Unmet Need for Contraception in South Asia: Levels, Trends and Determinants

Fear of side effects and/or other health concerns, religious prohibition, the desire for more children, opposition from husbands, and a lack of knowledge about and/or access to, contraceptive methods are the major barriers to contraception

By Rafiqul Huda Chaudhury*

"Unmet need for family planning", which refers to the condition of wanting to avoid or postpone childbearing but not using any method of contraception, has been a core concept in international population for more than three decades (Casterline and Sinding, 2000; Freedman, 1987). The importance of the unmet need for family planning or satisfying an individual's reproductive

***** Adviser on Population Policies and Development Strategies, United Nations Population Fund, Country Support Team for South and West Asia, Kathmandu. The views expressed in this paper are those of the author only and do not necessarily reflect those of the SAWA.

aspirations as a rationale for formulating population programmes was further explicitly reiterated by the Programme of Action of the International Conference on Population and Development (ICPD), which states that "Government goals for family planning should be defined in terms of unmet needs for information and services" and that "all countries should, over the next several years, assess the extent of national unmet need for good-quality family planning services (United Nations, 1994). ICPD+5 has called for a 50 per cent reduction in the unmet need for contraception by 2005 and its total reduction by 2015.

Designing effective programmes to reduce unmet need will require, among other things, an assessment of the extent of unintended fertility and, correspondingly, of the amount of unsatisfied demand for fertility regulations, and the proper identification of women with unmet need, in terms of its causes and their socio-economic and demographic characteristics. This paper, covering selected countries of the South Asian region, attempts (a) to examine levels and trends in unmet need for contraception; (b) to identify the socio-economic and demographic characteristics of those women with the highest unmet need for contraception, at the country and regional levels; (c) to delineate the major reasons for not using contraception; and (d) to draw policy and programme lessons in order to meet the unmet need for contraception.

Data and methods

The paper is based on the analysis of secondary data, particularly those collected by Demographic and Health Surveys (DHSs) from 1990/1991 to 1999/2000. The DHSs were based on national probability samples of ever-married women. The paper is also based on information collected from currently married women between the reproductive ages of 15 and 49 years.

The unmet need for contraception was defined in DHSs as currently married pregnant women whose pregnancy was mistimed (that is, they did not want a child so soon) or unwanted (that is, they did not want a child at all), amenorrhoeic women whose last birth was mistimed or unwanted, and women who were neither pregnant nor amenorrhoeic and who either wanted to wait two or more years for their next birth or have no more children, but were not using contraception. Women who wanted to space the next birth or who wanted no more children were referred to as unmet need for spacing births, or spacers,

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1/   Infecund women are those who are unable to give birth to a child even if they try.

**Table 1. Distribution of married women of reproductive age with unmet
and met needs for contraception and total demand for contraception
in selected South Asian countries, 1996/1997-1999/2000**

<div align="right">(Percentage)</div>

Need for family planning	Bangladesh (1999-2000)	India (1998-1999)	Nepal (1996)	Pakistan (1996-1997)
Percentage of married women of reproductive age with unmet need				
Spacing	8.0	8.3	14.3	13.4
Limiting	7.3	7.5	17.1	24.1
Total	15.3	15.8	31.4	37.5
Met need for contraception (that is, current contraceptive prevalence rate)				
Spacing	15.6	3.5	2.6	5.1
Limiting	38.2	44.7	25.9	18.8
Total	53.8	48.2	28.5	23.9
Total demand for contraception				
Spacing	23.6	11.8	16.9	18.5
Limiting	45.5	52.2	43.0	42.9
Total	69.1	64.0	59.9	61.4
Percentage of demand satisfied				
Spacing	66.1	29.6	15.4	27.6
Limiting	83.9	85.6	60.2	43.8
Total	77.9	75.3	47.6	39.0

Sources: National Institute of Population Research and Training, Ministry of Health and Family Welfare; Mitra and Associates and Macro International Inc., Bangladesh Demographic and Health Survey 2000. International Institute for Population Sciences, National Family Health Survey, 1998-1999, Bombay, India. Ministry of Health, Nepal Family Health Survey, 1996 Report (Kathmandu, 1997). National Institute of Population Studies, and Centre for Population Studies, London School of Hygiene and Tropical Medicine, Pakistan fertility and family planning survey, 1996-1997 (January 1998).

and unmet need for limiting births, or limiters, respectively. Excluded from the category of unmet need were menopausal or infecund[1] women. The flow diagram in the annex illustrates the definition of unmet need, using data collected by the 1996 Nepal Family Health Survey.

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Findings

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Level of unmet need

Table 1 and figure 1 examine the level of unmet need as well as the spacing and limiting components in selected countries of South Asia. The data reveal a high level of unmet need for contraception among currently married

Figure 1. Percentage distribution of currently married women of reproductive age with unmet need for contraception by components in selected South Asian countries, 1996/1997-1999/2000
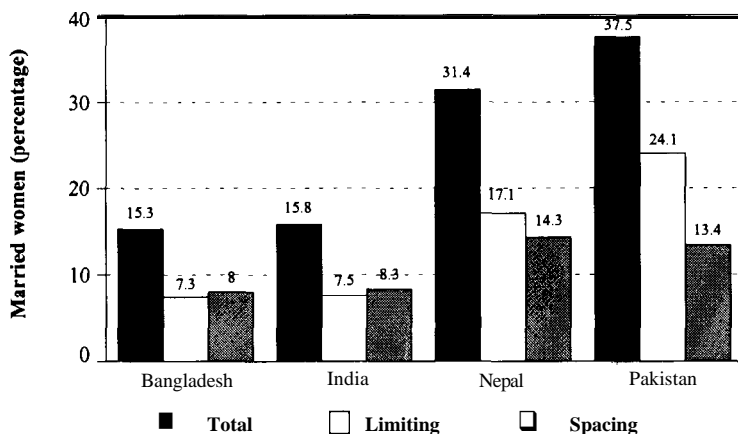

women in South Asia. At least one in five currently married women in the countries surveyed want to stop or delay childbearing, but are not using contraception. However, the level of unmet need for contraception varies considerably across the countries, ranging from 15.3 per cent in Bangladesh to 15.8 per cent in India, 31.4 per cent in Nepal and 37.5 per cent in Pakistan. In other words, nearly two in five currently married women in Pakistan, one in three in Nepal, and one in six in Bangladesh and India are in need of contraception for the purpose of spacing or limiting births. The high unmet need in Pakistan and Nepal can, to a great extent, be attributed to the high demand for limiting births (17-24 per cent), which exceeds the unmet need for limiting births in Bangladesh and India by 128-230 per cent.

Estimated number of women with unmet need

For the purpose of programme planning, an estimate is also made of the number of women in the reproductive age group with unmet need in each country.[2] This provides valuable information on the number of potential users of family planning services and helps programme managers to plan appropriate

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[2]/ An estimate of the number of women with unmet need is obtained by multiplying the number of women in the reproductive age group with the total unmet need for contraception. Data on the number of women in the reproductive age group are taken from World Contraceptive Use, 1998 (wall chart), United Nations, 1999.

Figure 2. Number of currently married women of reproductive age with unmet need for contraception in selected South Asian countries, 1996/1997-1999/2000
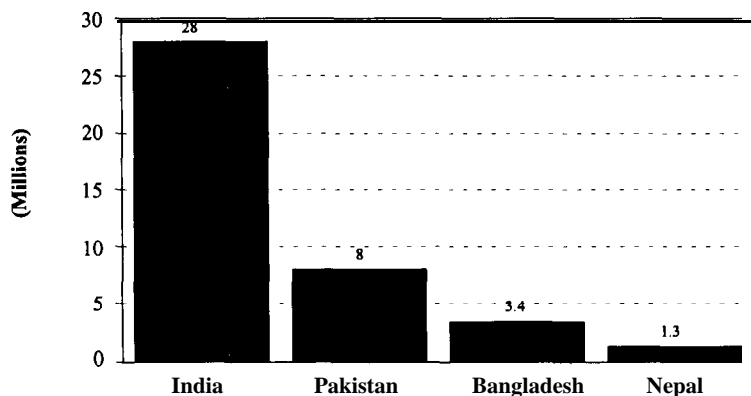
strategies to meet potential demand. In the South Asian countries covered by this paper, nearly 41 million women would like to postpone their next birth for two or more years or to stop childbearing, but are not using contraception. In India alone, around 28 million women have an unmet need for contraception, compared with 8 million in Pakistan, 3.4 million in Bangladesh and 1.3 million in Nepal (figure 2). This paper provides a conservative estimate of the number of women with an unmet need for contraception. The number would have been much higher if (a) the estimate had included the unmet need for contraception among individuals who were not living in marital union, and (b) the definition of unmet need had been broadened to include those women dissatisfied with their current methods of contraception, those who were using less efficacious contraceptive methods or those who sought services other than contraception, such as menstrual regulation or treatment of infecundity.

Level of total demand for contraception

Table 1 also provides an estimate of the total demand for contraception, obtained by adding the total unmet need to the contraceptive prevalence rate. Total demand may be interpreted as the contraceptive prevalence that would have been observed at the time of the survey if the women had previously fully implemented their spacing and limiting preferences (Bongaarts, 1991). The data in table 1 reveal a high level of total demand for contraception in almost all the countries surveyed, with little variation among them. The total demand for contraception varies within a narrow range of 60-64 per cent for most of the

Figure 3. Percentage distribution of currently married women of reproductive age with total demand for contraception, met need and unmet need, selected South Asian countries, 1996/1997-1999/2000


Per cent of married women

■ **Total demand**   □ **Met**   ▨ **Unmet**

countries surveyed. However, there is substantial variation with respect to the level that is reached in satisfying total demand.

Level of satisfaction in meeting total demand for contraception

The extent to which the total demand for contraception is satisfied is also estimated by dividing the contraceptive prevalence rate by the sum of the total unmet need and prevalence rate. The estimate will provide, on the one hand, a measure of the success achieved by the family planning programme in meeting the demand for contraception while reminding the programme managers of their unfinished task of meeting the need of those whose demand for contraception still remains unrealized. The data in table 1 and figure 3 indicate a big gap between demand and satisfaction. Only 65 per cent of the total potential demand for contraception is currently being satisfied. However, the level of satisfaction varies widely by country in the region. The percentage of the total demand for contraception that is currently satisfied ranges from a high of 75-78 per cent in India and Bangladesh to 48 per cent in Nepal and 39 per cent in Pakistan. It is also important to note that the proportion of satisfied

Figure 4. Level and trend in unmet need for contraception by planning status in selected South Asian countries, 1991 to 1999/2000
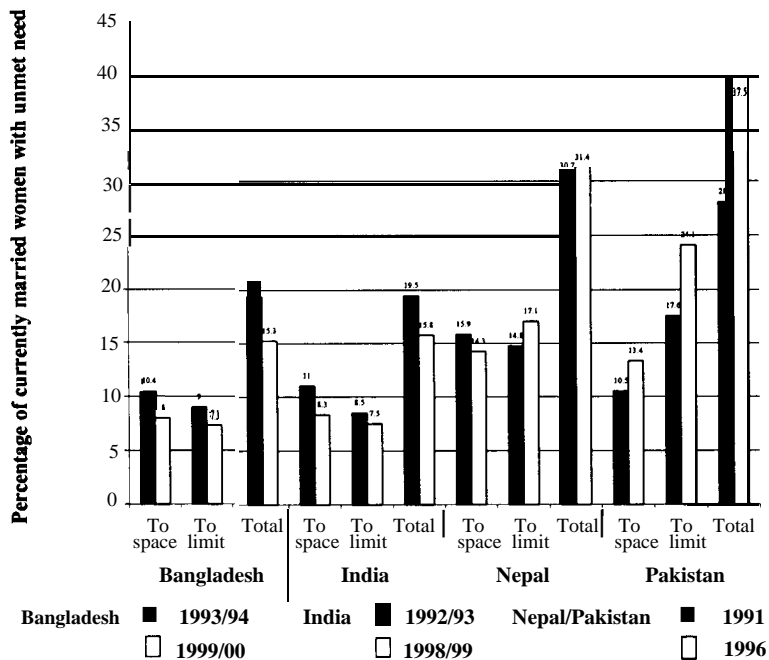
demand for limiting births far outweighs the proportion of satisfied demand for spacing births in all countries covered by this survey (figure 3). This may reflect, among other things, programme emphasis on terminal rather than spacing methods. It calls for ensuring greater accessibility of spacing methods and popularizing them, particularly among young couples who have not yet achieved their desired family size and are in need of contraception for spacing births. The findings indicate that most countries in the region need to substantially improve their programme efforts to enhance the contraceptive use rate (for example, at least 28-33 per cent in Bangladesh and India, and 110-157 per cent in Nepal and Pakistan, respectively) in order to meet the total demand for contraception.

Trend in unmet need

The data in figure 4 show a mixed trend in unmet need and the total demand for contraception by its components. In Bangladesh and India unmet

Table 2. Estimated total fertility rate using regression equation
TFR = 7.178 - 0.0682 CPR + e

Country	Current total fertility rate (TFR)	Current contraceptive prevalence rate (CPR)	Unmet need	Total demand for contraception	Estimated TFR if total demand for contraception satistied
	(A)	(B)	(C)	(B+C)	
Bangladesh	3.3	53.8	15.3	69.1	2.46
India	2.9	48.2	15.8	64.0	2.81
Nepal	5.6	28.5	31.4	59.9	3.09
Pakistan	5.3	23.9	37.5	61.4	2.99

need has declined, while in Nepal and Pakistan it has increased. In India and Bangladesh, the unmet need for family planning among currently married women declined by 19-21 per cent between the early and late 1990s. This decline was also noticed among both spacers and limiters of births. In Nepal, the unmet need for contraception increased, albeit modestly, by 2 per cent, while in Pakistan it increased considerably by 33 per cent between the early and late 1990s. This increase was noticed among both spacers and limiters of births in Pakistan. In Nepal, the unmet need for contraception for spacing and limiting of births showed an opposite trend, in which the former declined while the latter increased. The increase in unmet need for contraception in Pakistan and Nepal may be attributed to greater reproductive preference for smaller family size and the increased availability of family planning services, among other factors.

