to learn about family planning, since these clinics serve other maternal-child-health purposes as well, and the woman may have attended the clinic for pre-natal or post-natal care, or examination, treatment or immunization of her child. The second most important source of information on loop or pill was the worker calling at her home, usually a public health midwife, who performs various maternal-child-health functions and who is authorized to prescribe the pill and who also sells pills and condoms. (The public health midwife, incidentally, even though trained in obstetrics, actually performs only a small proportion of deliveries, averaging only about one a month since, as noted earlier, most women go for delivery to hospitals or maternity homes.) As mentioned above, the worker "at some other place" usually means a hospital worker, and while many women learn of loop, pill or condom at the time of hospital delivery, this is an even more important source of information on sterilization.

As would be expected, husbands are more likely than their wives to learn about condoms, though the recent marketing and advertising of "Preethi" condoms is now contributing greatly to the general awareness of this method.

As Table 3 shows, none of the three methods was in widespread use before 1965, and the reported use of pill or loop before then may have been mis-dated, since (so far as can be learned) neither of these two methods was in use in Sri Lanka before 1962 even though some women in the survey reported their use before that date. The pill and loop starters outnumbered the condom before 1973, but the advent of Preethi late in that year considerably increased condom use.

Pill and condom use have generally begun at an earlier age and marriage duration than loop use, but seldom would either of these methods be adopted at zero parity. While the loop may now be inserted before the first pregnancy, no woman in the survey had had a loop before her first birth, and very few were pill or condom users before then. Sri Lankan women have traditionally had their first pregnancy very early in marriage, a fact that is reflected in the high mean number of births in the first five years of marriage (1.9 in the Sri Lanka WFS data, as compared to 0.9 for Bangladesh, 1.5 for Pakistan, 1.7 for Thailand). One reason for this is that marriages before age 15 are comparatively rare, so that periods of adolescent sub-fecundity tend to be excluded. The fact that in recent years women are often not marrying until well into their 20's may also have increased the urgency to have the first birth as early in marriage as possible.

There were a considerable number of switches (40) from pill to loop, but only half as many switches in the opposite direction. Seven† women who became pregnant while using the pill later used the loop, though one of these became pregnant again and finally had a sterilization.

* Only 6 per cent of condom users reported having used another method together with the condom, the method most frequently reported being rhythm.

† Unweighted data.

Table 3. Details Concerning Ever-Use of Pill, Loop, and Condom

Item	Pill		Loop		Condom		
	Number	Per Cent	Number	Per Cent	Number	Per Cent	
Total Ever-Users of Method	558		527		324		
Ever-Users Using This as Their First Method	447	80	348	67	159	45	
User's First Source of Information About the Method							
Medical or Paramedical Person at Family Planning Clinic	265	47	319	61	104	32	
Family Planning Worker Calling at Home	170	30	110	21	49	17	
Medical or Paramedical Worker at Some Other Place	70	13	56	11	28	8	
Husband	21	4	5	1	115	36	
Other or not stated	32	6	31	6	28	7	
Year of First Use of Method							
Before 1965	53	9	11	2	29	9	
1965-69	156	28	192	36	45	14	
1970-72	185	35	121	25	67	21	
1973	46	8	54	10	45	14	
1974	54	10	68	13	68	21	
1975	55	10	70	13	68	21	
Year Not Stated	8	1	5	1	2	1	
Age at First Use of Method*							
Under 25	189	34	142	28	94	29	
25-29	190	34	167	32	115	36	
30-34	104	19	117	23	70	22	
35 or older	68	12	89	17	43	13	
Marriage Duration at First Use** (years)							
0-4	236	42	175	34	163	50	
5-9	143	26	141	27	94	29	
10-14	101	18	120	23	47	15	
15-19	42	8	56	11	11	3	
20 or more	27	5	25	5	7	2	
Parity at First Use†							
0	6	1	0	0	13	4	Per cent of Total Sample in Category
1	96	17	63	12	70	22	
2-3	210	38	169	32	140	43	
4-5	136	24	154	30	76	23	
6 or more	102	19	130	25	23	7	
Race and Religion of Users							
Sinhalese Buddhist	376	67	421	81	227	70	65.9
Sinhalese Christian	30	5	27	5	23	8	5.3
S.L. Tamil Hindu	72	13	21	4	32	10	13.3
S.L. Tamil Christian	10	2	6	1	8	2	1.2
Moor-Muslim	28	5	17	3	25	8	6.6
Indian Tamil and other	42	8	29	6	7	2	7.7
Residence of Users							
Urban	139	25	80	15	98	30	18.4
Rural	373	67	416	80	215	67	72.1
Estate	46	8	25	5	10	3	9.4
Zone of Residence							
1. Colombo	64	11	27	5	44	14	6.3
2. Other southwest	132	24	146	28	135	42	27.8
3. Near north and near east	66	12	67	13	26	8	14.1
4. Eastern coast	26	5	8	2	12	4	5.7
5. North	32	6	17	3	16	5	6.9
6. Central highlands	238	43	256	49	91	28	39.1
Zone 6 other than estates	192	34	231	44	81	25	29.7

* Age was derived by subtracting calendar year of birth from year of first use. Data exclude cases where year of first use was not given.

** Marriage duration was derived by subtracting calendar year of marriage from year of first use. Data exclude cases where year of first use was not given.

† Parity may not be exact since month of first use is not given. Data exclude cases where year of first use is not given.

Table 4a. Continuance of Pill, Loop, and Condom

Item	Pill	Loop	Condom
1970-72 Starters*			
Total	184	118	67
Discontinued after:			
0-5 months	91	21	29
6-11 months	19	15	5
12-17 months	26	7	8
18-23 months	6	1	1
Continuing 24 or more months	42	74	24
1973 Starters*			
Total	46	52	43
Discontinued after:			
0-5 months	20	8	18
6-11 months	6	0	5
12-17 months	4	4	2
Continuing 18 or more months	16	40	18
1974 Starters*			
Total	53	65	66
Discontinued after:			
0-5 months	27	11	21
Continuing 6 or more months	26	54	45
Per cent of Total Continuing after			
6 months	52	83	61
12 months	41	74	48
18 months	28	68	39
24 months	23	63	36

* Starters exclude those whose duration of use is not given.

Colombo and other urban women used the pill and condom in greater numbers than their proportion in the survey, probably due to their greater sophistication and the easier availability of supplies in urban areas. The loop was in relatively greater use in rural areas, particularly in Zone 6. It will be noted that Sinhalese Buddhists are more likely to have been users than other ethnic-religious groups, and particularly users of the loop. Even though Zone 6 includes the tea-estates where use of any of the three methods was relatively low, the

majority of its total population are Sinhalese Buddhists, who apparently relied heavily on the loop. Moors and Sri Lanka Tamil women, most of whom live either in zones 4 and 5 respectively, or in Colombo, were users in considerably lower proportions than Sinhalese, and the same is true of Indian Tamils who live and work mostly in the estates.

The figures in Table 4 record the answers to questions of types (c) and (d) referred to above. The figures on duration of use include only those who started use in 1970-74, and are subdivided by year of start so that continuation rates can be calculated, as explained later. Among the reasons for discontinuance, side effects, accidental pregnancy and planned pregnancy (wanted additional child) show up more frequently for pill than for loop, and planned pregnancy was a frequent cause for condom terminations also.

The data given on calendar year of first use of pill, loop and condom, and durations in months of first use, enable us to show approximate continuation rates in the form often given for these methods. There are a number of limitations, however. First is the fact that we know only the calendar year of the start of a method so that we cannot include and classify cases continuing to the survey date by the usual life-table method; instead we can include 1974 starts only for 6 months of continuation and 1973 for 6, 12 or 18; and only starts of 1972 or earlier can be followed for as long as 24 months. Second, for the purposes of use-effectiveness we must adjust the records where continuance is shown as including a pregnancy. Third, we should probably not include cases which were reported as starting before 1970, since recall lapse must be serious over more than five years; even for starts of 1970 or later there is very marked heaping for continuance durations of 6, 12 and 24 months.

With the adjustments described, continuance percentages were derived for 283 pill starters, 235 loop starters, and 176 condom starters of 1970-74, subdivided as shown in Table 4. The continuation rates for pill and loop agree rather closely with an earlier (1967-69) experience recorded by Wright and Perera (1973), which showed 24-month first-method continuance rates of 30 per cent for pill and 68 per cent for loop. Their findings were based on 269 pill starters and 147 loop starters in three areas of Sri Lanka. The fact that their sample may have been more selective may account for their slightly more favourable results. Some corresponding data for other Asian countries are given on p. 13.

Table 4b. Reasons for Discontinuance of Pill, Loop, and Condom

Item	Pill		Loop		Condom	
	Number	Per cent	Number	Per cent	Number	Per cent
All Starters						
Side effects or medical advice	252	45	72	16	—	—
Became pregnant while using	43	8	10	2	17	5
Wanted additional child	37	7	10	2	36	11
Expulsion (loop)	—	—	96	16	—	—
Supply problems or expense	39	7	—	—	16	5
No further need	10	2	7	2	10	3
Other or not stated	82	15	36	7	103	31
Still using method	95	17	290	56	141	46
1970-72 Starters						
Side effects or medical advice	81	44	11	9	—	—
Became pregnant while using	14	8	2	2	3	5
Wanted additional child	10	5	0	0	11	16
Expulsion (loop)	—	—	27	23	—	—
Supply problems or expense	10	5	—	—	6	9
No further need	6	3	2	2	4	6
Other or not stated	21	12	2	2	19	28
Still using method	42	22	74	63	24	36

First Segment Continuance Rates—Per Cent

	Months	Pill	Pill	IUD	IUD
		12	24	12	24
<i>Sullivan et al. (1976)*</i>					
Indonesia		59	44	85	75
<i>Ross et al. (1972)</i>					
India		60	NA	77	54
W. Malaysia		62	NA	68	52
Philippines		55	NA	77	49
Thailand		76	NA	76	56

In comparison with most of the above figures, Sri Lanka has a favourable IUD continuation rate, but an unfavourable one for the pill.

The various pill and condom studies described here are of the usual "use-effectiveness" type in which it is not confirmed that the pill is taken every day or a condom used for each coitus but merely that the method had not been completely abandoned during the period indicated and that the woman had not become pregnant during the period. A closer look at pill continuance was included as part of a 1974 study by the Sri Lanka Family Health Bureau. This was a well-controlled survey, the sample being drawn from hospital, clinic and public health midwife records of loop or pill starters during the years 1971-73. In the case of pill acceptors, records had been kept of the actual number of pill packets purchased from hospitals, clinics, and midwives from the date of first purchase up to the survey date, and during these years it was very difficult to obtain pills from any other source. In the case of loops, the users' statements as to when the loop was removed could also be verified from medical records, but it was generally impossible to verify the date of loop expulsion; however, whenever a woman reported to an interviewer that the loop was still *in situ*, the interviewers (who were public health nurses) requested permission to examine the user to verify this, and this permission was generally granted.

The results of the survey, which included over a thousand users of each method, were very gratifying so far as the loop was concerned, since it was found that 83 per cent of loops were still in place 12 months after insertion and 74 per cent after 24 months. For pills, on the other hand, the results

showed a much less favourable experience. Two standards were followed in the case of pill continuance, a lenient standard under which a woman was considered a continuer if she had purchased a number of pill packets at least equal to one-half the number of months elapsed and had not become pregnant in the meantime; under this standard 36 per cent continued for at least 12 months and 24 per cent for at least 24. The strict standard considered a woman a continuer if she had purchased at least as many packets as months elapsed, and under this standard only 16 per cent had continued for 12 months and 6 per cent for 24. Even this strict standard did not insure continuous daily use, since that would have required 13 packets for 12 months.