Demographic impact

The question of whether unmet need for family planning is high enough in South Asian countries to have a significant impact on fertility if that need is satisfied is investigated using a simple regression model (TFR = 7.178 - 0.0682 CPR + e), developed by Bongaarts (1990). The result in table 2 shows that a significant demographic impact would follow for a majority of the South

Asian countries surveyed if all women who wished to limit or postpone births became contraceptive users. For example, the total fertility of Bangladesh, Nepal and Pakistan would be greatly reduced, from 3.3 to 2.5 births (24 per cent), 5.6 to 3.1 births (45 per cent) and 5.3 to 3.0 births (43 per cent), respectively, if the unmet need for contraception was satisfied. Only in the case of India would the corresponding decline be marginal: from 2.9 to 2.8 births (3 per cent). These countries would become 15 to 30 per cent closer to replacement-level fertility of 2.1 births per woman (table 2) if women with unmet need for contraception became contraceptive users.

Co-variates of unmet need for contraception: who has unmet need?

The magnitude of unmet need for contraception varies substantially according to the demographic and social characteristics of women, the most prominent of which are age, number of living children, residence and education. Also, the characteristics of women with unmet need who are interested in spacing differ from those interested in limiting births. Examination of co-variates of unmet need will enable the identification of women with greater unmet need and their characteristics. This information will provide valuable inputs to the formulation of targeted strategies for meeting the demand for contraception of women with varying needs.

Age

The data in table 3 show a negative association between age and unmet need for contraception for all of the South Asian countries surveyed, except Pakistan. In Pakistan, age shows a positive relationship with unmet need for contraception. The relationship between age and unmet need becomes sharper and uniform across all the countries when unmet need is divided into its spacing and limiting components. Age shows a negative relationship with unmet need for spacing and a positive relationship with limitation of births. This indicates a concentration of unmet need for spacing and limiting births among younger and older women, respectively. This is to be expected because younger women will still want to have more children, while older women have achieved their desired number of children.

Number of living children

The relationship between the number of living children and the level of unmet need assumes the same pattern as that of age, in which women with

**Table 3. Percentage distribution of currently married women with unmet need for contraception
by background characteristics in selected South Asian countries, 1996/1997-1999/2000**

Background characteristics	Unmet need for contraception											
	Bangladesh (1999-2000)			India (1998-1999)			Nepal (1996)			Pakistan (1996-1997)		
	To space	To limit	Total	To space	To limit	Total	To space	To limit	Total	To space	To limit	Total
Age												
15-19	18.3	1.7	20.0	25.6	1.6	27.1	38.9	1.6	40.5	22.4	0.6	23.0
20-24	13.2	4.9	18.1	18.4	5.9	24.4	28.8	9.0	37.8	25.9	7.1	33.0
25-29	6.7	9.5	16.2	8.1	10.5	18.6	12.9	21.6	34.6	19.6	18.1	37.7
30-34	4.2	10.3	14.5	3.1	11.1	14.1	5.3	27.0	32.3	10.6	24.1	34.7
35-39	I.5	11.8	13.3	1.1	9.1	10.2	2.3	26.8	29.1	3.8	35.8	39.5
40-44	0.6	9.3	9.9	0.2	5.5	5.7	0.8	21.4	22.2	1.8	43.0	44.7
45-49	0.0	4.6	4.6	0.1	3.0	3.1	0.1	9.1	9.2	0.8	51.8	52.6
Number of living children												
0				13.8	0.2	14.1	22.9	0.2	23.1			
1				20.6	2.6	23.2	32.0	3.4	35.4			
2				7.9	7.1	15.0	18.2	13.8	32.1			
3				4.1	7.8	11.9	9.2	20.1	29.3			
4				2.9	9.7	12.5	3.2a/	30.3a/	33.5a/			
5				2.4	14.2	16.6						
6+				2.0	20.5	22.5						
Residence												
Urban	6.3	6.1	12.4	6.7	6.7	13.4	7.4	14.3	21.7	11.8	24.2	36.0
Rural	8.4	7.6	16.0	8.9	7.8	16.7	14.9	17.4	32.3	14.0	24.1	38.1
Education												
No education	6.9	9.7	16.6	7.8	8.5	16.2	12.7	18.4	31.1	13.3	26.2	39.5
Primary	8.6	8.3	16.9	9.2	6.1	15.2	21.1	15.0	36.2	14.6	20.3	34.8
Secondary +	8.5	3.9	12.4	8.8	6.3	15.1	19.0	8.8	27.8	12.9	15.9	28.8
Total	8.0	7.3	15.3	8.3	7.5	15.8	14.3	17.1	31.4	13.4	24.1	37.5

Sources: National Institute of Population Research and Training, Ministry of Health and Family Welfare; Mitra and Associates and Macro International Inc., Bangladesh Demographic and Health Survey 2000. International Institute for Population Sciences, National Family Health Survey, 1998-1999, Bombay, India. Ministry of Health, Nepal Family Health Survey, 1996 Report (Kathmandu, 1997). National Institute of Population Studies, and Centre for Population Studies, London School of Hygiene and Tropical Medicine, Pakistan fertility and family planning survey, 1996-1997 (January 1998).

a/ Refers to 4 and above.

fewer living children are more interested in contraception for spacing than women with high parity. The latter are more concerned with limiting births (table 3).

Place of residence

In all the South Asian countries covered by this paper, the unmet need for contraception is generally higher in rural areas than in urban areas. This may be attributed, among other factors, to the higher availability of contraceptive services and the preference for smaller families in urban areas. The overall finding of a higher need for contraception in rural areas also holds for the unmet need to space births across all the South Asian countries surveyed, and for limiting births, except in Pakistan. The data show no variation between rural and urban areas of Pakistan with regard to unmet need for limiting births (table 3).

Female education

Examination of the relationship between female education and the level of unmet need shows the following pattern: in all of the countries included in the survey, unmet need for family planning is lower among women with secondary and higher education than among women with little or no education (table 3). However, the overall pattern of the relationship between education and unmet need changes when unmet need is divided into spacing and limiting components. In all of the countries under study, the unmet need for limiting births is more concentrated among women with little or no education, while the unmet need for spacing is more concentrated among women with primary education followed by those with secondary education, except in Pakistan. In Pakistan, both spacers and limiters tend to be more concentrated among women with little or no education. The finding of a relatively higher concentration of spacers among women with higher education and a greater number of limiters among women with little or no education may be attributed, among other factors, to their age differences. Since women with higher education are relatively younger than women with little or no education, the former will therefore be more interested than the latter in spacing births. Moreover, the former are more knowledgeable than the latter about method mix and sources of contraceptives.

Differences among women with unmet need

Women with unmet need do not form a homogeneous group. Several important differences exist among women with unmet need that deserve

Table 4. Composition of unmet need for contraception by pregnancy status and contraceptive intention in selected South Asian countries

Country	Pregnant or amenorrhoeic	Who have never used contraception	Who intend to use contraception
Bangladesh (1993-1994)[a]	22.0	51.0	79.0
Nepal (1996)[b]	26.5	78.0	76.0
Pakistan (1990-1991)[a]	26.0	82.0	26.0

[a] Demographic and Health Surveys, quoted in *Population Reports*, vol. XXIV, No. 1, September 1996, Johns Hopkins University School of Public Health, Centre for Communication Programs.

[b] Aryal, R.H and T.B. Dangi (1997). "Attitudes towards family planning and reasons for non-use among women with unmet need for family planning in Nepal", in *Insights on Family Health Issues in Nepal* (Kathmandu, Ministry of Health).

consideration from a programmatic viewpoint. These differences include whether unmet need is for limiting or spacing of births, the pregnancy or exposure status, the previous use of contraception and the intention to use contraception in the future.

Limiting versus spacing

The classification of unmet need into two components (the need for spacing and the need for limiting births) has important family planning programme implications. This will provide valuable information to programme managers that will be helpful in selecting the appropriate method mix for meeting the demand of potential users of contraception, that is, whether they are interested in spacing or limiting births.

Data show no systematic distribution pattern of the components of unmet need across the South Asian countries covered by this study. The unmet need is higher for limiting than spacing births in Nepal and Pakistan, while in India and Bangladesh it is the reverse (table 1).

Pregnancy or exposure status

The unmet need for contraception was also assessed for women who are pregnant or amenorrhoeic women by asking whether (a) their current pregnancy or recent birth was mistimed (that is, the child was either not wanted so soon or was unintended (that is, not wanted at all), and (b) any method of family planning was being used at the time of conception. Table 4 shows that a

sizeable proportion of women with unmet need are pregnant or amenorrhoeic, accounting for at least one fifth of the total in all the South Asian countries included in this study. The finding indicates that unmet need is fairly common among amenorrhoeic women, that is, those who have recently given birth. This finding has significant programme implications. Although such women are not immediately at risk of pregnancy, they may become pregnant sooner than expected if their unmet need for contraception is not met in a timely and adequate way, a fact confiied by studies conducted in several countries. For example, survey data from 33 countries found that 17-22 per cent of pregnancies occurred within nine months of a previous birth (Hobcraft, 1991). Another set of data collected from 25 countries found that, on average, 11 per cent of women intended to have another birth within two years of a previous birth, but that 35 per cent had actually given birth sooner. Those figures confirm that many amenorrhoeic women give birth much earlier than they would like (Westoff and Bankole, 1995). One lesson that can be learnt from these findings is that the unmet need for contraception of amenorrhoeic women should be met in a timely way in order to avoid unwanted births.

Prior use of family planning

As observed elsewhere, the data from selected South Asian countries also confirm that the majority of women with an unmet need have never used contraception. The past use of contraception ranges from a high of 49 per cent in Bangladesh to a low of 18 and 22 per cent in Pakistan and Nepal, respectively.

Intention to use contraception

The data on intention to use contraception in the future are very useful as they enable a fairly robust estimate to be made of potential demand for contraception. There is a close association between intention to use and actual use of contraception. A recent longitudinal study in Morocco revealed that more than 75 per cent of a cohort of women who indicated their intention to use family planning in 1992 actually did so in 1995 (Johns Hopkins University School of Public Health, 1996). The data in table 4 show a high potential demand for contraception among women with unmet need in most countries of the region, except Pakistan. At least three out of four women in Bangladesh and Nepal intended to use contraception in the future. In Pakistan, only one in four intended to use contraception in the future. This could be attributed to the prevailing low level of unmet need and inadequate supply of family planning services in 1990-1991. However, the situation could have changed by

the late 1990s. Unfortunately, no recent comparative data are available for measuring that change over time.

Reasons for not using contraception

This section identifies and discusses the factors inhibiting the use of contraception by married women who are apparently willing to postpone or limit births, by utilizing data collected during the DHS surveys. The reasons for not using contraception are identified for two groups of women with unmet need: (a) women with total unmet need; and (b) women with unmet need who do not intend to use contraception in the future. Proper identification of the reasons why so much demand remains unsatisfied will lead to the formulation of appropriate strategies for meeting the unmet need of potential users.

Reasons for not using contraception: women with total unmet need

The most frequently mentioned reasons cited by women with unmet need for not using contraception in Nepal, as reported in the 1996 DHS, were: (a) a desire for more children (27 per cent); (b) side effects and/or health concerns (22 per cent); (c) infrequent sex and/or not having sex (11 per cent); (d) husband's disapproval (6 per cent); (e) a lack of knowledge and/or sources of, and a lack of access to, contraceptive methods, (12 per cent); (f) religion (3 per cent); and (g) postpartum breastfeeding (7 per cent) (table 5).

In Bangladesh and Pakistan, religion and the partner's opposition were cited as the principal reasons for not using contraception by women with unmet need in the 1990/1991 and 1993 DHSs (Macro International, 1998). A 1997 survey in the province of Punjab, Pakistan revealed that among the eight possible barriers to contraceptive use, the most prevalent was disapproval by the husband, followed by fear of side effects (Population Council, 1997). Opposition by the husband was also identified as a major reason for non-use of contraception in India (Viswanathan, Godfrey and Yinger, 1998).

In Sri Lanka, the principal reasons cited by women with unmet need for non-use of contraception included: (a) health concerns (19.3 per cent); (b) husband's disapproval (14.6 per cent); (c) infrequent sex (13.3 per cent); (d) lack of knowledge (10.4 per cent); (e) religion (3.6 per cent); and (f) lack of access (3.2 per cent) (Bongaarts and Bruce, 1994). In 2000, health concerns were still cited (11 per cent) as the single most important non-biological reason for not using contraception, followed by husband's disapproval (3.9 per cent) and religious opposition (3 per cent), among married non-pregnant women who

Table 5. Percentage distribution of women with unmet need for contraception by main reason for non-use, Nepal 1996

Reasons for non-use	Unmet need		
	Spacing	Limiting	Total
Not having sex	2.2	2.5	2.4
Infrequent sex	8.5	7.9	8.2
Menopausal/hysterectomy	0.0	0.0	0.0
Sub-fecund, infecund	0.0	0.1	0.0
Postpartum, breastfeeding	7.7	6.3	6.9
Want more children	47.1	9.4	26.6
Pregnant	3.4	3.7	3.6
Respondent opposed	1.0	2.1	1.6
Husband opposed	2.9	9.1	6.3
Others opposed	0.8	0.8	0.8
Religious prohibition	3.0	3.4	3.2
Knows no method	3.8	4.8	4.4
Knows no source	2.7	3.3	3.1
Health concerns	1.4	9.8	6.0
Fear of side effects	6.8	23.5	15.9
Lack of access	2.7	6.0	4.5
Costs too much	0.1	0.1	0.1
Inconvenient to use	0.4	0.1	0.2
Interferes with body	0.0	0.4	0.2
Others	4.1	6.4	5.3
Don't know	1.3	0.2	0.7
Total	100	100	100
Number of women	1,138	1,366	2,504

Source: Aryal, R.H. and T.B. Dangi (1997). "Attitudes towards family planning and reasons for non-use among women with unmet need for family planning in Nepal", in *Insights on Family Health Issues in Nepal* (Kathmandu, Ministry of Health and Macro International Inc.).

were not currently using a method of contraception and who reported being unhappy if they became pregnant too soon (Department of Census and Statistics, 2001).

Reasons for not intending to use contraception in the future

The group of women who are apparently willing to postpone or limit their births, but are not intending to use contraception in the future, deserve special focus from a programme point of view. The reason for such focus is that they are not likely to respond spontaneously to family planning programme efforts easily, unless their concerns for not intending to use contraception in the

Table 6. Percentage of women with unmet need intending to use contraception in the future, and reasons of those not intending to use contraception by components of unmet need, Nepal 1996

| | Components of unmet need | | |
	Spacing	Limiting	Total
Intend to use	81.0	70.9	75.5
Do not intend to use	19.0	29.1	24.5
Total	100	100	100
Number of women	1,138	1,366	2,504
Do not intend to use owing to:			
Infrequent sex	4.0	8.6	7.0
Menopausal	0.0	0.1	0.1
Want (more) children	35.5	0.2	12.6
Respondent opposed	3.2	5.7	4.8
Husband opposed	5.0	8.8	7.5
Others opposed	1.4	0.0	0.5
Religious prohibition	16.8	10.6	12.8
Knows no method	6.2	3.1	4.2
Knows no sources	4.6	2.2	3.1
Health concerns	1.9	14.3	9.9
Fear of side effects	19.1	32.6	27.8
Lack of access/too far	0.7	1.9	1.5
Interferes with body	0.0	0.4	0.2
Others	0.0	10.8	7.0
Don't know	1.6	0.8	1.0
Total	100	100	100
Number of women	216	397	613

Source: Aryal, R.H. and T.B. Dangi (1997). "Attitudes towards family planning and reasons for non-use among women with unmet need for family planning in Nepal", in *Insights on Family Health Issues in Nepal* (Kathmandu, Ministry of Health and Macro International Inc.).

future are adequately understood and addressed. This calls for a thorough investigation into, and understanding of, the reasons inhibiting currently married women with unmet need from using contraception in the future. Utilizing data from the 1996 Nepal DHS, Aryal and Dangi (1997) looked at the reasons why women with unmet need did not intend to use contraception in the future, and noted the following frequently cited reasons: (a) fear of side effects and/or health concerns (38 per cent); (b) religious prohibition (13 per cent); (c) a desire for more children (13 per cent); (d) husband's disapproval (8 per cent); and (e) a lack of knowledge and/or sources of contraceptive methods, and lack of access to contraceptive methods (9 per cent) (table 6).

Table 6 shows that the principal non-biological reasons given by women with unmet need who do not intend to use any contraceptive method in the future tend to be: (a) health concerns about contraceptives and side effects; (b) desire for more children; (c) husband's disapproval; (d) a lack of knowledge and/or access; and (e) religious opposition.

Programme implications

The research findings clearly point to the need for (a) improving access to, and the quality of, reproductive health and family planning (RH/FP) services; (b) ensuring that the programme is more focused and targeted; (c) enhancing male participation in reproductive health; and (d) undertaking vigorous information, education and communication programmes as major strategies for meeting the existing unmet need for contraception.

Improving the quality and accessibility of reproductive health services would dispel health concerns and reduce the side effects of contraceptives as well as improve the limited choice of methods, particularly spacing methods, which are the two major barriers to the use of contraception. This would involve developing programme strategies that would (a) institutionalize regular follow-up services for the users of contraceptives in order to monitor and manage health-related side effects; (b) provide counselling and accurate information on how to use the method selected, and promote discussions of possible side effects and how to manage them; (c) ensure the local availability of a wider choice of method mix to meet the need of both spacers and limiters of births; and (d) inform women about various choices of contraceptive methods, the possibility of switching methods whenever their needs change, and/or alternative sources of supply. This would require sound training of field workers and the development of effective educational materials.

The targeted programme approach would help meet demand for contraception by women with the highest unmet need (that is, women with little or no education, rural women, adolescent girls and young women, and amenorrhoeic women). This would require programme-devising services based on a thorough understanding of reproductive health needs and contraceptive choices. As this understanding is as yet very limited, in-depth research studies on the subject, in order to fill gaps and formulate knowledge-based programme strategies, would need to be carried out.

Male involvement in reproductive health will reduce opposition to family planning decisions made by partners. Opposition from husbands is a major
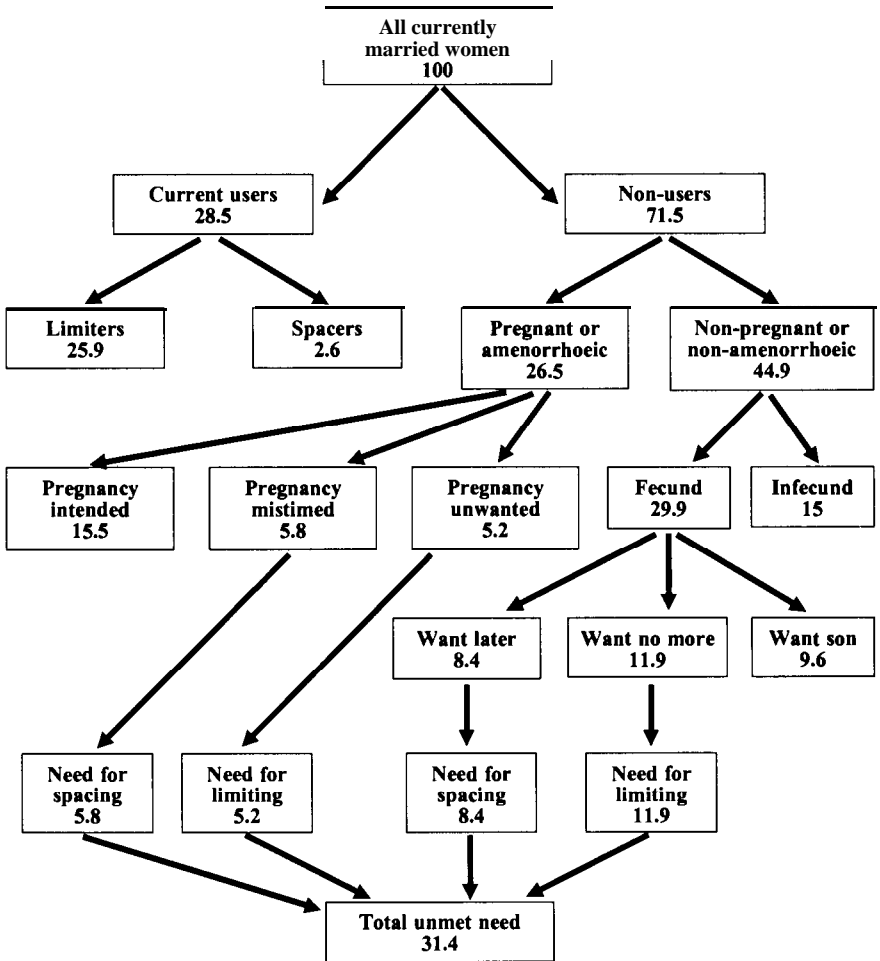
barrier to the use of contraception by wives. Many studies have shown that when men are provided with information about reproductive health services, they are likely to be supportive of their partners' family planning decisions. Hence, family planning programmes should devise services and communication strategies for reaching women and men by (a) conducting male-oriented surveys and research on male perspectives; (b) training programme planners and service providers to give them a better understanding of men's reproductive health needs; (c) emphasizing male-female partnership through better spousal communication; and (d) supporting women's autonomy and reproductive rights. A study conducted in Pakistan in 1999 found that unmet need was somewhat lower among women who had more autonomy in house-hold decision-making, were free to travel to health facilities on their own, and were able to freely discuss family planning with their husbands (Population Council, 1997).

A desire to have more children, opposition from a husband to the use of contraception by his wife, religious prohibition and a lack of knowledge about methods are the major barriers to the use of contraception. To circumvent these barriers, family planning programmes should develop appropriate information, education and communication strategies that would (a) promote the value of the small family; (b) dispel the misinterpretation of religion with regard to birth control; (c) foster interpersonal communication on reproductive health or family planning issues; (d) promote reproductive rights, including the right to choose the number and spacing of children, gender equity and equality; and (e) increase awareness of contraceptive methods.

Annex

Flow diagram for estimation of unmet need for family planning: an example for currently married women in Nepal, 1996