It is to be noted that, even for the lenient standard, the pill continuation rates were lower than those obtained from the SLFS for 12 months and about the same for 24 months. This suggests the possibility that many of Sri Lanka's pill users are actually taking pills on no more than one-half the days in the periods of nominal use, and this may explain why there are so many accidental pregnancies during the use of a method which is considered to be about 99 per cent effective when followed consistently.

Nycander (1971) explains much of the poor pill continuance in Sri Lanka in his comments on the performance of the public health midwives. Pill users expected to buy new pill supplies on the midwives' periodic visits, but often a midwife post would become vacant, or the midwife had run out of pill packets or forgot to bring them, or the user did not have ready cash when the midwife called. Midwives sometimes failed to motivate women to continuous use or to prepare them for possible side effects.

* Sullivan et al. give the following 24-month breakdown of Indonesia terminations by cause, as a percentage of starts:

	Pill (Per cent)	IUD (Per cent)
Expulsion	—	11
Side effects	19	5
Accidental pregnancy	8	2
Planned pregnancy	6	3
Other	24	4
Total	56	25

4 Female Contraceptive Sterilization

Female contraceptive sterilization is by far the most important element of contraceptive use in Sri Lanka. More ever-married women had heard of this method than any other, though the pill was mentioned before prompting by a somewhat higher percentage (59 per cent) of women than female sterilization (49 per cent).

Details of use of this method are presented in Table 5. The following are some of the salient features of its use:

1) The method is primarily post-partum, with 68 per cent shown as taking place in the same month as the woman's last birth and with an additional 12 per cent within three months following the month of birth. Since about 70 per cent of all births in Sri Lanka are in hospitals, the substantial number of post partum operations is not surprising. Moreover, women whose deliveries are not in hospitals, or are in smaller hospitals where the operation cannot be performed, often have the operation done shortly after delivery.

2) Although sterilizations were performed even before 1960, the majority of those reported in the survey had been performed in the years 1973-75. These were the years in which the capability to perform sterilizations was greatly expanded, partly due to considerable surgical equipment and supplies furnished by WHO and UNICEF under the UNFPA programme. So widely did the word spread as to the availability of the female sterilization operation, however, that demand for it has continued to exceed service capacity.

3) The mean parity at sterilization has ranged between 5 and 6 though the modal parity in 1973-75 was 4. Only three women with a single birth were sterilized and in all three cases that child still survived (as of the interview date). The mean attained age at sterilization as shown in Table 5 was 32, and the mean marriage duration (from date of first marriage) was 13 years. It should be noted, however, that there may have been some truncation affecting these means; women sterilized several years prior to 1975 might have been excluded from the survey because of death or attainment of age 50, and these women may well have been of higher parity, age or marriage duration than those included. Their exclusion might have masked a shift over the years towards a younger age, lower parity, and lower marital duration at time of sterilization.

As would be expected, the age, marital duration and parity for sterilization are considerably higher than for loop, pill or condom acceptors.

Of the 29 women who had sterilizations within five years of marriage, 1 had borne a single child, 8 had borne two, 12 three and 8 four, indicating in several cases a very high fecundity.

4) As in the case of pill and condom acceptors, the proportion of sterilization acceptors in Colombo and in urban areas generally was higher than the proportion of women living in these areas; in the case of sterilizations however, the reason is that there are relatively more hospital beds and

Table 5a. Number of Contraceptively Sterilized Women, by Parity, by Age, and by Marriage Duration, Classified by Year of Sterilization

Year of sterilization	Total	Parity									Mean
		1	2	3	4	5	6	7-9	10+		
Before 1965	30	0	1	0	9	7	5	8	0	5.4	
1965-69	105	3	2	12	13	17	18	30	10	5.9	
1970-72	130	0	4	11	15	26	28	35	11	6.0	
1973	80	0	3	8	15	13	11	21	9	5.9	
1974	126	0	2	25	25	20	22	23	9	5.5	
1975	116	0	5	19	25	22	12	27	6	5.4	
Date not given	3	0	0	1	0	0	0	1	1	6.7	
Total	590	3	17	76	102	105	96	145	46	5.6	

Year of sterilization	Total	Age at Sterilization					Mean
		Under 25	25-29	30-34	35-39	40+	
Before 1965	30	2	14	10	4	0	30
1965-69	105	5	23	40	25	12	32
1970-72	130	12	38	45	22	13	31
1973	80	4	22	28	23	3	32
1974	126	16	36	37	32	5	31
1975	116	5	46	30	27	8	32
Total	590*	44	179	190	133	41	32

Year of sterilization	Total	Years Since First Marriage					Mean
		0-4	5-9	10-14	15-19	20+	
Before 1965	30	2	8	12	5	3	12
1965-69	105	7	27	35	26	10	12
1970-72	130	7	26	49	28	20	13
1973	80	3	19	26	19	13	13
1974	126	2	46	40	21	17	12
1975	116	9	27	42	22	16	13
Total	590*	29	153	204	121	80	13

* Includes 3 cases with date, age, and marriage duration not known.

Table 5b. Further Characteristics of Sterilized Women

Item	Number	Per cent	Per cent of total sample in category
Race and religion			
Sinhalese Buddhist	439	74	65.9
Sinhalese Christian	34	6	5.3
S.L. Tamil Hindu	49	8	13.3
S.L. Tamil Christian	13	2	1.2
Moor-Muslim	22	4	6.6
Indian Tamil and other	33	6	7.7
Residence			
Urban	158	27	18.4
Rural	399	68	72.1
Estate	33	6	9.4
Zone of residence			
1. Colombo	63	11	6.3
2. Other south-west	169	29	27.8
3. Near north and near east	72	12	14.1
4. Eastern coast	18	3	5.7
5. North	27	5	6.9
6. Central highlands	241	41	39.1
Zone 6 other than estates	208	35	29.7
Number of months between last live birth and sterilization			
0	400	68	
1-3	68	12	
4-12	39	6	
13 or more	83	14	
Contraceptive method used before sterilization			
No other method	350	59	
Traditional method only	90	15	
Modern method*	150	25	
Total	590	100	100.0

* The modern methods used were pill (92), IUD (40), condom (34), injectable (3), some women using more than one method.

surgical manpower in the cities. Zone 6 also had a relatively high proportion, particularly when estate women were not counted in numerator or denominator.

Again, Buddhists have a higher proportion of women accepting sterilization than do the other religious groups.

5) Of the 590 sterilized women, 59 per cent had used no contraceptive method and 25 per cent had used a modern method. Of the 150 modern method users, 92 had used the pill, 40 the loop, 34 the condom and 3 injectables; these include women who had used more than one method. Twenty-four of the sterilized women were widowed, divorced or separated at the time of interview.

5 Male Contraceptive Sterilization

Only 44 women in the survey had husbands who had undergone male sterilization (vasectomy). The mean parity of these women was 4.7. Thirty-nine of the vasectomies had been performed during 1970-75 and 5 during 1965-69.

Twenty-five of the 44 vasectomy cases are in the tea-estate area, 14 in other rural areas, and 5 urban. For several years, the large tea-estates have paid their male employees modest cash incentives, usually less than 50 rupees, to have sterilizations. One advantage of this from the employer's point of view is that sterilization lessens the maternity leave and medical costs which the employer is obliged to pay on behalf of his female employees, who in general are the wives of male

employees. While some women in the estates get sterilizations themselves, this necessitates going to a large hospital at considerable distance from the estate, whereas vasectomies are performed locally by mobile teams.

Very recently, mostly since 1975, a number of large industrial and commercial companies, including some public-sector corporations, have introduced sterilization incentive programmes for both male and female employees and for wives of male employees. It is unlikely that many of the sterilizations reported in the survey received incentives under these plans.

6 Year of First Use of Pill, Loop, Condom, or Sterilization

A total of 1,707 women (or their husbands) in the survey had ever used one or more of the effective contraceptive methods, and 1,664 of these had used pill, loop, condom or male or female sterilization, these being the methods whose year of first use is generally known. A tabulation of these women appears in Table 6. Only 116 of these first-use cases were before 1965, and a further breakdown of these by year would be quite unreliable, as some women reported use of pills or loops in years before they became available.

Table 6. Number of Women Who Have Ever Used Pill, Loop, Condom, or Sterilization,* by Year of First Use

Year	Number	Cumulative number
Before 1965	116	116
1965	42	158
1966	69	227
1967	88	315
1968	144	459
1969	113	572
1970	119	691
1971	124	815
1972	181	996
1973	173	1,169
1974	247	1,416
1975	244	1,660
Not stated	4	
Total	1,664	

* Includes male as well as female sterilization.

From the column of cumulative numbers, it will be seen that 572 women had become users by the end of 1969, five times the number before 1965, and the number grew another three-fold by the time of the survey. It must be noted,

however, that there were contraceptive users in the early years who were not included in this table because they had died or reached age 50 before the survey took place.

Analyses of the cumulative numbers of first use are shown in Tables 7 and 8, arranged in year of birth cohorts and year of first marriage cohorts, respectively, and showing the number of currently married women (reconstructed from the reported date of marriage) as the denominator for the purpose of calculating percentages of use. For purposes of consistency, the number of users is confined to women who were married at the time of the survey. In the Sri Lanka survey, the great majority of currently married women (96.7 per cent) are still in their first marriage and so have been continuously married.

Among currently married women born in 1925-1929 only 13 per cent have ever been users of one of the four methods, the percentage increasing to 35 per cent for the 1935-1939 birth cohort and then decreasing. It must be remembered, however, that as we read any row from left to right in the upper part of Table 7 each successive percentage is for an age-group five years younger than the preceding one. Despite that, a greater proportion of women born in 1935-39, who were 36-40 years old in 1975, had used modern contraceptives than had women of earlier cohorts.

A better comparison may be seen in the lower part of the table, when the percentages in each row are for the same attained age and where they increase rapidly from one birth cohort to the next. These rapid increases reflect the fact that great contraceptive opportunities now exist that were not available to older cohorts.

A similar trend for the marriage cohorts is shown in Table 8. Among women married during 1965-74, 18 per cent had already used one of these effective methods by the end of the fifth year following year of marriage, whereas among women who married during 1945-49 only 15 per cent had used an effective method at any time within the survey period.

Table 7. Number of Currently Married Women Born in 1925-1954, by Year of Birth, and Number Among Them Who Had Ever Used Pill, Loop, Condom, or Sterilization, by Year-End or Age Indicated

	Year of birth																	
	1925-29			1930-34			1935-39			1940-44			1945-49			1950-54		
	A	B	Per cent	A	B	Per cent	A	B	Per cent	A	B	Per cent	A	B	Per cent	A	B	Per cent
By end of																		
1960	626	5	1	754	10	1	775	2	0	515	3	1	99	0	0	3	0	0
1965	638	30	5	804	44	5	933	31	4	874	24	3	500	3	1	72	0	0
1970	644	69	11	822	120	15	1,013	178	18	1,080	178	16	949	78	8	444	25	6
1975*	644	85	13	825	183	22	1,040	364	35	1,174	402	34	1,250	360	29	963	203	21
By end of year when attained age																		
25	553	0	0	710	6	1	865	9	1	971	68	7	1,120	162	14	963†	203†	21
30	616	2	0	786	23	3	981	98	10	1,145	270	24	1,250†	360†	29			
35	638	14	2	813	78	10	1,032	251	24	1,174†	402†	34						
40	642	45	7	821	150	18	1,040†	364†	35									

A = Number married by the year-end or attained age indicated.