(Percentages)

```
                        All currently
                        married women
                            100
                          /        \
            Current users            Non-users
               28.5                    71.5
              /     \                  /      \
      Limiters    Spacers    Pregnant or      Non-pregnant or
       25.9        2.6       amenorrhoeic     non-amenorrhoeic
                              26.5               44.9
         /         /      \          \         /        \
  Pregnancy   Pregnancy   Pregnancy   Fecund        Infecund
  intended    mistimed    unwanted    29.9            15
   15.5         5.8         5.2       /   |   \
                                 Want later  Want no more  Want son
                                   8.4         11.9         9.6
  Need for   Need for   Need for   Need for
  spacing    limiting   spacing    limiting
   5.8         5.2        8.4        11.9
              \    \      |        /
                Total unmet need
                     31.4
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Source: Aryal, R.H. and T.B. Dangi (1997). "Attitudes towards family planning and reasons for non-use among women with unmet need for family planning in Nepal", in Ministry of Health and Macro International Inc. *Insights on Family Health Issues in Nepal* (Kathmandu).

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Fertility Decline in Sri Lanka: Are All Ethnic Groups Party to the Process?

Ethnic differentials in family planning acceptance and practice are diverse in Sri Lanka, with the Sinhalese demonstrating the highest rate

By P. Puvanarajan and W. Indralal De Silva*

Sri Lanka has played the role of a virtual laboratory in understanding the process of demographic transition in low-income countries. The advanced stages of demographic transition in any context entail irreversible population growth patterns that affect the population growth components of fertility, mortality and migration. The significant demographic transitional effects are the fertility changes that these communities undergo, tending towards achieving replacement or below replacement fertility levels (De Silva, 1994). It would therefore be of interest to investigate the course of such changes occurring in a heterogeneous society.

***** P. Puvanarajan, Senior Lecturer, Department of Geography and W. Indralal De Silva, Professor and Head, Department of Demography, University of Colombo, Colombo, Sri Lanka.

Sri Lankan society is diverse, as it is composed of a multiracial, multireligious and multilinguistic population. The Sinhalese, as the majority group, predominate. The Tamil and Moor communities form the other major ethnic groups. Malays and Burghers form minorities of insignificant proportions. The majority of the Sinhalese are Buddhists, while the majority of the Tamils are Hindus. However, Christianity prevails among the Sinhalese, Tamil and Burgher ethnic groups, while the Moors are followers of Islam.

The ethno-religious composition of the population and the relative numerical strengths and balances of each group during the process of demographic transition are important factors. These factors should be considered when investigating fertility levels and patterns of selected ethnic groups as they will have differential effects on fertility performance. Tables 1 and 2 indicate the relative numerical strength of the different ethnic and religious groups in terms of their fertility, mortality and migration behavioural patterns. The information presented in these tables, except for 1994, is based entirely on census data collected since 1881. It should be noted that data obtained from the 1994 Demographic Survey do not include the Northern and Eastern provinces. Therefore, in terms of ethnic balance, the numbers presented, as well as the rates, ratios and percentage distributions calculated for 1994 should be interpreted with caution, especially when those measures are compared with previous years.

Table 3 indicates the percentage distribution of the Sri Lankan population by ethnicity and religion in 1981. The data confirm that, although Sri Lankans form a heterogeneous society, there is a unique ethno-religious relationship in each ethnic group as a large majority in each ethnic group adheres largely to a particular religion. For example, at least 93 per cent of Sinhalese are Buddhists, about 85 per cent of Tamils are Hindus and approximately 93 per cent of Moors are Muslims.

While differentials exist among the ethnic groups in respect of the levels and patterns of fertility decline, there may also be substantial differences in the socio-economic and cultural determinants that affect such a decline (Abeykoon, 2001). Based on the relative declining trends and patterns of fertility, mortality and migration of the various ethnic groups, concern may arise among some groups experiencing a decline in their numbers. The current ethnic conflict, which is largely ethno-based, might add to such concern, especially among the Tamil, Moor and Sinhalese communities. Therefore, an ethno-based analysis of fertility changes among the Sri Lankan ethnic groups and associated research could bring clarity to the issue. It could also be deemed a contribution to the current knowledge of the transitional theory.

Table 1. Numerical and percentage distribution of population by ethnicity, 1881-1994

Ethniciity	1881		1891		1901		1911		1921		1946		1953		1963		1971		1981		1994	
All groups	2,944,280	100	3,007,789	100	3,565,754	100	4,106,350	100	4,497,854	100	6,657,339	100	8,097,895	100	10,582,064	100	12,689,897	100	14,846,750	100	15,022,000	100
Sinhalese	1,846,614	66.9	2,041,158	67.9	2,330,807	65.4	2,715,420	66.1	3,015,970	67.1	4,620,507	69.4	5,616,705	69.4	7,512,915	71.0	9,131,241	72.0	10,979,561	74.0	12,598,000	83.9
Sri Lankan Tamils [a]	687,248	24.9	723,853	24.1	951,740	26.7	528,024	12.9	517,189	11.5	733,731	11.0	884,703	10.9	1,164,689	11.0	1,423,981	11.2	1,886,872	12.7	809,000	5.4
Indian Tamils							530,983	12.9	602,510	13.4	780,589	11.7	974,098	12.0	1,122,961	10.6	1,174,606	9.3	818,654	5.5	544,000	3.6
Sri Lankan Moors [a]	185,542	6.7	197,166	6.6	228,034	6.4	233,901	5.7	251,925	5.6	373,559	5.6	463,963	5.7	625,301	5.9	828,304	6.5	1,046,926	7.1	954,000	6.4
Indian Moors							32,724	0.8	32,923	0.7	35,624	0.5	47,462	0.6	56,913	0.5	27,420	0.2	–	–	–	–
Burghers	17,886	0.6	21,231	0.7	23,482	0.7	26,663	0.6	29,403	0.7	41,926	0.6	45,950	0.6	45,944	0.4	45,376	0.4	39,374	0.3	41,000	0.3
Malays	8,895	0.3	10,133	0.3	11,902	0.3	12,990	0.3	13,395	0.3	22,508	0.3	25,464	0.3	33,430	0.3	43,459	0.3	46,963	0.3	46,000	0.3
Others	14,553	0.5	14,248	0.5	19,789	0.6	25,645	0.6	34,539	0.8	48,895	0.7	39,550	0.5	19,911	0.2	15,510	0.1	28,398	0.2	30,000	0.2

Source: Various reports of the Registrar General's Department and the Department of Census and Statistics, Sri Lanka.

[a]   In the censuses of 1881, 1891 and 1901, the Indian Tamils were included in the Sri Lankan Tamils category, while the Indian Moors were included in the Sri Lankan Moors category.

Table 2. Numerical and percentage distribution of population by religion, 1881-1994

Religion	1881		1891		1901		1911		1921		1946		1953		1963		1971		1981		1994	
All religions	2,759,800	100	3,007,700	100	3,565,900	100	4,106,400	100	4,498,600	100	6,657,400	100	8,097,700	100	10,582,000	100	12,689,600	100	14,846,700	100	15,021,500	100
Buddhist	1,698,100	61.5	1,877,000	62.4	2,141,400	60.1	2,474,200	60.3	2,769,800	61.6	4,294,900	64.5	5,209,400	64.3	7,003,300	66.2	8,536,800	67.3	10,288,300	69.3	11,752,000	78.2
Hindu	593,600	21.5	615,900	20.5	826,800	23.2	938,300	22.8	982,100	21.8	1,320,400	19.8	1,610,500	19.9	1,958,400	18.5	2,238,600	17.6	2,297,800	15.5	1,127,800	7.5
Muslim	197,800	7.2	212,000	7.0	246,100	6.9	283,600	6.9	302,500	6.7	436,600	6.6	541,500	6.7	724,000	6.8	901,700	7.1	1,121,700	7.6	1,008,600	6.7
Christian	268,000	9.7	302,100	10.0	349,200	9.8	409,200	10.0	443,400	9.9	603,200	9.1	724,400	8.9	884,900	8.4	1,004,300	7.9	1,130,600	7.6	1,127,600	7.5
Others	2,300	0.1	700	0.0	2,400	0.1	1,100.0	0.0	800	0.0	2,300	0.0	11,900	0.1	11,400	0.1	8,200	0.1	8,300	0.1	5,500	0.0

Source: Various reports of the Department of Census and Statistics, Sri Lanka.

The present study attempts to examine a number of objectives. First, it investigates the relative size of the various ethnic groups in Sri Lanka and changes in them over past decades. Second, it compares fertility trends and levels within each ethnic group, as well as ethnic differentials in levels and patterns of fertility decline. Ethno-religious differences in the context of social, economic and cultural determinants of fertility decline among various communities are also highlighted. Third, the determinants of fertility trends and levels of various ethnic groups are investigated. Such an investigation throws light on the demographic transition process under way and provides a better understanding of the socio-cultural milieu determining the process of fertility decline in respect of the various ethnic identities. The determinants under review in this study are those of age at marriage and contraceptive use within the different ethnic groups.

Ethnic groups in Sri Lanka and their origins

The origins of the Sinhalese, according to the historical chronicles, *Mahawansa* and *Thupawansa,* can be traced back to the early Aryan Period of *Rig Vedic Janapadas* in northern India. At that time, Prince Vijaya, exiled from a *Janapada* in northern India, migrated to Sri Lanka and started the Sinhala *Janapada* in the north of the country.

The Tamils of Sri Lanka have their origins rooted in the Dravidians of southern India, who migrated to Sri Lanka from time to time. They introduced southern Indian cultural patterns into Sri Lankan society and are located largely in the northern and eastern parts of the country. A second wave of the Dravidian population and their cultural traits came into the country when, in the middle of the nineteenth century, the British imported Tamils to work on the newly founded plantations in the central parts of the country. The latter now form a segment of the naturalized population located in the central highlands of Sri Lanka.

The origins of the Moors in Sri Lanka can be traced back to the early Anuradhapura period, when Arabian traders migrated to Sri Lanka and became the forefathers of the Moor Islamic culture. Those ancient Arab traders, called *Yavanas* or *Yonas*, are referred to in the *Mahawansa*. The Moor settlements as well as the pre-Moor Arabian settlements, were initially located around the ports of Sri Lanka.

At a later stage, other groups of Moors migrated to Sri Lanka from the Malabar coast of India and settled largely in the south-western quadrant of the island. Census data pertaining to recent geographical locations of Sri Lankan Moors show that they comprise a substantial proportion of the population in the districts of Colombo, Mannar, Batticaloa, Trincomalee and Kurunegala. Moor

Table 3. Religious composition of ethnicity, 1981

Religion	Ethnicity						
	Sinhalese	Sri Lankan Tamils	Indian Tamils	Sri Lankan Moors	Burghers	Malays	Others
Buddhist	93.3	1.8	1.8	0.2	2.9	2.1	7.5
Hindu	0.1	80.7	90.0	6.7	0.4	3.4	15.3
Muslim	0.1	0.7	0.5	92.6	1.6	89.2	48.7
Roman Catholic	6.1	14.3	6.2	0.4	79.3	2.2	11.6
Christian	0.4	2.4	1.4	0.1	15.3	0.6	12.1
Other	0.1	0.1	0.1	0.1	0.5	2.5	4.8
Total %	100	100	100	100	100	100	100
Total numbers	10,979,561	1,886,872	818,656	1,046,926	39,374	46,963	28,398

Source: Department of Census and Statistics, Sri Lanka (1986).

culture, as much as the cultures of other ethnic communities in the country, has an ancient history and is woven into the cultural fabric of Sri Lanka.

The Malays, who arrived at a later stage in Sri Lankan history, have close connections with the Moors. Their origin can be traced back to Java; they are followers of Islam and are distributed throughout the island. The origins of the Burghers can be traced back to Western rule by the Portuguese and Dutch from the fifteenth to the eighteenth century. They are largely descendants of the civil and military employees of the former Western rulers.

Ethnic groups: their relative sizes

Tables 1 and 2 show the relative strength of the various ethnic groups in Sri Lanka. The two groups that comprise the Sinhalese population, that is, the low-country Sinhalese and the Kandyan Sinhalese, accounted for nearly 74 per cent of the total population in 1981. In 1881, the Sinhalese accounted for approximately 67 per cent of the total population. During the subsequent 100 years, the Sinhalese community increased by 7 percentage points. In the twentieth century, their proportionate share in the total population increased from 65 per cent in 1901 to 74 per cent in 1981 (table 1).

The proportionate share of the Tamil community (both Sri Lankan and Indian) in the total population showed only a slight decline of 0.8 of a percentage point during the final decade of the nineteenth century. Nevertheless, the percentage share of the community had increased to 27 per cent by the beginning of the twentieth century. Subsequently, the proportionate share of the Tamil population declined to 18 per cent, according to the 1981 census.

In the final decade of the nineteenth century, the Moor population comprised about 7 per cent of the total population. However, the proportionate share of this ethnic group declined to 6.4 per cent in the first quarter of the twentieth century. From 1946 to 1981, the proportion of the Moor community in the total population increased from 6.1 to 7.1 per cent. By 1971, the Moors formed the fourth largest ethnic group in the country (table 1).

Calculations based on the census data presented in table 1 also show that between 1946 and 1971 there was an overall population increase of 121.7 per cent in the Sri Lankan Moor community while during the same period the overall increase for the Sinhalese population was 97.6 per cent. The rate of population increase among the Sri Lankan Tamils during the same period was 94.1 per cent, although from 1911 to 1953 a steady growth in the Sri Lankan Tamil and Indian Tamil communities had been observed. Of the two ethnic groups, the Indian Tamils was the largest at that time. Nonetheless, between 1963 and 1971, Sri Lankan Tamils outnumbered Indian Tamils (table 1).

The 1911-1971 inter-censual increase in the Malay population was relatively moderate. For example, from 1911 to 1946, the increase was in the region of 73.2 per cent, while from 1946 to 1971 it amounted to 93.1 per cent, showing that the inter-censual increase had been on the rise. Between 1911 and 1946, the inter-censual rate of increase among the Burghers amounted to 57.2 per cent, while subsequent censuses up until 1971 revealed a decreasing rate. That trend was substantiated by a very sharp drop in the rate to 8.2 per cent in 1971. Malays comprised 0.3 per cent of the total population in the 1981 census (table 1). Despite being a minority, Malays have a stronger footing because they are aligned to the Moor community through the Islamic faith.

The declines seen in the population of the Sri Lankan Tamils and the Indian Tamils can be attributed to different sets of reasons. The former showed a rise in keeping with the growth rates prevalent in the country. Nonetheless, a significant kink observed in the trends in 1994 was owing to the fact that a national census was not held in 1991 and the figures were drawn from the Demographic Survey of 1994. That survey did not cover the Northern and Eastern provinces, the inhabitants of which are predominantly Sri Lankan Tamils. Apparently, the figures fail to portray the true picture. In accounting for the rather significant declines observed among the Indian Tamils, the determinants are political rather than demographic, since the reversal was largely due to the repatriation of Indian Tamils as agreed upon and concluded in October 1964 between the Governments of India and Sri Lanka under the Sirima-Shasthri pact. Under the agreement, 525,000 persons of Indian origin were to be repatriated to India over a 15-year period. Hence, the consequent out-migration would account for the decline in their numbers.

Ethnic groups and their fertility trends

The effective fertility of any society, observed through the number of births that would have occurred during a given period of time, is influenced by various factors, such as the relative number of child-bearing females and males, their nuptial behaviour, attitudes towards child-bearing outside marriage, conception control practices and attitudes, the related sociocultural and biological characteristics of the population, and, above all, the religious attitudes of and health facilities available to the communities.

The rate at which a population adds to itself by births during any given period of time is a measure of the fertility performance of that population. This measure may be in relation to the total population of the country, a particular religious or ethnic group, or a population representing a region of the urban and rural sectors. The fertility trends of Sri Lanka and its ethno-religious fertility behavioural differentials are discussed below, utilizing the various measures of fertility.

Crude birth rate

The simplest and most common measure of fertility is the crude birth rate (CBR), which is defined as the number of live births for a given year per 1,000 population. Usually, the mid-year population is taken as the denominator. CBRs for Sri Lanka and its various ethnic groups, computed on the basis of mid-year data collected since the early 1960s, show the demographic transition that is in force in Sri Lanka and reflect a decline in the fertility levels of all ethnic groups. Between 1955 and 1989, the CBR of Sri Lanka fell from 37.9 to 21.6 per 1,000 population, indicating a decline of almost 40 per cent (table 4). It would be of interest to examine whether each ethnic group in Sri Lanka was involved in this process of decline.

From 1958 to 1989, data for the Sinhalese, Sri Lankan Tamils, Sri Lankan Moors and Malays all indicated a similar percentage decline in CBR (table 4). The Burgher and Indian Tamil communities show a relatively low level of decline in CBR during the same period. Throughout the reference period, the Burghers recorded the lowest fertility of all the ethnic groups. The low percentage decline in fertility among the Indian Tamil community could be explained by the fact that they started with a relatively low CBR and, for that reason, only experienced a 23 per cent decline during the period under review.

In order to investigate the change in CBR among the different ethnic groups during the 1980s, the percentage change from 1981 to 1989 was computed. During that period, the Sri Lankan Tamils experienced the highest decline in CBR (25.9 per cent). The Sinhalese and the Sri Lankan Moors reported declines that placed them in second and third positions, respectively,

Table 4. Crude birth rate by ethnicity, 1955 to 1989

Year	All races	Sinhalese	Sri Lankan Tamils	Sri Lankan Moors	Burghers	Malays	Indian Tamils
1955	37.9	38.3	37.2	40.7	—	—	36.9
1956	36.4	36.8	35.4	41.0	—	—	34.7
1957	36.5	36.9	36.2	42.0	—	—	32.6
1958	35.8	35.8	37.7	41.8	26.2	36.5	31.8
1959	37.0	37.1	39.7	43.5	—	—	32.0
1960	36.6	36.5	38.8	42.7	—	—	33.1
1961	35.8	35.7	38.4	42.9	—	—	31.4
1962	35.5	35.0	39.7	43.9	—	—	31.4
1963	34.1	34.1	36.9	41.7	—	—	29.1
1964	32.2	32.7	37.2	42.9	—	—	27.7
1965	33.1	33.1	36.5	40.9	—	—	27.1
1966	32.3	32.1	35.4	42.3	20.7	29.6	26.3
1967	31.6	31.3	34.6	40.9	19.9	26.5	27.1
1968	30.0	32.2	33.7	40.9	19.1	26.4	26.4
1969	30.4	30.5	32.0	39.2	19.0	25.5	25.6
1970	29.4	29.2	31.5	38.8	17.5	23.2	25.8
1971	30.4	29.7	31.3	36.9	22.9	27.2	30.5
1972	30.0	29.5	31.0	35.6	21.9	24.5	29.5
1973	28.0	27.6	28.2	33.4	20.3	22.8	28.0
1974	27.5	26.8	28.8	32.2	17.4	24.8	29.7
1975	27.8	26.9	29.4	32.1	17.5	20.8	32.0
1976	27.8	26.7	29.9	32.8	17.6	22.3	31.3
1977	27.9	27.3	28.2	32.6	17.4	20.8	30.6
1978	28.5	27.8	30.2	32.9	15.5	20.7	30.5
1979	28.9	27.9	30.8	35.2	15.3	19.1	32.1
1980	28.4	27.3	31.7	33.2	14.6	20.0	31.2
1981	28.2	27.6	29.9	31.8	19.4	18.1	30.0
1982	26.9	26.3	27.2	31.3	25.3	20.2	29.7
1983	26.3	25.7	25.2	29.4	18.2	18.9	33.7
1984	25.1	24.3	24.3	27.8	19.5	17.2	34.7
1985	24.6	23.9	23.2	28.6	20.5	24.1	33.5
1986	22.4	21.6	21.3	27.3	17.6	21.4	30.2
1987	21.8	21.4	20.3	26.2	20.2	23.4	26.1
1988	20.7	20.1	20.9	24.9	16.2	21.8	24.0
1989	21.6	21.0	22.1	25.5	18.8	21.6	24.4
Percentage change 1958-1989	39.7	41.4	41.2	39.0	28.2	40.8	23.4
Percentage change 1981-1989	23.5	24.0	25.9	20.0	3.4	-19.2	18.9

Source: Various reports of the Registrar General's Department and the Department of Census and Statistics, Sri Lanka

Note: Crude death rates for different ethnic groups after 1989 cannot be computed due to the lack of availability of relevant data.

Figure 1. Crude birth rate, 1958, 1968, 1978 and 1988
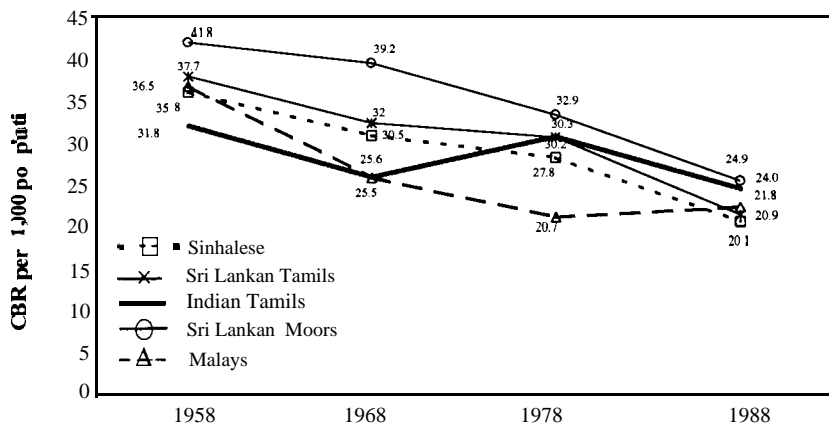
whereas CBR of the Burghers indicated the lowest decline (3 per cent). How-ever, the Malays, one of the smallest ethnic groups in Sri Lanka, reported an increase in CBR, possibly due to their limited number (46,000 in the 1981 census). Calculations based on such a small base population frequently tend to report significant fluctuations in CBR.

These trends clearly indicate the extreme diversity in the fertility levels that prevailed half a century ago in the various ethno-religious communities in Sri Lanka, but which was later narrowed down significantly (figure 1). Ethnic differentials of fertility reduction show that, commencing in the latter part of the 1950s, a significant decline occurred in fertility among the Sri Lanka Moors. Nevertheless, by 1989, CBR of the Moor community was 25.5 live births per 1,000 population. That was the highest rate for any ethnic group in Sri Lanka. The next highest CBR was reported for the Indian Tamils while the Sinhalese and Malay groups each recorded 21 live births per 1,000 population during the same year.

Distribution of births by ethnic group

The distribution of the total population for the country by ethnic group is not available for the period following 1989. Nevertheless, births reported by the different ethnic groups are routinely recorded and published by the birth registration system in Sri Lanka. Such data on live births, collected by the Registrar General's Department, has been used in this study in order to establish the pattern of fertility change among the different ethnic groups.

Table 5. Number of live births by ethnicity, 1981, 1986, 1991 and 1995

Ethnicity	1981	1986	1991	1995	Percentage change (1981-1995)
Sinhalese	304,336	258,796	252,609	243,835	-19.88
Sri Lankan Tamils	52,313	43,556	46,356	44,200	-15.51
Sri Lankan Moors	33,625	32,161	36,532	36,884	9.69
Indian Tamils	30,959	24,987	18,611	16,057	-48.13
Burghers	953	723	803	747	-21.62
Malays	907	983	1,169	1,048	15.55
Indian Moors	−	236	123	73	−
Others	700	293	390	380	-45.71
Total	423,793	361,735	356,593	343,224	-19.01

Source: Various reports of the Registrar General's Departmnet and the Department of Census and Statistics, Sri Lanka.

Table 5 shows that approximately 424,000 live births were reported among all ethnic groups in Sri Lanka in 1981. However, by 1995, the figure had declined to 343,000. This trend indicates that Sri Lankan fertility, in terms of total live births, declined by 19 per cent between 1981 and 1995. However, it is necessary to investigate whether this declining trend is common to all the ethnic groups in the country.

The number of live births reported by different ethnic groups, that is, Sinhalese, Sri Lankan Tamils, Indian Tamils and Burghers, from 1981 to 1995, shows a declining trend (table 5). A deviation in this trend is shown by the Sri Lankan Moors and Malays, among whom an increase in live births was recorded during that period. The highest decline in live births during the same period, reported for the Indian Tamils, could be attributed to the process of repatriation and the consequent decline in their numbers from the 1970s (table 1).

Birth order

Apart from reckoning the age of the mother, another dimension of the analysis of fertility is to look at the "birth order" of the child, with the aim of understanding the behavioural patterns of fertility. For the purposes of analysis, the definition of the term "birth order" is the number of children born alive to the mother, including the present child.

Fertility trends indicated by birth order analysis suggest that a relatively lower number of women in the present generation have moved to higher parities compared with earlier generations. For the country as a whole, the percentage of first order births (when compared with all other orders of birth) increased from approximately 40 per cent in 1992 to 46 per cent in 1996, while the percentage of higher order births, such as seventh and over, showed a steady decline during the same period (table 6).

Table 6. Percentage distribution of births by birth order and ethnic group, 1992-1996

Year and ethnicity	Birth order						
	First	Second	Third	Fourth	Fifth	Sixth	Seventh and over
1992							
Sri Lanka	39.72	28.57	16.88	8.43	3.46	1.65	1.30
Sinhalese	42.06	28.91	15.95	7.35	3.21	1.43	1.09
Sri Lankan Tamils	32.96	28.41	19.03	12.44	3.78	1.91	1.47
Sri Lankan Moors	34.72	25.44	18.66	10.45	4.90	3.05	2.79
Burghers	47.08	27.25	14.23	8.52	1.95	0.36	0.61
Malays	43.14	32.55	14.76	5.38	2.52	0.87	0.78
Indian Tamils	33.07	30.22	21.57	9.47	3.32	1.38	0.97
1993							
Sri Lanka	39.25	28.81	17.13	8.32	3.66	1.54	1.29
Sinhalese	40.88	29.28	17.02	7.41	3.12	1.31	0.98
Sri Lankan Tamils	35.10	26.52	16.66	12.29	5.60	1.99	1.84
Sri Lankan Moors	34.31	26.52	17.75	10.25	5.44	2.81	2.93
Burghers	44.71	33.99	12.55	5.92	1.27	1.13	0.42
Malays	42.83	33.76	14.34	5.07	1.85	0.78	1.37
Indian Tamils	35.61	32.78	19.64	7.04	2.96	1.16	0.79
1994							
Sri Lanka	40.90	27.93	16.81	7.85	3.64	1.63	1.24
Sinhalese	42.56	28.74	16.50	6.96	3.03	1.31	0.89
Sri Lankan Tamils	36.78	24.34	16.70	11.46	5.94	2.60	2.18
Sri Lankan Moors	35.83	25.58	18.77	9.82	5.30	2.75	2.55
Burghers	43.24	32.30	15.44	5.15	2.19	0.90	0.77
Malays	42.04	32.61	14.73	6.72	1.73	1.08	1.08
Indian Tamils	37.97	30.81	19.29	6.91	2.91	1.27	0.84
1995							
Sri Lanka	42.75	27.94	16.28	7.18	3.17	1.45	1.24
Sinhalese	45.48	28.78	15.59	5.99	2.40	1.03	0.73
Sri Lankan Tamils	34.38	25.02	17.45	11.53	5.54	3.03	3.05
Sri Lankan Moors	35.63	25.82	19.09	9.66	4.89	2.52	2.39
Burghers	47.26	28.38	13.39	6.83	2.41	0.54	1.20
Malays	46.33	28.41	14.87	5.82	2.57	1.05	0.95
Indian Tamils	40.04	27.99	17.32	7.69	4.40	1.19	1.36
1996							
Sri Lanka	45.85	28.79	14.73	6.25	2.46	1.06	0.86
Sinhalese	48.19	29.38	14.10	5.08	1.84	0.79	0.62
Sri Lankan Tamils	40.33	27.81	14.91	10.28	3.90	1.56	1.21
Sri Lankan Moors	37.39	26.13	18.32	9.32	4.60	1.40	2.05
Burghers	44.77	30.21	13.32	7.02	2.86	1.04	0.78
Malays	49.12	30.51	12.00	5.49	2.05	0.47	0.37
Indian Tamils	46.58	28.91	15.49	4.90	2.42	1.02	0.69

Source: Various reports of the Registrar General's Department and the Department of Census and Statistics, Sri Lanka.

The analysis was pursued in order to identify whether individual ethnic groups in Sri Lanka experienced the same pattern of fertility change in respect of birth order achievements. The percentage distribution of births by order of births for some ethnic groups clearly indicates a substantial variation. For all the years investigated, the frequency of births for some ethnic groups was different from what had been previously observed (table 6). The percentage of first order births in 1992 was highest among the Burghers, followed by the Malays and Sinhalese, while the lowest percentage (33 per cent) was identified among both the Sri Lankan and Indian Tamils (figure 2). In contrast, the percentage of higher order births was relatively high among the Sri Lankan Moors followed by the Sri Lankan Tamils. For example, about 21 per cent of the total Moor births in 1992 were reported as being fourth or higher order births.

The analysis clearly established that all ethnic groups had contributed to the process of fertility decline in Sri Lanka. The proportion of higher order births for all ethnic groups declined between 1992 and 1996, while the percentage of fourth or higher order births among the Indian Tamils declined from 15 to 9 per cent. Even the Moors experienced a decline, from 21 to 19 per cent, during that period, while the proportionate decline among the Sinhalese was from 13 to 9 per cent.