B = Number who had first used method by that year-end or attained age.

* Survey date, August-October 1975.

† As of survey date, some members of birth cohort had not attained the indicated age.

Table 8. Number of Currently Married Women Who Had First Married in 1940–1974, by Year of Marriage, and Number Among Them Who Had Ever Used Pill, Loop, Condom, or Sterilization, by Year-End or Marital Duration Indicated

Item	Year of first marriage													
	1940–44		1945–49		1950–54		1955–59		1960–64		1965–69		1970–74	
	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent
Marriage cohort	253		589		779		997		1,038		1,121		1,292	
By end of														
1960	1	0	10	2	11	1	4	0	0	0	—		—	
1965	7	3	18	3	56	7	40	4	21	2	0	0	—	
1970	17	7	56	10	143	18	181	18	168	16	91	8	0	0
1975*	25	10	87	15	216	28	317	32	383	37	364	32	231	18
By end of year when attained marital duration														
5	0	0	0	0	3	0	13	1	67	6	205	18	231†	18
10	0	0	5	1	17	2	95	11	243	23	364†	32		
15	0	0	13	2	94	12	231	26	383†	37				
20	5	2	32	5	166	21	317†	32						

* Survey date, August–October 1975.

† As of survey date, some members of marriage cohort had not completed the indicated number of years of marriage.

7 Contraceptive Method First Used

Two additional questions in the SLFS questionnaire that were not in the WFS core questionnaire were the following:

321. Which was the *first* method you used to delay or avoid pregnancy?

323. How many living children did you have when you first used your first method?

A cross-tabulation of the replies to these questions appears in Table 9. Note that rhythm (or "safe period") was the leading first method, and that it was used by more zero-child women as the first method than all other methods combined. Of the modern methods, the pill was the most popular first method.

It will be noted that the figures in Table 9 may not be wholly consistent with those in Tables 3 or 5 which relate to parity at first use, but the inconsistencies result from the fact

that Table 9 relates to the first method ever used, while 3 and 5 relate to first use of a particular method, and 9 refers to living children, while 3 and 5 refer to parity (see also footnote † of Table 3).

From Table 9 it appears that, while very few women with no living children started any method (other than rhythm), a substantial number started while they had only one, but even here rhythm was as popular a first method as all other methods combined.

Table 10 contains a cross-classification of the first method by the method currently used, i.e. the method used at the survey interview date. It shows that of the 1,155 women currently using a modern method, 252 or 22 per cent had started on some traditional method. Though the table shows the first and the current methods, there may have been one or

Table 9. Number of Women Who Have Used a Contraceptive Method, by First Method Used and by Number of Living Children at Time of First Use

First method used	Total	Per cent	Number of living children at time of first use									Number of children—per cent		
			0	1	2	3	4	5	6	7-9	10+	0-1	2-3	4+
Pill	447	15	10	79	93	84	69	42	27	34	8	20	40	40
Loop	348	12	0	58	64	50	57	41	35	33	11	17	33	50
Condom	159	5	6	49	46	26	16	10	5	1	0	35	45	20
Female sterilization	350	12	0	4	19	47	50	72	56	86	17	1	16	83
Male sterilization	26	1	0	1	7	4	5	3	3	3	0	4	42	54
Foam, dia., etc.	14	0	0	2	2	6	3	0	0	0	0	15	62	23
Injectable	21	1	0	3	3	5	3	2	1	2	1	15	40	45
Douche	14	0	0	4	7	1	2	0	0	0	0	29	57	14
Rhythm	1,047	35	92	431	234	133	66	34	30	24	1	50	35	15
Withdrawal	169	6	20	62	53	17	6	6	2	3	0	49	41	10
Abstinence	362	12	17	161	53	42	24	18	20	25	3	49	26	25
Other methods	5	0	0	4	1	0	0	0	0	0	0	80	20	0
Total	2,963	100	145	859	582	415	301	228	179	211	41	34	34	32

Table 10. Number of Women Who Have Used a Contraceptive Method, by First Method Used and by Method Used at Time of Interview

First method used	Total	Method used at time of interview										Not using	No longer exposed*
		Pill	Loop	Cond.	Fem. ster.*	Male ster.	Inj.	Rhythm	Withd.	Abst.	Other†		
Pill	447	65	40	17	62	5	1	22	3	9	1	134	90
Loop	348	8	186	12	22	3	1	16	1	3	0	54	42
Condom	159	2	6	83	14	1	0	7	1	3	0	20	24
Fem. ster.	350	—	—	—	330	—	—	—	—	—	—	—	20
Male ster.	26	—	—	—	—	26	—	—	—	—	—	—	0
Foam, etc.†	14	0	1	1	3	0	0	0	0	4	0	2	3
Injectable	21	0	0	1	3	0	9	0	0	0	0	5	3
Rhythm	1,047	15	41	19	93	6	1	425	14	31	1	172	228
Withdrawal	169	1	7	6	16	0	3	7	70	5	1	26	26
Abstinence	362	3	8	2	22	2	4	10	0	158	0	77	75
Other†	19	0	1	1	1	0	0	2	1	1	1	8	4
Total	2,963	95	290	141	566*	44	19	489	90	214	4	497	515*

* 24 sterilized women were no longer married at interview date.

† 14 women using douche as the first method were included in "other"; only 2 women were using this method at interview date. No women were using foam or diaphragm at interview date.

more intervening methods.* The table also shows the degree of adherence to any one method (or the return to the original method if there had been a shift). Thus we see that of 348 women who used the loop as their first method, more than half (186) were still using it at the survey date. For condom also, over half of those who used it as the first method remained with it, though their use may have been far from continuous. Of 447 women who used the pill as their first method, only 15 per cent (65) were on the pill at the survey date, a similar number (66) were sterilized, and 50 per cent (220) were on no method at all, some of these because they were no longer exposed to pregnancy risk or were currently pregnant. The table shows that 40 of the women who started on the pill were using a loop at the time of the survey, while only 8 who started with the loop ended on the pill.

It will be noted that none of the 14 women who started with the "other female scientific" methods, primarily diaphragm or foam tablets, were still persisting with these methods at the date of the survey. These, together with condoms, were the modern methods introduced by the Family Planning Association during the 1950's, and many of the acceptors of these methods were members of cohorts who had reached age 50 by 1975 and therefore were not represented in the survey, while those 14 who were in the survey had shifted to other methods or were using no method at all.

* In fact, out of 2,963 women who have used at least one method, only 1,701 have used only one, while 763 have used two, 334 three, 124 four, 29 five, 10 six and 2 seven methods.

8 Comparison of Sri Lanka Fertility Survey with National Data

The Sri Lanka Fertility Survey covered approximately one-third of the ever-married women under age 50 in the entire country, since the number covered was 6,810 while the total number in the country as of mid-1975 was approximately two million. (See Appendix II for the derivation of this estimate.) On this basis it is reasonable to multiply the SLFS figures on acceptors of modern methods by 300 and to compare the results with the national acceptor data compiled by the Family Health Bureau (FHB). In such a comparison one would expect differences due to the following reasons:

1) Women who accepted a method prior to the survey interview date but who died or reached age 50 before that date would be included in the national acceptor data but not be represented in the SLFS. This difference should not be great, though it should be relatively greater for sterilization than for the loop and greater for the loop than for the pill, because of the different acceptance ages of the three methods.

2) National acceptor figures are designed to include family planning acceptors in the national health system plus those who were served by the Family Planning Association or the Colombo Municipal Health Department. However, some women have had IUD's inserted, or sterilizations performed, by private doctors or in private hospitals; these would not be recorded in the national data on new acceptors though they would be represented in the SLFS and also in the Family Health Baseline Survey, to which further reference will be made later. Similarly, both the SLFS and the Family Health Baseline Survey could identify condom users who had bought Preethi or other condoms through commercial channels, but national acceptor data compiled by the FHB would not record these generally.

3) New acceptors were not recorded during the years 1974 or 1975 in the national data, except for sterilizations and loops.

Table 11 shows a comparison of new acceptors on the basis of SLFS first-use data, inflated by a factor of 300, together with the FHB data, for selected years and methods. The comparison shows striking differences, the SLFS data being much higher than the FHB for female sterilizations, much lower than the FHB for loop and pill acceptors. The factors

mentioned above cannot fully account for these differences.

Since women would hardly report themselves to be sterilized if they were not, and since women who reported themselves as sterilized in the SLFS were women who had no pregnancies after their reported dates of sterilization,* it is reasonable to assume that the SLFS data on sterilizations are more accurate than the FHB data and that the FHB failed to obtain reports on many sterilizations; as the private hospitals could hardly account for this difference, it must be that some government hospitals also failed to report large numbers of sterilizations. It is interesting to note that the Family Health Baseline Survey,† taken only a few months before the SLFS, also indicated a much higher number of sterilizations than were shown in the FHB acceptor data.

In the case of loops and pills, where the FHB figures are much higher (instead of lower) than the SLFS, we cannot similarly confirm either set of acceptor figures by the Family Health Survey. Here it would also appear, however, that the SLFS sample data are more accurate than the FHB acceptor data. While of course the SLFS could have missed cases, the probability is much greater that the FHB duplicated cases, particularly in the case of pill acceptors. It is likely that any time a woman discontinued the pill for a few months and then started it again, she was counted again as a new acceptor. This would particularly be the case where there was a new midwife in the post (a common occurrence) when pill use was resumed. Also, though with less frequency, a woman who had used the loop but who lost it through expulsion or asked to have it removed, might have been counted a second time as a new user when a loop was re-inserted. This would be quite likely if

* There were a number of cases where the data show sterilization dates earlier than the date of last birth, but almost all these differences are for a very few months and are believed to result from the fact that some birth months were mechanically imputed.

† This nation-wide survey was begun in March 1975 to evaluate Sri Lanka's maternal-child-health and family planning programme and to obtain bench-marks from which to measure subsequent progress.

Table 11. New Acceptors of Selected Contraceptive Methods, 1967-1975: Comparison of Family Health Bureau and Inflated SLFS Data

Year	Family Health Bureau data ('000s)				SLFS data inflated by 300-to-1 factor ('000s)			
	Sterilization		Loop	Pill	Sterilization		Loop	Pill
	Female	Male			Female	Male		
1967-70	11.8	0.8	74.4	77.0	33.0	0.6	57.6	51.1
1971	4.1	0.2	11.4	25.8	10.7	1.2	9.6	15.9
1972	5.1	0.5	18.5	32.3	19.0	0.4	13.5	23.1
1973	18.4	1.8	27.5	34.3	24.2	2.8	16.2	13.8
1974	34.9	7.3	29.7	*	37.8	2.7	20.4	16.2
1975**	24.3	4.6	24.3	*	34.9	4.4	21.0	16.5
Total								
1967-75**	102.6	15.2	185.8	*	159.6	12.2	138.3	136.6

* FHB data on pill acceptors were not tabulated for 1974-75.

** FHB data shown for 1975 are for the first 3 quarters only; SLFS data include approximately 3 quarters, since the survey was conducted during August-October 1975.

the new insertion were at a different clinic from that of the first insertion. Similarly, women switching from pill to loop or vice versa are likely to have been double counted as acceptors.

The FBH became aware of such duplication of reporting of acceptors, and beginning in January 1976 it introduced a new reporting form which was intended to distinguish between an acceptor who was entering the national programme for the first time and one who had previously been in the programme either for the same or a different method.