By 1996, the relative contribution of first order births had increased for all ethnic groups. Sinhalese, Burghers, Malays and Indian Tamils all indicated a higher percentage of first order births than any other birth orders. Only the Sri Lankan Tamils and the Sri Lankan Moors had a relatively low level of first order births. The achieved fertility behaviour of the different ethnic groups, as indicated by the birth order analysis, suggests that at present the highest fertility levels in Sri Lanka are experienced by the Sri Lankan Moor and Tamil ethnic groups.

The level and change in ethnic fertility was further examined by computing the mean birth order for each ethnic group, which is reported in parentheses in figure 2. In 1992, the highest mean birth order, that is, 2.46, was observed for the Sri Lankan Moors, followed by 2.37 for the Sri Lankan Tamils. The estimate for the Sinhalese was 2.09, while the Burghers recorded the lowest mean birth order.

The mean birth order for Sri Lankan Moors amounted to 2.32 in 1996, suggesting that they still had the highest fertility. The figure for the Sinhalese declined from 2.09 in 1992 to 1.88 in 1996. Only in the case of the Burghers was a marginal increase recorded between 1992 and 1996; nevertheless, their level of fertility remained low (figure 2).

Figure 2. Percentage distribution of births by order and ethnicity

1992

1996
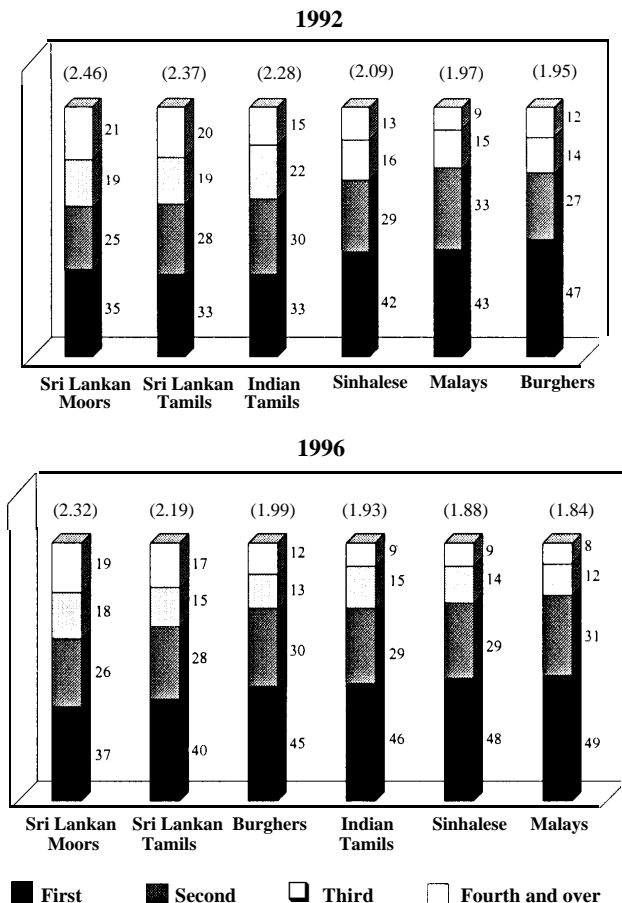
Note: Figures in parantheses indicate the mean birth order per woman.

The relative contribution of the different ethnic groups to fertility decline, as reflected in the changes that occurred in the mean birth orders (figure 3), illustrates that the Indian Tamils experienced the highest decline in the change of mean birth order among the different ethnic groups.

In that regard, Puvanarajan (1994) observed similar declining trends in the fertility of Indian Tamils, which he attributed to negative factors, poor nutritional levels and the resultant infecund state of the Indian Tamil women of

Figure 3. Percentage decline in mean birth order by ethnicity, 1992-1996
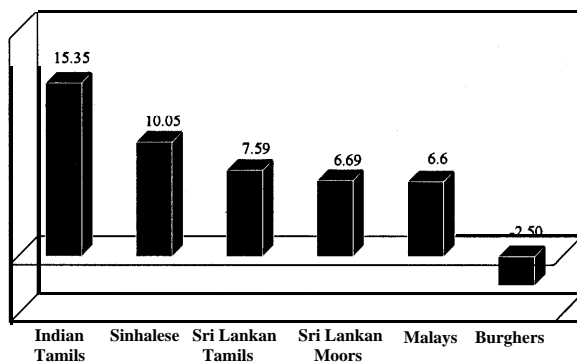
childbearing age. However, the decline now observed is an outcome of the beneficial effects of the amelioration programmes mooted thereafter, which paved the way for a healthy transition to lower fertility.

Figure 3 shows that the Indian Tamils experienced the highest decline, at over 15 per cent in mean birth order. The Sinhalese had the second highest decline, while the Sri Lankan Tamils were in third position. Although the highest figures for both 1992 and 1996 were recorded for the Sri Lankan Moors, it is evident from figure 3 that there was a decline in fertility of about 7 per cent among Sri Lankan Moors during the same period.

Child-woman ratio

A more useful and simpler summary measure of fertility, which is particularly useful in projecting subnational populations, is the child-woman ratio (the ratio of young children to women of reproductive age group at a given period of time). A commonly used age category of women and children that is applied to compute this ratio is the number of children aged under five years and women who are aged 15 to 49 years. The ratio does not directly refer to any actual number of births in the incidence of childbearing, but rather to the child population between the ages of 0-4 years; assuming that the children were enumerated correctly by age, they ought to be the survivors of births during the five-year period preceding the census.

This ratio can be computed using census or large sample data. The data required to compute the child-woman ratio for the entire country, as well as the different ethnic groups are presented in tables 7 and 8. In table 7, the

Table 7. Distribution of population aged 0-4 years by ethnicity, 1963-1994

Year	Total	Sinhalese	Sri Lankan Tamils	Sri Lankan Moors	Burghers	Malays	Indian Tamils	Other[a]
1963	1,599,140	1,134,980	178,430	118,870	5,440	3,610	151,630	6,180
1971	1,664,677	1,190,059	183,447	129,403	4,374	5,479	146,310	5,605
1981	1,854,738	1,325,314	244,038	154,301	3,418	5,466	118,965	3,236
1981[b]	1,562,389	1,284,689	62,304	97,486	2,842	5,268	106,915	2,885
1994[b]	1,322,661	1,088,482	69,640	107,680	2,673	5,044	47,242	1,900

a/ Indian Moors included.
b/ Excludes northern and eastern provinces.

population aged 0-4 years in different ethnic groups from 1963 to 1994 is presented. Table 8 provides data on the female population aged 15-49 years for the same period. In this regard, it should be noted that the last population census was taken in 1981. Figures reported for 1994 were obtained from the 1994 Demographic Survey, which did not cover the entire country since it excluded the northern and eastern provinces.

Child-woman ratios computed for the period from 1963 to 1994 suggest that, commencing from the early 1960s, there had been a gradual decline in Sri Lankan fertility. In 1963, for every 1,000 women aged between 15 and 49 years there were 680 children aged 0-4 years (table 9). The ratio declined to 489 per 1,000 women in 1981. If the 1963 figure is taken as 100 (680 = 100), the estimated figure for 1981, (when the last census was held in Sri Lanka) is 72. The above analysis also confirms that during the 1963-1981 period Sri Lanka fertility, measured in terms of the child-woman ratio, declined by 28 per cent.

**Table 8. Distribution of female population aged
15-49 years by ethnicity, 1963-1994**

Year	Total	Sinhalese	Sri Lankan Tamils	Sri Lankan Moors	Burghers	Malays	Indian Tamils	Other[a]
1963	2,352,770	1,670,730	252,520	137,070	10,970	5,260	268,860	7,360
1971	3,015,198	2,176,313	330,303	182,235	11,346	10,602	295,945	8,454
1981	3,800,062	2,826,155	468,617	253,759	10,210	11,857	222,480	6,984
1981[b]	3,301,118	2,768,953	131,329	168,040	9,036	11,493	205,739	6,528
1994[b]	4,201,707	3,526,488	228,566	265,430	10,921	13,764	148,820	7,718

a/ Indian Moors included.
b/ Excludes northern and eastern provinces.

Table 9. Child-woman ratio by ethnicity, 1963-1994

Year	Total	Sinhalese	Sri Lankan Tamils	Sri Lankan Moors	Burghers	Malays	Indian Tamils	Other[a]
1963	680 (100)	679 (100)	707 (100)	867 (100)	496 (100)	686 (100)	564 (100)	840 (100)
1971	552 (81)	547 (81)	555 (79)	710 (82)	386 (78)	517 (75)	494 (88)	663 (79)
1981	489 (72)	469 (69)	521 (74)	608 (70)	335 (68)	461 (67)	535 (95)	463 (55)
1981[b]	473 (100)	464 (100)	474 (100)	580 (100)	315 (100)	458 (100)	520 (100)	442 (100)
1994[b]	315 (67)	309 (67)	305 (64)	406 (70)	245 (78)	366 (80)	317 (67)	246 (56)

Notes: The child-woman ratio is the ratio of young children (0-4 years) to women in the reproductive age group (15-49 years).

[a] Indian Moors included.

[b] Excludes northern and eastern provinces.

The trend in fertility behaviour, as reflected in the child-woman ratios after 1981, was examined by using the data collected from the 1994 Demographic Survey. Since the survey excluded the Northern and Eastern provinces, for the purpose of comparison a special computation was made of the child-woman ratio excluding the two provinces. As noted in column 1 of table 9, the child-woman ratio declined from 473 to 315 per 1,000 women during the 1981- 1994 period. In other words it declined from 100 to 67. The estimated child-woman ratio for Sri Lanka when the northern and eastern provinces were excluded was 473. This was found to be lower than the calculated ratio for the entire country in 1981. This indicates that the northern and eastern provinces together demonstrated, on average, a slightly higher level of fertility than the rest of Sri Lanka (De Silva, Gajanayake and Dissanayake, 1986).

It would be interesting to examine whether the fertility decline in Sri Lanka during the past four decades was similar among all ethnic groups. As noted in figure 4 and table 9, the child-woman ratio was highest among the Moors in 1963, while the Burghers recorded the lowest ratio. Even in 1971, the same pattern of fertility persisted among those communities.

In 1981, only 335 children were born per 1,000 Burgher women of reproductive age, while 608 children were born per 1,000 women of the Sri Lankan Moor community. The figure for the Sinhalese, who comprise the main ethnic group, was 469 children per 1,000 women.

The supposition that the population in the northern and eastern provinces represents a higher level of fertility than the population living in other parts of the country is worth examining. Taking into consideration the ethnic variable in 1981, estimates of fertility that exclude the northern and eastern provinces

Figure 4.   Child-woman ratio by ethnicity

1963

867	707	686	679	564	496
Sri lankan Moors	Sri lankan Tamils	Malays	Sinhalese	Indian Tamils	Burghers

1971

710	555	547	517	494	386
Sri lankan Moors	Sri lankan Tamils	Sinhalese	Malays	Indian Tamils	Burghers

1981

608	535	521	469	461	335
Sri lankan Moors	Indian Tamils	Sri lankan Tamils	Sinhalese	Malays	Burghers
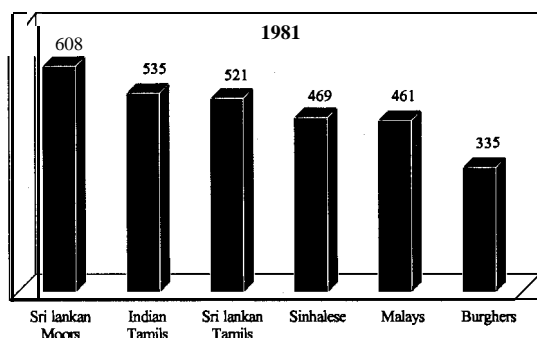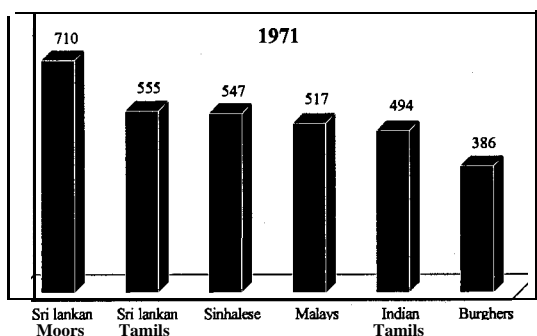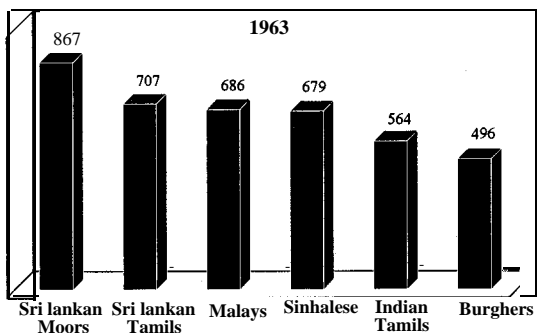
Note: The child-woman ratio is the ratio of young children (0-4 years) per woman in the reproductive age group (15-49 years).

**Figure 5. Child-woman ratio for the entire country and excluding
the Northern and Eastern provinces by ethnicity, 1981**
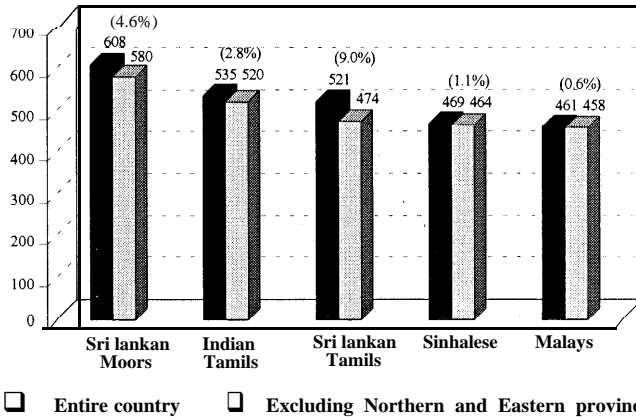
Note: Figures in parantheses indicate the difference in terms of percentage.

show that all the ethnic groups surveyed had experienced somewhat lower
levels of fertility compared with the figures for the whole country (figure 5).
Among all the ethnic groups, Sri Lankan Tamils and Sri Lankan Moors
reported the highest differences. In other words, Sri Lankan Tamils and Sri
Lankan Moors who largely lived in the northern and eastern provinces in 1981
reported higher levels of fertility than their counterparts in the rest of the
country. Interestingly, the members of the Sinhalese community, irrespective of
where they lived, did not show any significant difference.

The level of fertility decline after 1981 among the different ethnic groups
in Sri Lanka is examined, using data presented in the last two rows of table 9.
Each ethnic group indicated a substantial decline in fertility during the 1981-
1994 period. Even though the Sri Lankan Moors and Malays had the highest
levels of fertility, both groups reported a steady decline. The Sri Lankan
Tamils, Sinhalese and Indian Tamils demonstrated greater declines in fertility
than did the other groups. For example, the decline in the child-woman ratio of
those groups, taking 100 as the base, was at a low level of 64-67 in 1994.

However, the decline of the Sri Lankan Moors is not very different, as
fertility dropped from the base 100 in 1981 to 70 in 1994. The Malay
population reported the smallest decline over that period (table 9).

A comparison of all five ethnic groups in terms of their fertility change is
presented in figure 6. The Sri Lankan Moors started with a very high level of
fertility in 1963, but had shown a significant drop by 1994. Nevertheless,

Figure 6.   Change in child-woman ratio by ethnicity, 1963-1994

Figure 6. Change in child-woman ratio by ethnicity, 1963-1994. Sri lankan Moors: 867, 710, 608, 580, 406. Sri lankan Tamils: 707, 555, 521, 474, 305. Sinhalese: 679, 547, 469, 464, 309. Malays: 686, 517, 461, 458, 366. Indian Tamils: 564, 494, 535, 520, 317.

■ **1963 Census**   ❑ **1971 Census**   ❑ **1981 Census**   ❑ **1981 Census**[a/]   ❑ **1994 Survey**[a/]
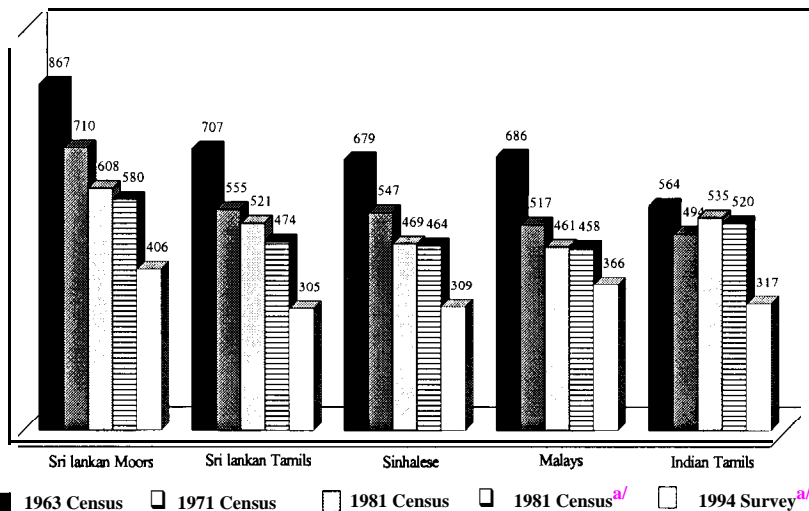
[a/]   Excludes northern and eastern provinces.

compared with the levels in other ethnic groups, even in 1994 the fertility level of the Moors was notably higher. From 1981 to 1994, the three main ethnic groups (the Sinhalese, Sri Lankan Tamils and Moors) reported a fertility reduction exceeding 50 per cent. For example, the level of fertility of the Sinhalese denoted by the child-woman ratio (table 9) dropped from 679 children per 1,000 women in 1963 to 309 in 1994, indicating a decline of 54 per cent. Similarly, measured by the same ratio for the said period, the fertility of the Sri Lankan Tamils dropped from 707 to 305 children per 1,000 women, indicating a decline of 57 per cent, while the fertility of Sri Lankan Moors showed a similar decline, from 867 to 406 per 1,000 women, constituting a decline of 53 per cent. In the case of the Sinhalese, the fertility level dropped by 54 per cent, while the Malay and the Indian Tamil groups reported falls in fertility of 47 and 44 per cent, respectively (figure 6).

The analysis undoubtedly establishes that all ethnic groups in Sri Lanka have experienced fertility declines of various levels, which is reflected in the current fertility transition occurring in the country. Notably, the previous ethnic disparities in the level of fertility have now narrowed significantly. For example, in 1963 the difference between the child-woman ratio of the Sri Lankan Moors and the Sinhalese was 188 per 1,000 women, but by 1994 that difference had narrowed to 97 per 1,000. The comparatively high level of

Figure 7. Child-woman ratio for Moors and Sinhalese, 1963-1994

	1963	1971	1981	1994
Sri Lankan Moors	867	710	580	406
Sinhalese	679	547	464	309
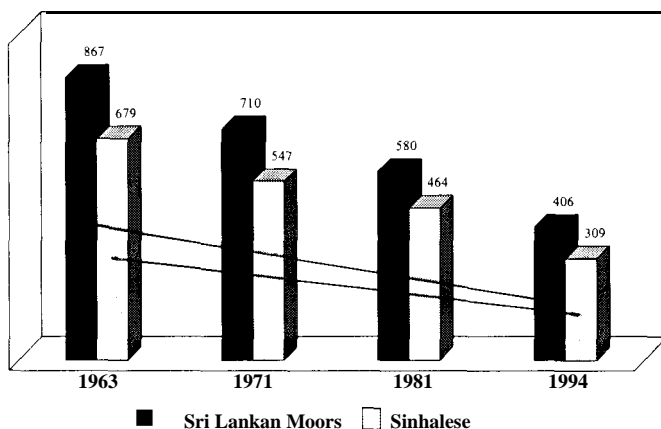
fertility now observed among the Sri Lankan Moor community should therefore follow the same pattern in the coming years, thereby aligning their level with the other ethnic groups who currently demonstrate a relatively low level of fertility (figure 7).

Some correlates of fertility to the transition

Having discussed the declining trends among the different ethnic groups in the country, it is now pertinent to look at some correlates that have contributed to effect this transition. This study highlights two major correlates, the rise in age at marriage and contraceptive use associated with the process of fertility decline.