The Family Health Baseline Survey results (Family Health Bureau, 1976, are similar in most respect to the SLFS. Conducted only a few months before the SLFS, it covered 4,347 currently-married rather than ever-married women under age 50. Subtracting those who were pregnant at the date of survey and making an approximate estimate of others who were infecund, gives a net sample of 3,440 exposed women, which corresponds to the 4,709 exposed women of SLFS. The following comparison may then be made between the current use percentages:

	FH Baseline Survey	SLFS
Total Women	3,440	4,709
Percentage Currently Using		
No method	45.2	58.6
Pill	3.0	2.0
Loop	7.5	6.2
Condom	2.9	3.0
Sterilization	11.5	12.8
Injection	0.2	0.4
Safe period	15.4	10.4
Withdrawal	8.4	1.9
All other	5.9	4.7

It will be seen that the main difference in these percentages is that the use of safe period and withdrawal is much higher in the Baseline Survey; in fact, the excess percentages for these two methods account for almost the whole difference in total use. With respect to withdrawal, the difference may be explained by the fact that the interviewers for the Baseline Survey, all of whom were public health midwives, were instructed to probe this question very explicitly, as it was thought that this method is practised widely but is one which women might be reluctant to disclose. In the case of safe period, the difference is less easy to understand, though here too the midwives probed carefully and also asked the respondents what period of the menstrual cycle they understood to be "safe".

The two surveys yielded similar findings in several respects: for example, the Baseline Survey found a higher percentage of use among Sinhalese than other ethnic groups; it found a higher relative percentage of use of pill and condom in urban areas and of loop in rural, and its findings on socio-economic differences of fertility and contraceptive use were similar to those of SLFS (see Gaminiratne (1979) in addition to the FHB report). The Baseline Survey did have a considerably different orientation from WFS, however, with fully as much interest in health care matters (e.g. place and attendance of delivery of recently-born infants, their birth weights, their immunizations, etc.) as in fertility and family planning. It is of course gratifying that the two surveys had findings which agreed in so many respects.

9 Reasons for Non-use of Contraception

The Contraceptive Knowledge and Use section of the SLFS questionnaire asked never-users of contraception their reasons for non-use. The question (question 320) was: "Why is it you have never used any method to delay or avoid getting pregnant?" The answers were pre-coded. There were boxes for recording more than one answer, but multiple answers were seldom given and the following tabulation is based on the first response only:

Reason	Number	Per cent
Never heard of any method	400	10.4
Disapproves of family planning	262	6.8
Recently married	555	14.4
Wants more children	749	19.5
Husband against any method	253	6.6
Doesn't know how or where to go for supplies or services	143	3.7
Believes cannot conceive	332	8.6
Other or not stated	1,155	30.0
Total	3,849	100.0

The number who had never heard of any method is considerably lower than that obtained (623) from the earlier questions on knowledge and use of contraceptive methods. The very fact that the never-users had heard of various methods when these were mentioned in questions several minutes earlier in the interview (apparently for the first time) may have caused some of them to give other reasons for non-use.

It is not clear how some of the questions were interpreted by the respondents. There could well have been some confusion as to the *time* about which the question was asked. Did the answer "wants more children" represent the attitude of the women at the time of the survey or at a much earlier time? It could hardly be the current feeling of all 749 who gave this answer, since 134 of them had three or more births at the time

of the survey, as did 10 women who gave as their answer "recently married." Of the 332 women who believed they could not conceive, 262 were aged over 35 at the date of the survey, and might well justifiably believe that they could no longer conceive, but most could not have been infecund in the past as only 25 were childless.

Among the 1,245 women who said, in a later section of the questionnaire, that they wanted no more children but who had never used a contraceptive method, the pattern of answers was considerably different:

Answers	Number	Per cent
Never heard of any method	123	9.9
Disapproves of family planning	129	10.3
Recently married	46	3.7
Wants more children	131	10.5
Husband against any method	134	10.8
Doesn't know how or where to go for supplies or services	75	6.0
Believes cannot conceive	106	8.5
Other or not stated	502	40.3
Total	1,245	100.0

The order of questions may well have affected the answers. It should be noted that the women answered this question (question 320) *before* they were asked either whether it was physically possible to have more children (question 506) or whether they wanted another child (question 510), and this may explain some of the inconsistencies in the answers. For example, all 1,245 women tabulated above answered question 506 to the effect that they could have more children, but 106 of them had answered question 320 to the effect that they probably could not conceive. Apparently many of the women in this tabulation were simply unable to explain their non-use of a contraceptive method, a not uncommon result of open-ended questions of this nature.

10 Determinants of Ever-use of Contraception

The first stage of analysis of contraceptive use is concerned with the proportions of SLFS respondents who have ever used contraceptive methods and the findings in this stage will lead to the analysis of current use. We may subdivide the 6,810 ever-married women in the survey into the following four categories: (1) those who have never used any contraceptive method; (2) those who have used only a traditional method (rhythm, withdrawal, etc.); (3) those who have used a modern method (pill, loop, etc.) but have not been sterilized; (4) those who have used female or male contraceptive sterilization. Note that we speak here of ever-married women and not merely currently married; some of those not currently married

used a method while they were married. Note also that we speak of "ever users" rather than "current users" though of course sterilized women are automatically classified as current users, unless they are no longer married. Some married women who have used a method in the past but who have been planning their fertility may be non-users at the moment because: (a) they currently wish for another child or are pregnant with one, or (b) they are now past menopause or for some other reason no longer wish to use a method.

The analysis of ever-use is illustrated by Table 12 and the variables first considered are demographic variables.

Table 12. Per Cent Distribution of Ever-Married Women According to Ever Use of Contraception, by Selected Demographic and Background Characteristics

Characteristic	Number	Never used contraceptive method	Have used traditional method only	Have used efficient method	
				Other than sterilization	Sterilization
Total: Number	6,810	3,848	1,255	1,072	634
Per cent	100.0	56.5	18.4	15.8	9.3
		Per cent			
Current age					
<20	176	81.0	9.0	9.6	0.4
20-24	912	67.5	12.1	18.6	1.7
25-29	1,295	57.1	17.2	17.9	7.9
30-34	1,221	44.6	20.4	20.3	14.7
35-39	1,203	47.8	19.5	18.3	14.4
40-44	968	56.7	19.6	12.7	11.0
45-49	1,035	66.1	22.5	6.3	5.2
Years since first marriage					
<5	1,280	70.2	14.8	14.2	0.7
5-9	1,231	50.0	20.8	21.7	7.5
10-14	1,118	45.2	20.0	19.0	15.8
15-19	1,057	49.4	16.2	19.5	14.9
20-24	893	53.2	19.3	13.4	14.1
25+	1,231	67.5	19.7	6.9	5.9
Number of live births					
<2	1,572	77.5	13.9	8.4	0.2
2-3	1,874	50.9	24.0	20.0	5.2
4-5	1,474	45.3	17.9	22.5	14.3
6+	1,891	53.2	16.9	14.3	15.6
Age at first marriage					
<15	984	66.0	12.0	13.2	8.8
15-17	1,777	57.0	16.0	15.4	11.7
18-19	1,214	54.2	19.3	17.1	9.4
20-21	977	53.9	21.2	16.7	8.3
22-24	955	55.5	19.7	15.2	8.6
25-29	709	49.4	25.5	17.2	7.9
30+	194	62.2	21.9	13.2	2.8
Number of living children					
<2	1,712	77.5	13.8	8.4	0.3
2-3	2,059	51.0	23.7	19.4	6.0
4-5	1,547	45.2	18.1	19.7	16.8
6+	1,492	51.6	16.8	15.2	16.4
Sex composition of living children					
male > female	2,585	53.5	19.0	17.4	10.0
male = female	1,135	48.3	22.0	18.9	10.7
male < female	2,450	54.4	19.3	16.1	10.3
no living children	640	91.3	6.4	2.3	0.0

Table 12. (Continued)

Characteristic	Number	Never used contraceptive method	Have used traditional method only	Have used efficient method		
				Other than sterilization	Sterilization	
Per cent						
Education (Years)						
None	1,512	71.9	10.8	10.9	6.4	
1-5	2,686	59.8	16.3	14.7	9.1	
6-9	1,704	46.8	23.1	20.3	9.8	
10+	908	39.3	28.4	22.6	9.7	
Literacy						
literate	4,953	50.4	21.5	18.1	10.0	
illiterate	1,855	72.8	10.3	9.4	7.5	
Residence now and in childhood						
	<u>Now</u>	<u>Childhood</u>				
rural	rural	4,488	56.9	19.4	15.4	8.3
urban	rural	505	49.9	21.5	15.6	13.0
rural	urban	293	38.6	26.0	24.1	11.4
urban	urban	731	44.6	20.8	21.5	13.1
	other	793	76.3	5.8	8.4	9.6
Zone						
1 Colombo	432	42.5	17.3	25.0	15.2	
2 Other southwest	1,894	48.0	26.4	16.3	9.3	
3 Near north, near east	961	61.2	17.4	13.6	7.8	
4 Eastern coast	391	76.3	9.8	9.2	4.7	
5 North	472	77.3	6.7	10.1	5.9	
6 Central highlands	2,661	56.6	16.7	16.6	10.2	
Race and religion						
Sinhalese	Buddhist	4,494	50.6	22.0	17.5	10.0
Sinhalese	Christian	338	38.3	31.0	20.6	10.1
S.L. Tamils	Hindu	684	72.6	8.1	12.1	7.2
S.L. Tamils	Christian	130	64.5	12.9	12.5	10.2
Moor	Muslim	449	73.8	9.4	12.0	4.8
	Other	714	74.9	6.8	8.8	9.5
Husband's occupation						
farming	1,800	62.3	17.0	11.8	8.9	
professional and clerical	779	41.4	25.0	23.9	9.7	
agricultural labour	1,048	72.9	9.8	9.8	7.4	
sales and service	1,098	46.9	22.9	19.1	11.1	
other	2,086	54.0	19.2	17.2	9.6	
Births in five years following marriage						
0	444	77.7	13.1	5.5	3.8	
1	1,387	62.3	21.9	9.2	6.6	
2	2,524	49.8	20.5	18.4	11.3	
3	1,052	40.7	16.5	23.1	19.7	
4	119	43.4	10.4	26.4	19.7	
5	4	66.5	20.9	12.6	0.0	
not married 5 years	1,280	70.2	14.8	14.3	0.7	

We find that, as age rises, the proportion using sterilization or some other modern method rises but only up to the age groups 30-34 and 35-39. Women in older age groups, as already pointed out, might well have wanted contraception ten years ago while in their thirties, but did not have as great a contraceptive opportunity then as exists today; nor did they have the education or information of younger cohorts, nor was the interest in, or apparent need for, smaller families as prevalent then as now. The same sort of condition may be seen when we subdivide women by years since first marriage; the longest-married women and the women of highest parity are usually the oldest.

When the data are classified by age at first marriage, a more

complicated picture emerges. The women who married before 15 are the women who are now the oldest, since more recently born cohorts married at older ages; hence these very early-wed women have had the lowest contraceptive use. As we proceed to the group who married in their later teens, we find a higher percentage who have used a modern method, including sterilization, for these are more often the women now in their thirties. Those who married in their twenties are also relatively likely to have used a modern method but less likely to be sterilized, as they are a somewhat younger cohort who do not have enough children to motivate them to use a terminal method. Finally those who married in their late twenties or their thirties are largely women who have very recently

married and are still under the age of forty; they have relatively few children now, and while they may use contraception in the future, most of them may feel they are not yet ready for it.

Sex composition of the family appears to exert little influence on contraceptive use; women with more boys than girls are more likely to have used a non-terminal modern method than those with more girls than boys, which might be expected, but at the same time a lower proportion of them have been sterilized. What is significant is that women who have the same number of boys and girls are the most likely to be using a modern method, including sterilization, suggesting that these are the women most content with their family status.

As would be expected, literate women and those with the most education are most likely to have used contraception, except that women with 6-9 years schooling are more likely to be sterilized than women with still higher education; the latter probably have a smaller number of children and have more likely been using reversible methods, either traditional or modern.

The Sinhalese lead all other races in the use of contraception, with Christian Sinhalese having higher use than Buddhist Sinhalese. The Sinhalese lead is most pronounced in the use of traditional methods. Sri Lanka Tamils have had considerably lower use of contraception than Sinhalese. Moors and Indian Tamils (the chief members of the "other" group) have had the lowest use.

As expected, urban use has exceeded rural, and women with an urban childhood background have had higher use than women with a rural background, regardless of whether their present residence is rural or urban. The "other" group are mostly Indian Tamil tea-estate workers whose use has been very low.

Contraceptive use has been higher in Zone 1, Colombo City, than elsewhere in the country. Zone 6, the central highland area, is in second place in modern methods, including sterilization, but it would show an even higher use were it not for the presence of the tea-estate workers in this zone, as their contraceptive use has been very low. Zone 2, the southwest area south of Colombo, is the highest in the use of traditional methods, as this is a largely Sinhalese area.

As expected, women with husbands who have non-agricultural occupations are more likely to be urban and therefore have had the highest use. Women whose husbands are agricultural labourers have had the lowest contraceptive use, with those whose husbands are farmers (mostly farm owners) only slightly higher.

Fertility during the early years apparently is a very significant determinant of contraceptive use in the later years of marriage. Except where marriage is at a very young age or at an advanced age, the number of births in the first five years of marriage is a good index of a woman's fecundity, or natural fertility, because contraceptive use is so low during the first five years. It would appear that this early experience greatly affects the woman's subsequent decision-making. The

data in Table 12 show a marked and continuous increase in ever-use of modern contraception as the number of births in the first five years increases from 0 to 4.

Several additional categorical distributions, not shown in Table 12, were obtained to test determinants of contraceptive use. One of these was the distribution of women by desired family size, and here it was found, somewhat curiously, that women who had given four or more children as the desired number had used modern contraception in a higher proportion of cases (28 per cent) than those who had stated less than four as the desired number (22 per cent); the percentage who had resorted to sterilization was particularly high for the former group. As pointed out by Pullum (1979), the number desired tends to follow the actual family size and may be a post-rationalization of the actual size; in other words those who stated four or more were usually the mothers of large families and it was these very women who were more likely to have been sterilized.

Women who reported that they desired their last pregnancy are less likely to have used contraception than those who said they did not desire that pregnancy. To some extent, however, their saying that they desired the last pregnancy may reflect their rationalization of the non-use of contraception. Actually, the percentage of non-use among these is not much greater than among those who said they did not desire the pregnancy, and some of these are now sterilized; interestingly, the percentage of non-users is still higher among those who were uncertain as to whether they desired the pregnancy.

On the other hand, women who said they want a future birth are much less likely to have used contraception than those who want no more births, with the undecided in an intermediate position. By definition, none of the women who want a future birth or are undecided had been sterilized; those who had been contraceptively sterilized are presumed to have wanted no more births and thus are automatically included in that category. What is significant is that 38 per cent of the women who say they want no more children have never used even a traditional method, or putting it another way, 32 per cent of the never-users say they want no more children. The true proportion may in reality be even higher, since there may have been other non-users who want no more children but hesitated to say this after admitting they had made no effort to limit family size.

Two distributions of women by their own work pattern were tested. It had been expected that women who had worked since marriage and particularly those who had worked away from home would have used contraception in a significantly higher proportion of cases than women who had never worked or who had worked only before marriage, but this did not turn out to be the case.*

* A partial explanation lies in the fact that many of the working women were those on the estates, whose contraceptive use has been very low.

Table 13. Percentage of 'Exposed' Women Who Are Currently Using a Contraceptive Method, by Number of Living Children and by Current Age

Current age	All	Less than four children			Four or more children			
		No method	Traditional	Modern	All	No method	Traditional	Modern
Total	100	66	16	17	100	49	17	34
<25	100	76	9	15	100	72	6	21
25-34	100	63	19	18	100	47	12	41
35-44	100	60	22	18	100	47	19	34
45-49	100	74	22	4	100	54	27	19

When we come to analyse current use of contraception, as distinct from ever-use, we are concerned only with those women who are currently exposed to the risk of pregnancy. For this purpose, women who have been contraceptively sterilized (or whose husbands have been sterilized) and who are still married are counted with the exposed. Women who are currently pregnant, who are no longer married or who report themselves as infecund (other than by contraceptive sterilization) are not counted.

Table 4.4.1 of the SLFS First Report analyses these exposed women by currently used contraceptive method as well as by current age and number of living children. The findings presented in this table are summarized in text Tables 7.5 and 7.6 on page 133 of the First Report and discussed on page 132. Table 13 is a further breakdown of Table 7.5 in which

traditional method users are grouped together as are modern method users. It will be noted not only that the greatest percentage of contraceptive use is for the larger families and at ages 25–44, but also how the younger age groups are definitely preferring modern methods while the very oldest group still relies more on the traditional methods.

Tables 4.4.2 to 4.4.5 of the First Report show the percentages of exposed women who are current contraceptive users with further breakdown as to living children or living sons, years since first marriage, schooling, zone and type of residence, and religion, but without reference to contraceptive method, all users being grouped together. These tables are summarized in text Table 7.7 on page 134 of the First Report and discussed in the adjoining portions of the text.

11 Multivariate Analysis of Current Contraceptive Use

Because of the considerable number of explanatory variables which might explain current use or non-use of contraception by currently exposed women, a multivariate analysis seems appropriate. Rather than merely taking the proportion of users as the dependent variable, it was decided to give different weights to the various contraceptive methods, since the choice of method reflects both contraceptive effectiveness and the contraceptive's own motivation.

This weighting was done by the formulation of a "contraceptive score", which, while admittedly crude, does reflect both of these elements. The score was as follows:

- 0 for no method currently used
- 1 for a traditional method (douche, rhythm, withdrawal, abstinence or other traditional)
- 2 for pill, condom or injectable
- 3 for IUD
- 4 for sterilization, whether female or male.

Table 14 Multivariate Analysis of Current Contraceptive Use (Part 1). Regression Results for Cohort Married 0-4 Years Ago
 Dependent Variable: Contraceptive Score
 Number of Women = 890 Grand Mean = .478

Independent variable and categories	Number of women	Unadjusted means	Means adjusted for:	
			Demographic variables	All variables
Zone of residence				
1. Colombo	60	.534	.564	.370
2. Other southwest	286	.570	.596	.548
3. Near north and east	133	.322	.392	.365
4. Eastern coast	45	.189	.260	.255
5. North	76	.136	.222	.210
6. Central highlands	290	.582	.484	.588
Race-religion				
Sinhalese Buddhist	650	.530	.522	.497
Sinhalese Christian	57	.584	.559	.444
Tamil Hindu	100	.204	.226	.424
Tamil Christian	19	.256	.286	.445
Moors, Muslims	64	.352	.411	.411
Type of residence				
Childhood Present				
Rural Rural	637	.446	.442	.437
Rural Urban	73	.343	.345	.577
Urban Rural	64	.618	.596	.469
Urban Urban	116	.660	.691	.647
Work pattern				
Never worked	522	.483	.489	.450
Worked before marriage only	147	.465	.430	.424
Worked since marriage, away	127	.480	.480	.587
Worked since marriage, at home	94	.468	.489	.573
Husband's occupation				
Farming	205	.326	.309	.331
Professional and clerical	141	.726	.761	.701
Agricultural labour	50	.334	.272	.449
Sales and service	184	.600	.602	.578
Other	310	.416	.421	.418
Woman's education				
No schooling	56	.353	.321	.392
1-5 years	230	.282	.278	.368
6-9 years	323	.506	.495	.482
10-11 years	215	.582	.594	.524
Higher education	66	.787	.850	.769

The score is not claimed to be scientific; it is not assumed that a method scored 2, for example, is twice as effective as a traditional method, or that all methods with the same score are equally effective. The pill would be as effective as the IUD in some societies, but in Sri Lanka the data show that use of the pill is often spasmodic or accompanied by low motivation.

Traditional methods are scored 1, because they can be of some effect if faithfully practised, and if faithfully practised they also reflect considerable motivation.

The multivariate analysis of current contraceptive use was by multiple regression with categorical variables treated by a dummy-variable method, following the methodology of Little and Perera (1980) and where appropriate using variables corresponding to theirs. The dependent variable for multiple regression was the contraceptive method score already described. Estate women were not included.

The following independent variables were included:

- 1) Months since first marriage
- 2) Age at marriage
- 3) Number of births in the 5 years following first marriage
- 4) Region (zone) of residence
- 5) Race and religion
- 6) Present and childhood type of residence
- 7) Respondent's work pattern
- 8) Husband's occupation
- 9) Respondent's education
- 10) Standard-of-living score

The regressions were done separately for the following four marriage cohorts:

- a. respondents whose first marriage was 0–4 years ago
- b. respondents whose first marriage was 5–9 years ago
- c. respondents whose first marriage was 10–19 years ago
- d. respondents whose first marriage was 20+ years ago.

Table 14 (Part 2).
Regression Results for Cohort Married 5–9 Years Ago
Dependent Variable: Contraceptive Score
Number of Women = 894 Grand Mean = .967

Independent variable and categories	Number of women	Unadjusted means	Means adjusted for:	
			Demographic variables	All variables
Zone of residence				
1. Colombo	81	1.261	1.262	1.268
2. Other southwest	285	1.127	1.069	1.014
3. Near north and east	145	.922	.947	1.010
4. Eastern coast	60	.469	.508	.605
5. North	68	.527	.529	.495
6. Central highlands	255	.957	.997	1.008
Race-religion				
Sinhalese Buddhist	649	1.056	1.058	1.005
Sinhalese Christian	56	1.186	1.044	.935
Tamil Hindu	109	.589	.662	.933
Tamil Christian	17	.903	.767	.918
Moores, Muslims	63	.538	.551	.677
Type of residence				
Childhood Present				
Rural Rural	656	.940	.968	1.003
Rural Urban	69	1.016	.931	.754
Urban Rural	41	1.177	1.110	1.199
Urban Urban	128	1.014	.937	.825
Work pattern				
Never worked	485	.930	.930	.946
Worked before marriage only	112	1.339	1.282	1.273
Worked since marriage, away	150	1.105	1.113	1.062
Worked since marriage, at home	147	.665	.701	.707
Husband's occupation				
Farming	225	.714	.727	.744
Professional and clerical	148	1.092	1.083	1.058
Agricultural labour	78	.662	.716	.786
Sales and service	151	1.162	1.096	1.056
Other	292	1.080	1.094	1.095
Woman's education				
No schooling	89	.522	.507	.524
1–5 years	302	.785	.772	.781
6–9 years	277	.991	1.002	.979
10–11 years	167	1.435	1.445	1.461
Higher education	60	1.137	1.142	1.132

In each regression, independent variable 1, months since first marriage, was taken as a linear variable. Variable 2 was taken as quadratic, as was done by Little and Perera, since the percentage of women who ever used contraception first increased and later decreased with increasing age at marriage (see Table 12). Variable 3, number of births in the 5 years following first marriage, was taken as a linear variable. In the case of the cohort married less than 5 years, this variable was defined as the number of births that would have occurred in 5 years by extrapolating the observed monthly fertility rate; in other words the variable was $60 \cdot \text{NLB}/\text{MSFM}$ where NLB is the number of live births and MSFM the number of months since first marriage.