Declining patterns of fertility due to increasing mean age at marriage have been described as the forerunner to irreversible fertility decline in a society. Historical evidence for a rise in age at marriage in Sri Lanka supports the supposition that due to social development during the past decades, the conceptualization of the "appropriate age" to enter marriage has steadily increased for both genders. For example, during the early twentieth century, the general marriageable age in Sri Lanka for a female was 12 years and for a male, 16 years. Any marriage agreement among persons of such ages was deemed proper. According to the 1981 Census of Population, the singulate mean age at marriage for females and males had increased to 24 years and 28 years, respectively. Due to exposure to various sociocultural agents of change as well as legal enactments defining adulthood and minimum marriage age, the age at marriage has substantially risen for both men and women (De Silva,

1997). The marriage laws have been amended to define the "lawful age of marriage" as 18 for both sexes. However, there are other non-demographic factors that have contributed to delayed marriage in Sri Lanka, most notably economic constraints (Puvanarajan, 1994).

Given the levels of stress prevalent in modem society it becomes socially and morally wrong for those of a very young age, and who need to be educated, to be burdened with the stress and sexual responsibilities of marriage as well as early childbirth.

Women of the Sri Lankan Moor community have been exposed to the afore-mentioned process of sociocultural development, in keeping with patriarchal-oriented social guidance. Consequent to such patrilinial guidance, Moor women were the least affected by the ongoing social change. For example, their singulate mean age at marriage (SMAM) was the lowest among all other communities. Consequently, fertility differentials of ethnicity suggest that the Moor community had experienced higher rates of fertility. One explanation that has been put forward is that Moor women enter marriage at an earlier age than women in other communities and, therefore, are exposed to effective fertility for a longer period of time than women of other communities. The mean age at marriage computed for various districts shows that it is comparatively low for districts that constitute a higher proportion of the Moor community (Department of Census and Statistics, 1986). For example, in Amapara, where 42 per cent of the district population are Moors, SMAM is 21.8 years, while in Mannar, which has a 26 per cent Moor population, SMAM is 21.9 years. Batticaloa has a Moor population of approximately 24 per cent and a SMAM of 22.3 years, while the Moor population in Trincomalee is 29 per cent with a SMAM of 21.3 years. Nevertheless, it should be noted that the mean age at marriage in those districts has increased during the past three decades. This could be attributed to an increased exposure of Moor women to higher education, thereby delaying marriage.

Moreover, awareness, acceptance and the use of various traditional and modern family planning practices can be identified as important correlates of irreversible fertility decline within the institution of marriage. Family planning was introduced to Sri Lankan society during the 1950s with the help of the United Nations and local non-governmental organizations such as the Family Planning Association, which initiated nationwide family planning projects (United Nations, 1976).

In the initial stage, when family planning was being introduced, strong resistance was voiced by various religious and political groups. Objections were put forward, especially against modern methods such as sterilization, that directly affected the fertility component of population growth (De Silva, 1992). However, the catalysts that have brought about changes in the prevalent

pattern, such as educating the community about family planning, have gone far to clear up misconceptions about the use of various contraceptive methods.

Ethnic differentials in family planning acceptance reveal diverse behaviour. The current user rates of family planning methods among the Sinhalese are higher than in the other communities. The lower user rates in communities such as the Tamils and Moors indicate that family planning has not been practised to any great extent by them.

As reported in the 1982 Contraceptive Prevalence Survey (CPS), the highest use of contraceptives was by the Sinhalese, at 60.2 per cent, while the Moors and others recorded the lowest rate of 37 per cent (Department of Census and Statistics, 1983). It should be noted that the 1982 CPS, which was the last survey in Sri Lanka, covered the entire country and provides estimates on ethnic differentials in contraceptive use. The other large surveys on fertility and contraception, that is, the Demographic and Health Surveys of 1987 and 1993, did not include samples from the northern and eastern provinces, where a significantly large proportion of Sri Lankan Tamils and Moors live. Therefore, estimates from those two surveys were not prepared for ethnic differentials in contraceptive use.

The difference observed in the ages at marriage among the ethnic groups and the differentials shown in respect of adopting contraceptive practices may well account for the ethnic disparities seen in fertility performance.

Policy implications

Sri Lankan society is diverse as it is composed of a multiracial, multireligious and multilinguistic population. Since the 1960s, the overall fertility of the country has shown a significant decline. However, a pertinent question is whether all ethnic groups are party to the fertility declining process. If all the groups have contributed to the decline, it has to be regarded as a successful outcome of the family planning programmes and activities that were initiated about five decades ago. Alongside the programmes aimed at curbing fertility, the ongoing social change in the country has enhanced the receptivity and acceptance rates of those efforts.

All the measures applied in the present study have established that all ethnic groups in Sri Lanka have experienced significant fertility declines at various levels, as reflected in the current fertility transition occurring in the country. Over the past two decades, ethnic disparities in the levels of fertility have narrowed significantly. The two main factors that have directly contributed to this decline among the ethnic groups is the increase in the average age at marriage and the increasing use of contraception. Although the Moor women seem to be least affected by ongoing social change, together with

the other ethnic groups they have shown a marked increase in the average age at marriage, a change observed particularly among the females.

The provision of free education since the 1940s and the associated change in aspirations, particularly among females, could be regarded as the most powerful single agent related to ongoing social change. It could strongly influence further narrowing of the ethnic differences in fertility.

There have been claims that the population size of some ethnic groups is increasing faster than others and that, consequently, the present ethnic balance in the country could change considerably. This argument has been levelled in particular against the Moor community, whose level of fertility is still higher than all other ethnic groups in the country. However, it has been demonstrated that the Moors have also participated in the fertility transition, even though they have been slower than the others to enter the transition process.

However, among all the ethnic groups in Sri Lanka there are pockets of population where a significantly higher level of fertility could be identified that may contribute to the concern among the other ethnic groups over high fertility behaviour and the consequent effect on the prevalent ethnic balance. Therefore, it is important from a policy point of view to identify such pockets of relatively high fertility performance and implement specially designed family planning activities suitable for such cultures in order to complement and strengthen acceptance of ongoing social change. This would be a step in the right direction as it would allay any misconceptions and concern among ethnic groups, which could be an impediment to ethnic harmony in the country.

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Gender Dimensions of Migration in Kerala: Macro and Micro Evidence

A subtle transformation has occurred among the wives of the migrants that will leave a lasting imprint on Keralan society

By K.C. Zachariah and S. Irudaya Rajan*

Women follow men in migration from Kerala; men follow women in migration back to that State. Female migrants are better qualified than male migrants, but a lower proportion of them obtain paid employment. Migration causes the separation of wives and husbands. The numbers are the same among both. Wives rarely migrate without husbands, but husbands migrating without wives accompanying them are more the rule than the exception. Men and women both have their own separate gains and losses arising from migration, but women are less capable of handling them without help from their spouses.

* K.C. Zachariah, Honorary Fellow, and S. Irudaya Rajan, Associate Fellow, both at the Centre for Development Studies, Thiruvanathapuram, Kerala, India.

They have greater problems in dealing with the trauma arising from separation. For many, the trauma is worth the trouble, because, at the end of the day, they become well-equipped to face the world on their own. This article deals with these and other gender differentials in migration. It is an analysis of how women differ from men in the migration process, in terms of levels, trends, characteristics and impacts.

Objectives and sources of data

This article is based on a large research project entitled "Migration from Kerala: Social, economic and demographic consequences", undertaken by the Centre for Development Studies. This research was sponsored by the Indian Council for Social Science Research, New Delhi under its Indo-Dutch Programme on Alternatives in Development. In 1998, data for the study were collected through a large-scale field survey covering 10,000 households from 200 *panchayats* (village councils) selected at random from all the 14 districts and all the 61 *taluks* (groups of villages) of the State.

The major objectives of the study included measurement of emigration from Kerala and return migrants, study of the impact of migration on Kerala's demographic transition and on the elderly, women, employment, unemployment and several other economic aspects. One special area of investigation in the study was the consequences of migration for women, especially women who are left by emigrant husbands. This article is concerned with the consequences of migration on Keralan women.

The study collected information on four types of migrants: (a) emigrants or usual members of a household who had emigrated out of Kerala and were living outside India at the time of the survey; (b) return emigrants or usual members of a household who had returned to Kerala after living outside India for a year or more or a lesser period, if the stay outside was for the purpose of study or work or looking for a job; (c) out-migrant or usual members of a household who had migrated out of Kerala and were living outside the State (but within India) at the time of the survey; and (d) return out-migrants or usual members of a household who had returned to Kerala after living outside Kerala (but within India)   for a year or more, or for a lesser period, if the stay outside Kerala was for the purpose of study or work or seeking employment.

The emigrants and out-migrants counted in this study had to have roots in Kerala, otherwise there would be no one in Kerala to give information about them. Migration within Kerala was not included in this study.

This article is divided into two parts. The first part brings together general gender issues in migration based on the analysis of data from all 10,000 households studied. The second part deals with an analysis of the data from a special survey conducted in selected districts (Thiruvanathapuram, Kollam, Pathanamthitta, Alappuzha, Ernakulam, Thrissur, Palakkad and Kozhikode) on the special problems faced by women whose husbands are living away or have lived away from them as emigrants.

Review of literature

The Government of Kerala conducted three separate surveys at different times to assess the international migration situation and has produced reports on the subject (Department of Economics and Statistics, 1982; 1987; 1994). Although no analysis of the survey data was produced as the data were inaccessible to individual researchers, a few researchers have conducted migration research on macro issues such as remittances, capital flows and return migration based on various official and unofficial documents produced by the Government of Kerala and India such as the Reserve Bank of India (Nayyar, 1994; Issac, 1997; Prakash, 1998). Some others have also conducted small-scale surveys to study the various aspects of migration (Prakash, 1978; Mathew and Nair, 1978; Nair, 1989). This is the first systematic migration survey covering the entire State of Kerala (for more details, see Zachariah, Mathew and Rajan, 2001a; 2001b). Only one study exists in Kerala which assessed the impact of male migration on women, However, this work is based on an in-depth qualitative study of only 10 women in Kerala (Gulati, 1993). The census of India also provides data for analysing inter-state migration, but not international migration (Zachariah, Mathew and Rajan, 2000). Thus, this large-scale survey was undertaken to assess international migration in Kerala.

Main findings

Sex differentials in migration

The total number (stock) of migrants in Kerala in 1998 (emigrants, out-migrants, return emigrants and return out-migrants) was 3,752,000; of that number, women constituted only 654,000 or 9.6 per cent. However, their share varies considerably between internal and external migration (table 1).

In 1998, the total number of female emigrants was 126,000, out of a total of 1,362,000, and the number of female return emigrants was 81,000, out of a total of 739,000. Thus, for both emigration and return emigration, only one out of every 10 migrants was a woman; emigration from and back to Kerala is essentially a male affair.

Table 1. Gender composition of Kerala migrants, 1998