The first six socio-economic variables, region of residence to education, being categorical variables, were handled in each regression by the dummy variable method; that is, in each case one category was a reference category while each other category had the value 1 or 0 depending on whether or

not an individual case was a member of the category. The last socio-economic variable, the standard-of-living score, was treated as a linear metric variable, the individual scores running from 0 to 26.

For each marriage cohort, separate regressions were obtained as follows:

- (a) a regression in which the three demographic variables were entered first, followed by all of the socio-economic variables in the sequence indicated above, namely region of residence, race-religion, type of place of residence, work pattern, husband's occupation, and woman's education. The final result was that each variable was adjusted for the effects of every other variable.*

* Two-way interactions were tested for the various pairs of variables, and no interaction was found significant at the .05 level.

Table 14 (Part 3).
Regression Results for Cohort Married 10–19 Years Ago
Dependent Variable: Contraceptive Score
Number of Women = 1,524 Grand Mean = 1.268

Independent variable and categories	Number of women	Unadjusted means	Means adjusted for:	
			Demographic variables	All variables
Zone of residence				
1. Colombo	117	1.718	1.710	1.386
2. Other southwest	469	1.321	1.359	1.280
3. Near north and east	228	.991	.902	1.037
4. Eastern coast	88	.648	.569	.724
5. North	112	.771	.871	.894
6. Central highlands	510	1.455	1.453	1.509
Race-religion				
Sinhalese Buddhist	1,116	1.362	1.356	1.331
Sinhalese Christian	96	1.346	1.326	1.125
Tamil Hindu	180	.910	.987	1.236
Tamil Christian	32	1.079	1.124	1.072
Moors, Muslims	99	.840	.772	.817
Type of residence				
Childhood				
Present				
Rural	1,116	1.159	1.159	1.163
Rural	144	1.514	1.515	1.514
Urban	81	1.719	1.718	1.703
Urban	183	1.534	1.533	1.518
Work pattern				
Never worked	762	1.269	1.248	1.241
Worked before marriage only	161	1.514	1.535	1.470
Worked since marriage, away	327	1.231	1.269	1.279
Worked since marriage, at home	274	1.165	1.164	1.209
Husband's occupation				
Farming	406	1.140	1.123	1.241
Professional and clerical	210	1.257	1.343	1.076
Agricultural labour	134	1.135	1.048	1.392
Sales and service	257	1.387	1.370	1.287
Other	516	1.348	1.356	1.325
Woman's education				
No schooling	246	.895	.862	.922
1–5 years	642	1.250	1.251	1.305
6–9 years	442	1.458	1.420	1.324
10–11 years	124	1.506	1.531	1.515
Higher education	70	1.112	1.403	1.335

- (b) seven separate regressions, one for each of the seven socio-economic variables, in which (1) that particular variable was entered first, so as to produce a simple cross-tabulation of means by categories of that variable, then (2) the demographic variables were entered, so as to measure the means of the socio-economic variable of interest after adjustment for the demographic variables.
- (c) a regression by the dummy-variable method of number of births in the first five years of marriage to obtain the means for zero, one, two, three and four or more births; this regression was not performed for respondents married less than five years.

A tabulation of the major results of the regressions of types (a) and (b) will be found in Table 14. The results of the regression of type (c) will be found in Table 15. Table 17 shows the contribution to R^2 of the several variables as well as the results of some significance tests.

The effects of the controls for demographic variables – namely, marriage age, months since first marriage, and number of births in the first five years of marriage – are relatively minor. In the case of months since first marriage, the control might not even have been necessary except for the cohort married less than five years, since the main control was achieved by division of the respondents into the four marriage cohorts in the first place. For the cohort married less than five years, we see large differences between the first and second columns of mean scores, i.e. between the unadjusted means and the means adjusted for demographic variables only, but for the older cohorts the differences between these columns are less pronounced.

Nevertheless, the impact of number of births in the first five marriage years is very definite. In Table 15 it will be seen that there is a sharp rise in the score of *current* contraceptive use which accompanies the variation in *early* fertility. Except in the one case in the cohort married 10–19 years ago where the

Table 14 (Part 4).
Regression Results for Cohort Married 20 or More Years Ago
Dependent Variable: Contraceptive Score
Number of Women = 977 Grand Mean = 1.118

Independent variable and categories	Number of women	Unadjusted means	Means adjusted for:	
			Demographic variables	All variables
Zone of residence				
1. Colombo	63	1.420	1.448	1.195
2. Other southwest	272	1.137	1.170	1.082
3. Near north and east	163	.989	.924	1.031
4. Eastern coast	43	.558	.503	.831
5. North	82	.563	.598	.741
6. Central highlands	354	1.306	1.304	1.294
Race-religion				
Sinhalese Buddhist	718	1.224	1.228	1.204
Sinhalese Christian	42	1.331	1.338	1.294
Tamil Hindu	133	.747	.736	.891
Tamil Christian	19	.934	.935	1.058
Moors, Muslims	65	.607	.583	.513
Types of residence				
Childhood				
Present				
Rural				
Rural	764	1.093	1.087	1.109
Urban	80	1.114	1.171	1.105
Urban				
Rural	39	.927	.970	.945
Urban	94	1.404	1.386	1.273
Work pattern				
Never worked	521	1.165	1.160	1.153
Worked before marriage only	55	1.113	1.158	1.107
Worked since marriage, away	207	1.070	1.079	1.116
Worked since marriage, at home	193	1.043	1.034	1.028
Husband's occupation				
Farming	340	1.004	.988	.996
Professional and clerical	78	.210	1.259	1.139
Agricultural labour	112	.913	.923	1.013
Sales and service	158	1.373	1.414	1.413
Other	288	1.166	1.146	1.134
Woman's education				
No schooling	285	.908	.898	.946
1–5 years	474	1.127	1.144	1.149
6–9 years	185	1.330	1.300	1.241
10–11 years	27	1.640	1.665	1.490
Higher education	6	1.308	1.417	1.276

current-use score for 4 or more births (only 42 women) is less than that for 3 births, the rise is monotonic. It is remarkable that early fertility should have so great an impact on contraceptive behaviour so many years later, though part of the explanation lies in the fact that contraceptive use is related to number of living children which in turn is related to the number of births early in marriage.

Table 15. Mean Contraceptive Scores, by Number of Births in First Five Years of Marriage

	Cohort of women married					
	5-9 years ago		10-19 years ago		20+ years ago	
Total women in cohort	894		1,524		977	
Number of births in first five years	Number of women	Mean score	Number of women	Mean score	Number of women	Mean score
0	75	.145	101	.383	64	.927
1	187	.692	347	.829	224	.986
2	425	.943	693	1.336	511	1.451
3	194	1.540	341	1.819	162	1.522
4+	13	1.748	42	1.416	16	1.788

The following comments may be made about the regression on the various socio-economic variables:

1) **Zone of residence.** The score variations between zones are very wide, with generally the highest scores being in Zones 1, 2, and 6. Zones 2 and 6 are predominantly Sinhalese areas, as may be seen from the following percentages (from Little and Perera) which show racial distributions by zone, with estate women omitted from Zone 6:

	Per cent					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Sinhalese*	69	93	87	18	1	93
Tamil**	17	4	2	51	94	3
Moors	14	3	11	32	5	4
Total	100	100	100	100	100	100

* The few members of "other" races are included with Sinhalese.
 ** The few Indian Tamils not living in stratum 17 (the tea-estate stratum in zone 6) are included with Tamils.

Zone 3 is also predominantly Sinhalese, but its contraceptive scores are substantially lower than Zones 1, 2 or 6. Zones 4 and 5, which are generally Moors or Tamils, have the lowest scores, but when the other socio-economic variables are introduced their scores are substantially increased, though even then their mean scores remain lower than those of the other four zones. In most of these cohorts the Zone 1 mean contraceptive scores are reduced, with the result that in two cohorts they become lower than the Zone 6 mean scores.

Table 16 shows the effects on the zone means for the 10-19 cohort after successive introduction of the other variables.

Here it will be seen that the introduction of race-religion as a control variable substantially increased the mean contraceptive scores for Zones 4 and 5, where the population is largely non-Sinhalese. Controlling for type of residence greatly reduced Zone 1's mean score, since that zone is entirely urban, and appreciably raised Zones 3 and 6 which are predominantly rural. Wife's work pattern and husband's occupation had very little effect. The effect of introducing wife's education was to reduce the Zone 5 score since the Sri Lanka Tamils living in that zone are above average in education; and introducing standard-of-living reduced the score for Zone 1, which has by far the highest mean standard-of-living score (8.3).

2) **Race-religion.** Here too the differences in mean scores between categories were wide, but controlling on the other variables tended to reduce them. The Moors had the lowest mean scores in all cohorts except the 0-4, but in some cohorts they were raised by controlling on education, since woman's education is very low for the Moors generally. One interesting effect of controlling on other variables was to lower the mean score of *Christian* Sinhalese relative to that of *Buddhist* Sinhalese, and also of Christian Tamils relative to Hindu Tamils. In each case the Christian women have the higher school attainments.*

As noted elsewhere, Indian Tamils not living on the estates are included with Sri Lanka Tamils in this regression analysis. Members of "other" races are included among Sinhalese; these "others" are very few in number and are mostly Burghers, persons of European ancestry, and therefore mostly Christian.

3) **Type of residence.** The predominant group are those who are rural both as to present location and as to childhood

* The following table from Little and Perera shows the educational attainments of the different racial-religious groups:

	Sinhalese Buddhist	Sinhalese Christian	Tamil Hindu	Tamil Christian	Moors Muslim
	Per Cent				
No Schooling	19	3	20	13	34
1-5 Years	39	33	42	39	47
6-9 Years	27	40	25	28	15
10+ Years	14	24	14	20	5
Total	100	100	100	100	100

Table 16. Mean Contraceptive Scores for Cohorts Married 10-19 Years Ago, by Zone

Zone	Unadjusted means	Means after introduction of following variables:						
		Demo-graphic	Race-religion	Type of residence	Work pattern	Husband's occupation	Woman's education	Standard of living
1	1.718	1.710	1.755	1.479	1.438	1.430	1.428	1.386
2	1.321	1.359	1.341	1.319	1.308	1.296	1.288	1.280
3	.991	.902	.899	.982	1.003	1.025	1.031	1.037
4	.648	.569	.702	.704	.695	.696	.695	.724
5	.771	.871	.908	.925	.920	.919	.845	.894
6	1.455	1.453	1.429	1.478	1.485	1.489	1.509	1.509

source. Controlling them on the other socio-demographic variables tends, in each cohort, to raise their mean score slightly.

The group who are rural in origin but urban in present location are called by Little and Perera "rural migrants". Their mean contraceptive score is generally higher than the rural-rural group, although in the case of the 20-or-more-years cohort the difference is very slight.

The small group who were urban originally but are now rural are called "urban migrants" by Little and Perera. In some cohorts (5-9 and 10-19) their mean scores are even higher than those of the urban-urban.

4) **Work pattern of woman.** The four work pattern categories were: (a) women who have never worked, (b) those who have worked before marriage but not since, (c) those who have worked since marriage (though not necessarily working currently) and whose most recent work since marriage has been away from home - whether on a farm or in non-agricultural employment, (d) those who have worked since marriage (not necessarily currently) but whose most recent work since marriage has been at home or on the family farm. This set of categories is different from that of Little and Perera, whose first category was the same but whose others were: (b) worked before marriage only, (c) worked since marriage only, (d) worked both before and since.

For all marriage cohorts except the 5-9 years since marriage, the mean contraceptive scores were closely similar for all four categories. Moreover they were very little affected by controlling on the other variables, nor did work pattern affect the results of other variables when it became a control variable. For the 5-9 cohort, the category which worked since marriage and away from home had a mean score considerably higher than the others; this in fact is what would have been expected in all cohorts, namely that the women currently employed and away from home would have the highest contraceptive use.

5) **Husband's occupation.** Here the two agricultural categories - wives of farm operators who owned or managed their own farms and wives of agricultural labourers, i.e. farm employees - had the lowest contraceptive scores before adjustment, although variations between them and the wives of men in other occupations were not particularly wide. Moreover, controlling on the other socio-economic variables tended to raise the contraceptive scores of the agricultural categories, as would be expected inasmuch as these women were all rural residents.

6) **Education of woman.** Here, as would be expected, there was a direct, definite and generally monotonic relationship between years of schooling and contraceptive score, with women with 1-5 years of schooling using contraception more in each cohort than women with no schooling; women with 6-9 years more than those with 1-5 years, and those with 10-11 years more than those with 6-9 years. In all but the 0-4 cohort, however, the category with "higher" education had a somewhat lower score than those with 10-11 years of schooling. Only a minority of the "higher" had had university education: the majority were "other higher" which may often have meant vocational studies.

In general, the mean scores for the lowest educational groups, particularly those with no schooling, were raised slightly when controlled by the other socio-economic variables, while those for the highest groups were slightly lowered. The women with the most education were also the urban women: those with relatively high living standards, and were seldom in floors. As we have seen, education operated a control variable to affect mean scores in categories of other variables.

7) **Standard-of-living.*** As this was taken as a metric rather than a categorical variable, we do not have the same measures for it as are shown in Table 14. However, as would be expected, the standard-of-living score was always directly

related to the contraceptive score, as may be seen from the following zero-order correlation coefficients.

Cohort	r
0-4	.137
5-9	.058
10-19	.085
20 and over	.068

However, as will be seen from Table 17, standard-of-living as a variable seldom contributed very significantly to R².

Table 17. R² and Chi-square Values from the Multiple Regression of Contraceptive Scores

	Cohort of women who first married			
	0-4 years ago	5-9 years ago	10-19 years ago	20+ years ago
R ² from demographic variables	.0791	.0981	.0644	.0454
R ² after successive introduction of:				
Zone	.1018	.1193	.0968	.0725
Race-religion	.1028	.1249	.1003	.0799
Type of residence	.1154	.1276	.1132	.0834
Woman's work pattern	.1170	.1432	.1153	.0861
Husband's occupation	.1421	.1591	.1161	.0961
Woman's education	.1529	.1881	.1269	.1020
Standard-of-living	.1541	.1903	.1306	.1024
Chi-square resulting from addition of:				
Zone (5 d.f.)	23.1**	22.6**	55.6**	28.6**
Race-religion (4 d.f.)	1.0	6.0	6.0	7.8
Type of residence (3 d.f.)	12.8**	3.0	22.3**	3.7
Woman's work pattern (3 d.f.)	1.7	16.6**	3.6	2.9
Husband's occupation (4 d.f.)	25.6**	17.0**	1.3	10.5*
Woman's education (4 d.f.)	11.0*	31.0**	18.6**	6.3
Standard of living (1 d.f.)	1.2	2.4	6.4	0.4
R ² which would result if the indicated socio-economic variable were the only variable:				
Zone	.0289	.0276	.0315	.0266
Race-religion	.0159	.0226	.0136	.0202
Type of residence	.0094	.0018	.0169	.0043
Woman's work pattern	.0001	.0210	.0034	.0012
Husband's occupation	.0246	.0216	.0041	.0092
Woman's education	.0248	.0427	.0152	.0127
Standard-of-living	.0187	.0034	.0071	.0047

* Significant at .05 level.

** Significant at .01 level.

* The standard-of-living score for the SLFS was developed in the WFS London office with the assistance of consultants from Sri Lanka. It was based on housing and household asset information from Part II of the SLFS household schedule, and was obtained by summing points determined according to source of water for cooking and drinking, type of toilet, source of lighting, type of material used in house walls and roof, ownership of motorized vehicle, bicycle, sewing machine, etc. As mentioned above, scores ranged from 0 to 26 points.

Table 17 shows the contributions to R^2 resulting from the stepwise regression of the contraceptive score on the demographic variables and the seven socio-economic variables. Total R^2 itself ranges from .1024 for the marriage cohort 20+ to .1903 for the 5-9 cohort. The table also shows the R^2 contribution which each variable would make when introduced as the first variable instead of in the sequence given in Table 17.

The table also makes use of the technique of Little and Perera in developing chi-square values as the quotient of the sum of squares introduced by the individual variable divided by the residual mean square, with the indicated number of

degrees of freedom. The starred chi-square values in the table are those which are significant at level .05 or better.

The socio-economic variables which contribute most consistently by these various measures are zone of residence, type of place of residence, husband's occupation and woman's education. Woman's work pattern turns out to be statistically insignificant except in the 5-9 cohort, while race-religion, and standard-of-living are relatively weak.

Age at marriage and duration of marriage contribute strongly only in the 20+ cohort, no doubt because this is an open cohort involving a wide range of these variables.

12 Effect of Contraception on Fertility

While the foregoing analysis highlights the fact that the degree of fertility in the early years of marriage has strongly influenced contraceptive behaviour in the later years, it is nonetheless possible to examine in an approximate manner what effect contraception has had on fertility. The approach used here has been to compare the mean number of births in the most recent five years for the following four groups of currently and continuously married women: (a) those who have never used a contraceptive method, (b) those who have used a traditional method only, (c) those who began a modern method (including sterilization) prior to 1971 and (d) those who first used a modern method during 1971-75. This was done by dummy-variable multiple regression, controlling on age, marital duration and race. The following results were obtained for non-estate women:

Group	Number of women	Mean number of births in past five years
a) Never used contraceptive method	2,076	.91
b) Used traditional method only	912	.85
c) Began modern method before 1971	566	.61
d) Began modern method during 1971-75	684	1.43

Since the most recent five years before the survey included the last few months of 1970, all of 1971-74 and most of 1975, it was to be expected that women who began a modern method before 1971 would have relatively low fertility thereafter. It is not surprising that women who began modern contraception during 1971-75 would have had high fertility immediately before they began, particularly since in the majority of sterilization cases the women had just given birth, and other modern methods were also commenced shortly after birth in many cases.* For the women in group (b), who used traditional methods only, it is not possible to tell when they began because year of first use was not ascertained for traditional methods, though it can be inferred from Tables 9 and 10 that these methods were often begun many years ago. It is of interest to note that the mean recent fertility for women in group (b), though considerably higher than that for group (c), is slightly lower than the fertility of women in group (a), who had never used any contraceptive method. The difference between the (a) and (b) means is significant at the .05 level.

* Information for loop, pill and condom did not include *month* of first use. However, 54 per cent of women who started on loop in 1971-75, 46 per cent of women who started pill and 44 per cent of those who started condom were shown as starting in a calendar year which included a birth.

13 Births Averted by Female Sterilization

It is not possible on the basis of SLFS data to make other than very crude estimates of births averted by contraceptive methods in general. The weakness of the data on pills and condoms, and particularly the uncertainty as to the faithfulness of their use, would make any births-averted estimates based on them quite questionable. However, Davies and Louis (1977) report that there was a net use of 3.1 million Preethi condoms in the year 1974, the year after the start of the Preethi commercial marketing programme. Based on this net use figure, they estimate 50,000 couple-years of protection in 1974 resulting in an estimated 10,000 births averted. If one could make births-averted estimates for pills and condoms, it might be feasible to estimate the effects of the IUD: however, since the WFS data give not the month but only the year of insertion, the duration between last birth and insertion would usually be a matter of guesswork. Knowledge of this duration is important, since it is desirable to know the extent to which the probability of conception (had the IUD not been inserted) has been affected by post-partum amenorrhoea.

For female sterilizations, on the other hand, we are given the month in which the operation took place and can therefore relate it to the month of last birth, though the month data are not absolutely reliable, as shown by the fact that the reported month of sterilization was sometimes *before* the month of the last birth.

In estimating births averted by sterilization, the main question is what the sterilized woman's fertility rate would have been had she not been sterilized. Table 5.13 of the SLFS First Report gives age-specific marital fertility rates for Sri Lanka for the years 1963, 1970 and 1974, the 1974 rates being derived from SLFS data. These fertility rates were those of *all* currently married women, and as we have seen, the fertility rates of sterilization acceptors were higher than those of women generally. The 1969-73 exposures and births of married women who were sterilized in 1974 or 1975 (excluding those who had married either before age 15 or at ages 25 or older) produced rates 56 per cent higher on an age-standardized basis than the 1974 fertility rates of Table 5.13. These 1969-73 rates did not generally include the births which immediately preceded sterilization and therefore give a rough indication of what the later rates might have been, if one disregards the possibility of adopting some other contraceptive method. It was therefore decided to use these fertility rates of subsequently sterilized women as the basis for one fertility assumption in the calculation of births averted.

This first assumption, however, may overestimate births averted by sterilization, because the high fertility rate of subsequently sterilized women may reflect to some extent a chance element as well as a genuinely higher fecundity (see Ridley *et al.* 1969). As a second, and more conservative, assumption, it was decided to adopt 1970-75 rates derived by Alam and Cleland from SLFS experience for currently married women generally. These rates were shown by both age and marital duration, and in their application to the calculation of births averted they were smoothed and interpolated by a formula derived by multiple regression.

With each set of fertility rates, a methodology was employed which was adapted from Venkatacharya (1971) but which assumed shorter periods of post partum amenorrhoea than were used in his paper. In Sri Lanka, the mean duration of breast-feeding in the last closed interval for women who were subsequently sterilized was found in the SLFS data to be only 13.4 months, considerably shorter than the mean for women in the sample, a fact which may partially explain their higher fertility. Potter *et al.* (1965, p. 387, Table 2) showed

that in a large Indian sample amenorrhoea tended to last about two-thirds as long as lactation, so that these Sri Lanka women might be expected to have a mean of only about 9 months. Accordingly, a hypothetical amenorrhoea distribution was worked out which had a mean of 9.6 and a variance of 31.1 months, and on this basis a matrix of age specific marital fertility (or in the case of the conservative assumption age-duration specific) rates was derived which also allowed for the effect of the amenorrhoea distribution. Further adjustment was made by allowing for the effect of mortality of both wife and husband after 1975, using mortality rates of the 1970-72 Sri Lanka Life Tables (Department of Census and Statistics, 1978) and also assuming a 1 per cent annual probability of termination of marriage by divorce or separation.

Special calculations were also made for the women who were sterilized but whose marriages terminated before the interview date.

The results of both sets of calculations of births averted – the low estimate based on the fertility rates for women generally, and the high based on the 1969-73 fertility of women sterilized in 1974 or 1975 – are shown in Table 18. For each set, the estimated births averted are subdivided into those which would have occurred prior to 1976 (i.e. approximately up to the survey date) and those occurring prospectively thereafter. Births averted are also shown inflated to a national basis.

Table 18. Births Averted by Female Sterilization

	Low estimate	High estimate
Women still married at date of survey		
Number of women: 566		
Births that would have occurred to end of 1975	216	436
Births that would have occurred in all years after 1975	490	1,221
Women whose marriages terminated before date of survey		
Number of women: 24		
Births that would have occurred prior to termination of marriage	12	19
Total births averted	718	1,676
National estimate based on 300-to-1 inflation factor		
Years before 1976	68,000	136,000
Years after 1975	147,000	366,000
	215,000	502,000

The high estimates are more than double the low, largely because the fertility rates on which the high estimates are based are more than double the low rates at ages over 40, when most of the averted births would have occurred.

Westoff *et al.* (1979) have described a method for estimating births averted by sterilization as applied to Panama WFS data. Their methodology is quite different from that employed here, and they express their results in terms of births averted per woman for all women, whether sterilized or

unsterilized. They also make use of a synthetic approach under which the rate of sterilization of the 5 years immediately preceding the survey would have operated in all future years. In an unpublished paper, they have extended their methodology to SLFS data, and obtain for Sri Lanka 0.2 births averted per woman under the simple approach, 0.7 under the synthetic. The 0.2 result would be equivalent to roughly 1,400 births averted which is between the low and high estimates of Table 18. The 0.7 would be far in excess of even the high estimate. The assumption underlying their

synthetic approach seems open to some question, because in some countries a rate of sterilization achieved at a certain stage early in a national family planning programme might be artificially high due to a backlog of demand, and might therefore not be sustained in later years. In Sri Lanka it is interesting to note that the high annual number of sterilizations during the years 1974--76 was not sustained in the years which immediately followed. By 1978 the annual rate fell to about one-half of the 1974--76 level, though the decline was apparently due to various administrative and political reasons rather than to a decrease in demand.

14 Summary

The following are some of the principal points revealed by this analysis of Sri Lanka Fertility Survey data:

1) Contraception is a growing force in Sri Lanka, but delay in marriage, as evidenced by decreasing percentages of young women who are married (Table 1), has accounted for more of the country's fertility decline than has contraception.

2) While modern contraceptive methods are widely known in Sri Lanka, they are still used by only a minority of the women exposed to the risk of pregnancy (Table 2). The explanations given for non-use of contraception are often unconvincing.

3) While the loop (IUD) has a fairly good retention record (Table 4), that for the pill (oral contraceptive) is poor, partly because of problems in support for its use.

4) Female sterilization is the most important contraceptive method, protecting as many currently exposed women as all other modern methods combined (Table 2) and resulting in the averting of a substantial number of births (Table 18). Most women who have had themselves sterilized did so immediately after their last birth, and most had used no previous method (Table 5a).

5) There has been considerable use of traditional methods, and to a considerable extent there has been shifting from traditional to modern methods (Table 9), indicating that some of the modern method use is a substitution for previous use of traditional methods. The younger cohorts have much less relative use of traditional methods than the older cohorts (Table 13).

6) Even though Sri Lanka is a small country geographically, there is considerable variation in contraceptive use (Tables 12 and 14.) While the highest proportional use is in the capital city, Colombo, use is also relatively high in the central highlands area (but not in the tea estates in that area). There is considerable variation in use among the various ethnic groups, with much less use by Tamils and Moors than by

Sinhalese. The incidence of use also varies strongly and directly with female education.

7) An important determinant of contraceptive use appears to be the woman's fertility in her early years of marriage: the greater the number of children born in the first five years, the more likely the use of contraception in later years (Table 15). The women who have elected sterilization had particularly high fertility in the years preceding sterilization.

The contraceptive data do not explain why Tamil marital fertility is in most respects lower than Sinhalese, which was a significant finding of the First Report, for as this study shows contraceptive use is higher among Sinhalese than among Tamils. Some comments on this paradox may be found in the closing paragraphs of Appendix 1, applicable to estate women, who for the most part are Indian Tamils, but the reference to cultural factors among Indian Tamils may also apply to Sri Lanka Tamils. As for Moors, the situation is clear-cut; their contraceptive use is low and their fertility high.

This study has shown a number of respects in which the SLFS data have not been wholly satisfactory in measuring contraceptive behaviour or its effects. This is partly because some questions, particularly those questions in the Sri Lanka questionnaire which are not in the WFS core questionnaire, were liable to misinterpretation by respondents or may not have been probed sufficiently by interviewers. Perhaps as important was the fact that the survey was largely a retrospective one covering a long period of years, with a consequent high probability of recall lapse.

Despite these limitations, it is clear that the SLFS has added substantially to the previously available information on Sri Lanka's national family planning programme and has contributed to a better understanding of the programme's problems.

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Appendix I Estate Residents

Estate residents, or more precisely the residents of stratum 17 of the survey, the tea-and-rubber estate area in Zone 6, have been placed in a separate category from the main sample, since they are distinct in several characteristics from other population groups in Sri Lanka. The estate workers who comprise the majority of the estate population are Indian Tamils, descendants of workers brought in from southern India during the period 1870–1940 to work in the plantations. They are primarily Hindu by religion and are also distinct in language and culture from the Sinhalese population who live all around them in Zone 6. They have virtually no contact with the Sri Lanka Tamils, who live mostly in Zones 4, 5 or 1 (Colombo) and whose ancestors came to Sri Lanka many centuries ago.

Details of contraceptive use of estate residents are shown in Table I-1 and it will be at once seen that, except for the fact that 25 estate men have had vasectomies, contraceptive use is much less than in Sri Lanka as a whole. Despite this, the SLFS indicates substantially lower fertility for estate residents than for most other groups.

The various other studies of SLFS data, by Meegama (1980), Little and Perera (1980), and Alam and Cleland (forthcoming) also treat the estate women separately. Their findings and other survey data show that:

1. Estate marriage age has been lower than that for all other groups except for the Moors.
2. Estate education levels are lower than for all other groups, even Moors. The proportions of estate women having no schooling were 69 per cent, 49 per cent and 43 per cent for women first married 20 or more years ago, 10–19 years ago and less than 10 years ago, respectively.
3. Ninety-two per cent of estate women have worked away from home since marriage, and only 5 per cent have never worked at all. For non-estate women, the corresponding percentages are 18 and 52 respectively.
4. The mean standard-of-living score on estates is only 2.8, as compared to 5.2 in non-estate households.
5. The greatest difference between estate and non-estate

fertility has been in the first five years of marriage, with estate fertility being consistently lower; moreover, estate fertility in the first five years of marriage has steadily declined for recent marriage cohorts, while it has remained high for non-estate women. However, since 1970 estate fertility has been lower than non-estate at almost all ages and marriage durations.

6. Survey data on estate women appear to be of considerably poorer quality than for non-estate women, exhibiting much more age heaping (see Alam and Cleland, forthcoming). The proportion of missing months of birth of children is more than double the non-estate proportion. Meegama (1980) has found irregularities in the sex-ratio of deceased estate infants which suggest the probability of serious under-reporting of female births and therefore of births in total.
7. In addition to the other evidence of poor health on the estates pointed out by Meegama, SLFS data show 9 foetal losses per 100 live births on the estates, as compared to 6 per 100 generally. Both of these rates are probably under-reported, but the degree of under-reporting may be greater in the estates.
8. Mean duration of breastfeeding appears to be longest for estate women (see Table 4.1.5C of First Report) but not in itself long enough to explain much fertility difference.
9. No abortions were reported by estate women, but abortions must be under-reported in SLFS data generally. The fact that 69 per cent of all women (and 56 per cent of estate women) know about abortion means that it is far from rare.

Table I-1 shows only 22 per cent of estate women to have used a contraceptive method as compared with 46 per cent for non-estate women. Note however that only a small proportion of total use on the estates is use of traditional methods, while the proportion sterilized (including husbands sterilized) is 9 per cent for both estate and non-estate. From the data in Table I-1 one can calculate a mean contraceptive score of 0.72

Table I-1. Contraceptive Use in Estates and Corresponding Non-Estate Data

A. Ever-married women, by ever-use of contraception

	Estate women				Non-estate women					
	Per cent				Per cent					
Number	Never used	Traditional only	Efficient method		Current age	Number	Never used	Traditional only	Efficient method	
			Not ster.	Ster.					Not ster.	Ster.
105	92	1	4	3	Under 25	982	67	13	19	1
260	76	5	10	9	25–34	2,256	48	20	21	10
195	68	7	10	14	35–44	1,976	50	21	17	12
81	85	6	4	5	45–49	955	64	24	6	5
642	78	5	8	9	Totals	6,168	54	20	17	9
Years since first marriage										
218	85	4	6	4	Under 10	2,292	58	19	19	4
214	72	3	12	12	10–19	1,960	44	20	21	15
210	74	8	6	11	20 and over	1,916	60	21	11	8
Number of living children										
414	84	5	7	4	Less than 4	3,359	60	21	15	3
223	65	5	11	18	4 or more	2,809	47	19	18	16

B. Women who have ever used pill, loop, condom or sterilization

Estate women		Year of first use	Non-estate women	
Number	Per cent		Number	Per cent
4	4	Before 1965	112	7
33	30	1965-69	423	27
28	25	1970-72	396	26
9	8	1973	164	11
18	16	1974	229	15
18	16	1975	226	15
1	1	Not stated	3	0
111	100	Totals	1,553	100
Age at first use				
17	15	Under 25	391	25
45	41	25-29	474	31
25	22	30-34	363	23
23	21	35 and over	322	21
1	1	Date not stated	3	0
Marital duration at first use				
15	14	Under 5	526	34
34	31	5-9	418	27
31	27	10-14	329	21
18	16	15-19	173	11
12	11	20 and over	104	6
1	1	Date not stated	3	0
Parity at first use				
8	7	Less than 2	220	14
34	31	2-3	482	31
30	27	4-5	428	28
38	34	6 or more	420	27
1	1	Date not stated	3	0

for estates (scoring current pill, condom or injectable use as 2, loop as 3, sterilization as 4 and traditional methods 1), which is not so far below the mean non-estate score of 1.01 as the over-all percentages would indicate. On the other hand, the table shows that on the average modern methods are not accepted until a higher age and parity than in the rest of the country.

All in all, the lower estate fertility cannot be explained by

C. Currently married, fecund, non-pregnant women, by method currently used

Estate women			Non-estate women	
Number	Per cent		Number	Per cent
8	2	Pill	87	2.0
11	3	Loop	279	6.5
1	0	Condom	140	3.3
32	7	Female sterilization	534	12.5
25	6	Male sterilization	19	0.4
1	0	Injectable	18	0.4
1	0	Rhythm	489	11.4
3	1	Withdrawal	87	2.0
21	5	Abstinence	193	4.5
0	0	Douche or other trad.	4	0.1
321	76	No method	2,435	56.8
424	100	Totals	4,285	100.0

contraception or other data. Instead, poor health, poor diet, harsh climate (the higher tea estates have heavy rain and temperatures that often go down almost to the frost level), poor housing, hard work and poor pay must all be factors. One can also expect that there are cultural factors operating which result in less frequent coitus and in long post-partum abstinence, which if cultural would probably not be reported as a contraceptive method.

Appendix II

Estimated Number of Ever-Married Women Under Age 50

Table II-1. Estimated Number of Ever-Married Women Under Age 50 in 1975

Age	Total number (000)	Per cent ever married	Number ever married (000)
15-19	743	8.1	60
20-24	650	43.3	281
25-29	549	71.4	392
30-34	458	88.8	407
35-39	371	94.7	351
40-44	321	96.3	309
45-49	283	97.7	276
15-49	3,375		2,076

The numbers of total women, by age, are from a projection made for mid-1975 by the U.S. Census Bureau from data supplied by the Sri Lanka Department of Census and Statistics. This projection is found in Table 6 of the Sri Lanka number of the Census Bureau's series "Country Demographic Profiles". The proportions ever married are derived from Table II.3 of the First Report of the Sri Lanka Fertility Survey. Ever-married include married, widowed, divorced, and separated women in the WFS household population.