A. Onward migrants	Emi-grants	Percen-tage	Out-migrants	Percen-tage	Total	Percen-tage
Males	1,235,426	90.7	524,796	75.9	1,760,222	85.7
Females	126,528	9.3	166,899	24.1	293,727	14.3
B. Return migrants to Kerala	**Return emigrants**	**Percen-tage**	**Return out-migrants**	**Percen-tage**	**Total**	**Percen-tage**
Males	58,733	89.1	678,494	70.8	1,331,227	78.7
Females	80,512	10.9	280,332	29.2	360,844	21.3

Women have higher representation among internal migrants. Among the onward migrants, one in four is a woman, 167,000 females and 525,000 males. The number of female return out-migrants was 280,000, compared with 679,000 males. Thus, females had a higher representation (29 per cent) among the return out-migrants.

Female return out-migrants exceeded female out-migrants by 113,000. Corresponding to every 100 female emigrants there were only 64 female return-emigrants; on the other hand, corresponding to every 100 female out-migrants there were 167 female return out-migrants.

Female migrants by community

More than half the number of all emigrants were Muslims; however, Muslims contributed only about a quarter of the total number of female emigrants. The highest proportion of female emigrants was among the Syrian Christian community (27 per cent). Together with Roman Catholics, the Christian community contributed nearly half the number of female emigrants. Nairs had a relatively low proportion of females among the emigrants, but Muslims had the lowest proportion (table 2).

About one fifth of the emigrants from the Christian community were females. On the other hand, less than 5 per cent of the Muslim emigrants were females. The corresponding proportion among Nairs was not much higher.

Among the various communities, the highest proportion of female out-migrants to total out-migrants was among the Christians, totalling some 38 per cent each among the Syrian and Latin Christians. The lowest proportion was among the Muslims, at only 3 per cent. About one third of the female out-migrants belonged to the Syrian Christian community. On the other hand, less than 2 per cent were Muslims.

Table 2. Female and male migrants by community in Kerala

	Percentage			Females as percentage of total
	Males	**Females**	**Total**	
Emigrants by caste and religion				
Scheduled caste/scheduled tribe	1.4	2.1	1.5	12.9
Ezhawas	7.5	9.7	7.7	11.7
Nairs	14.0	8.2	13.4	5.7
Syrian Christian	10.6	21.2	12.1	20.8
Roman Catholic	7.4	19.0	8.4	20.9
Muslim	52.0	25.1	49.5	4.7
Others	7.1	8.7	7.3	11.1
Total	**100**	**100**	**100**	**9.3**
Out-migrants by sex and religion				
Scheduled caste/scheduled tribe	4.9	4.5	4.8	22.6
Ezhawas	21.2	18.1	20.4	21.4
Nairs	24.2	14.3	21.8	15.9
Syrian Christian	17.1	32.8	20.9	38.0
Roman Catholic	8.9	17.7	11.0	38.8
Muslim	15.6	1.5	12.2	3.0
Others	8.2	10.9	8.8	29.9
Total	**100**	**100**	**100**	**24.2**

Destination of female migrants

The destination of the largest proportion of emigrants, both men and women, was Saudi Arabia. However, the proportion of females was smaller, totalling 21.5 for females, compared with 39.1 for males. The United Arab Emirates was next, Dubai alone accounting for 14 per cent. The other destinations in the United Arab Emirates were: Sharjha (8.2 per cent) and Abu Dhabi (7.7 per cent). Kuwait, Oman, Qatar and Bahrain together accounted for 31.8 per cent. The proportion of emigrants to the United States of America formed another 9.2 per cent.

In relative terms, the difference between males and females was the largest in the case of emigration to the United States. While only 1.5 per cent of males went to the United States, as many as 9.2 per cent of female emigrants went to that destination. A similar situation was observed with respect to Kuwait and Qatar. In many of the Persian Gulf countries, emigrant workers are not given family visas for wives and children unless they earn a certain income level set by the respective Governments. This greatly contributes, especially in the Persian Gulf region, to the number of wives left behind at home (Zachariah, Mathew and Rajan, 2001). However, this is not true in the case of the United States, where there is family migration.

The largest number of male and female out-migrants went to Maharashtra State. The principal determinant of the destination of female out-migrants was the destination of male out-migrants. The major destinations of out-migrants were Maraharastra, Tamil Nadu, Karnataka and the city of Delhi. The largest male-female differential was in Delhi. While only 7.7 per cent of male out-migrants went to Delhi, almost twice as many (14.8 per cent) female out-migrants did so. Andhra Pradesh is another State in which the proportion of female out-migrants from Kerala (6.1 per cent) was much higher than the proportion of male out-migrants (3.8 per cent)

Return emigration

The number of female return emigrants was estimated to be 81,000, or about 11 per cent of the total number of return emigrants. Return female out-migrants numbered some 280,000, constituting 29.2 per cent of the total return out-migrants. Thus, the number of return out-migrants was much larger than all other migration streams. The return out-migrants numbered 2.2 times the female emigrants, 1.7 times more than out-migrants, and 3.5 times more than return emigrants. A comparison between the number of female out-migrants and the number of female return out-migrants is particularly informative. While the number of female out-migrants was only 167,000, as many as 280,000 female out-migrants returned to Kerala.

Educational attainment of female migrants

Female emigrants were found to be better educated than male emigrants. As long as emigrants earn more money abroad compared to their counterparts in Kerala, parents will approve the marriage of their educated daughters with less educated men. This is purely for economic reasons. Among those who reported their educational attainment, 28.2 per cent had a degree, while the corresponding proportion among male emigrants was only 9 per cent (table 3). While about 66 per cent of the female emigrants had passed the secondary level of education, only 38 per cent of the male emigrants had attained that level.

Looked at from a different perspective, it was found that, of emigrants as a whole, 7.4 per cent were female; but among degree-holding emigrants as many as 20 per cent were female. The male-female differential in educational attainment by emigrants was 28.1 per cent.

Similar differentials were also noted among out-migrants (table 4). Female out-migrants had higher levels of educational attainment than males. About 21 per cent of the female out-migrants had a degree, compared with only 11 per cent among male out-migrants. Among females, there was an approximate 11 percentage point advantage with respect to only secondary level of education. However, the overall differential between male and female

Table 3. Distribution of Kerala emigrants by
sex and educational attainment

(Percentage)

Education level	Males	Females	Females as percentage of total
Illiterate	0.7	0.7	7.1
Literate without schooling	1.0	0.7	5.3
Primary (incomplete)	3.3	5.4	11.4
Primary	11.4	3.4	2.3
Lower secondary	45.2	23.5	4.0
Secondary	29.4	38.3	9.5
Degree	9.0	28.2	20.0
	100	100	7.4

Note: Differential index = 28.1. This is the sum of the positive (or negative) differences between the percentage distributions of male and female emigrants.

out-migrants was less than that among emigrants (only 20.4 per cent among out-migrants, compared with 28.1 per cent among emigrants).

Economic activity

As expected, the economic activity rate was lower among females than among males. The same relationship held at all stages: before migration in Kerala, after migration at the destinations and after return to Kerala. The differential was largest among return migrants. Females tended to drop out of economic activity after a stint at emigration or out-migration. At the destinations, the gender differential among emigrants was only 45.3 per cent before emigration, but as high as 76.3 per cent after return to Kerala. Similarly, the differential among out-migrants was only 31.3 per cent before out-migration, but as much as 64.8 per cent after return to Kerala. Thus,

Table 4. Distribution of Kerala out-migrants by
sex and educational attainment

(Percentage)

Educational level	Males	Females	Females as percentage of total
Illiterate	0.9	0.0	0.0
Literate without schooling	0.8	0.4	16.7
Primary (incomplete)	1.2	0.9	16.7
Primary	7.2	4.3	14.5
Lower secondary	34.2	17.8	12.7
Secondary	44.8	55.8	26.2
Degree	11.3	21.0	34.5
	100	100	22.1

Note: Differential index = 20.7.

Table 5. Occupational distribution of Kerala males and females before emigration, at destination and after return

	Before emigration		At destination		After return	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
Government and semi-government	2.5	11.8	3.2	8.9	2.7	21.1
Private sector	15.6	30.3	41.2	61.1	6.0	26.3
Self-employment and unpaid family worker	15.9	3.9	4.1	2.2	47.2	21.1
Agricultural labourer	2.0	0.0	0.1	0.0	5.2	0.0
Non-agricultural labourer	36.9	7.9	50.4	22.2	31.3	10.6
Job seekers	27.1	46.1	0.5	5.6	7.6	21.1
All occupations	100	100	100	100	100	100

emigration and out-migration tended to increase labour force participation by females. However, their return was associated with lower rates.

Sex differentials in occupation

Considerable sex differentials exist in the occupational profiles of the labour force (those not in the labour force have not been included in the calculation of rates). The proportion of the unemployed is much higher among female emigrants as well as out-migrants. The same pattern of sex differentials holds among migrants before migration, among migrants at their destination, and among return migrants. Similarly, the proportion of the labour force in the private sector is higher among females before migration, after migration and after return to Kerala. Females are over-represented in government and semi-government employment. On the other hand, females are under-represented in the labour force in self-employment, and among agricultural and non-agricultural labourers (tables 5 and 6).

Table 6. Occupational distribution of Kerala male and female out-migrants, before emigration, at destination and after return

	Before migration		At destination		After return	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
Government and semi-government	4.7	4.0	21.7	15.2	14.6	20.5
Private sector	8.7	11.2	38.0	69.7	8.9	6.3
Self-employment and unpaid family worker	9.4	4.8	10.9	3.0	31.0	22.3
Agricultural labourer	1.0	0.0	0.0	0.0	7.6	8.9
Non-agricultural labourer	23.0	2.4	27.5	4.5	30.5	7.1
Job seekers	53.1	77.6	2.0	7.6	7.6	34.6
All occupations	100	100	100	100	100	100

Figure 1. Percentage of unemployed in Kerala by sex and migration status
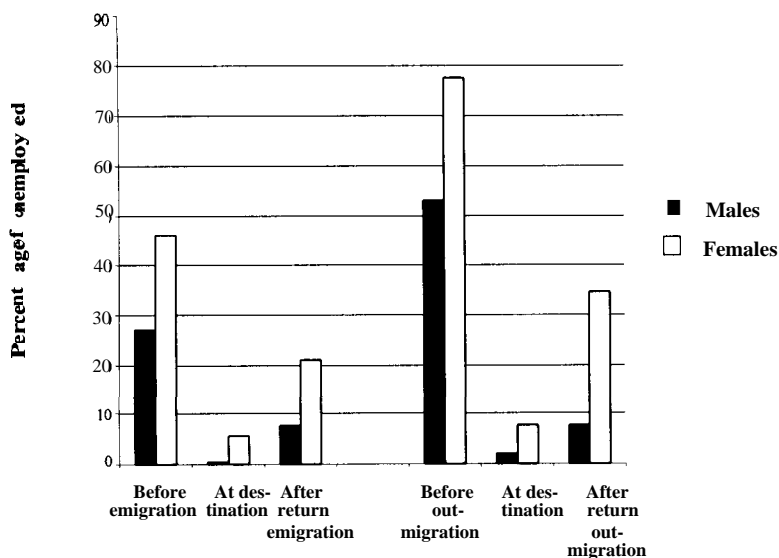
Unemployment among females

Almost half (46 per cent) of the economically active female emigrants were "job seekers" before emigration (figure 1). The corresponding percentage among the males was only 27 per cent. The percentages were much lower at the destination, but the differentials persisted: 5.6 per cent among females and 0.5 per cent among males. Among the return emigrants, the level of unemployment was higher, but the pattern of differentials persisted: 21.1 per cent among females and 7.6 per cent among males. The pattern of sex differentials among the out-migrants was similar but at higher levels of unemployment.

Separation of spouses: excess of married women

One of the major impacts of migration on women was separation from husbands who emigrated or moved to other States in India, leaving their wives and children at home.

The number of married men and women in the sample totalled 10,712 and 12,253, respectively, giving an excess of 1,541 married females. The difference, as a proportion of the number of married women, that is, husband-

Figure 2. Approximate percentage of Kerala wives separated from husbands, by age
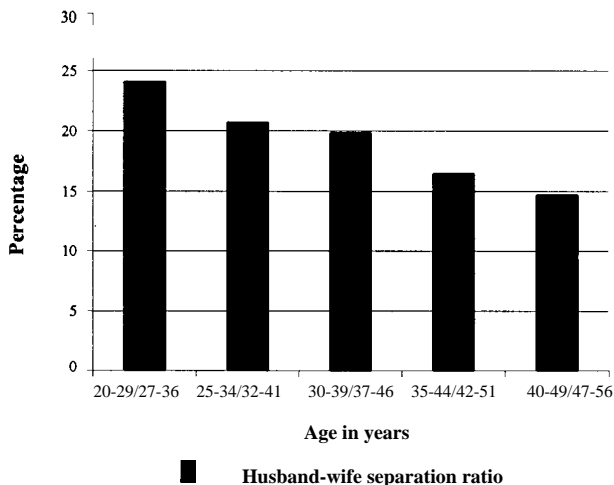
Note: These percentages assume that the husband is older than the wife by seven years, and that the husbands of women aged 20-29 years are all aged 27-36 years.

wife separation ratio (HWSR), was 12.6 per cent. Thus, a minimum of 12.6 per cent of the married women in Kerala were living apart from their husbands. Applying the ratio to the total number of married females in the State, 981,000 married women in Kerala were living apart from their husbands.

The extent of spousal separation varied considerably by age of the wife (figure 2), decreasing as age advanced. For example, it was about 24 per cent among women aged 20-29 years, but less than 15 per cent for higher age groups. In about 15 per cent of the households, the number of married females was higher than the number of married males. The percentage varied considerably from district to district and from community to community. The highest HWSR was in Malappuram district (28 per cent) and the lowest in Idukki district (1.7 per cent). The separation ratio was more than 30 per cent among Muslims and only 4.4 per cent among the scheduled castes.

In households where the number of married females exceeded the number of married males, 69 per cent had migrants and 31 per cent had no migrants. Among households where the number of married males exceeded the number of married females, only 6 per cent had migrants and 94 per cent had no

Table 7.   Age distribution of Kerala "Gulf wives and husbands"

<div align="right">(Percentage)</div>

Age (years)	Wife	Husband
20-24	11.0	0.0
25-29	21.7	4.8
30-34	22.9	19.4
35-39	20.0	24.6
40-44	13.6	18.9
45-49	7.6	17.7
50+	3.3	14.6
Total	100	100
Average age of wife	**34.0 years**	
Average age of husband		**40.9 years**
Difference	**6.9 years**	

migrants. Viewed another way, among households with migrants, 67 per cent had more married females than married men. Among households without migrants, only 6 per cent of the households had more married females than married males. These figures indicate that migration was the major underlying factor for the existence of more married females than married males in many households in Kerala.

"Gulf wives"

The term "Gulf wives" refers to married women whose husbands are, or have been migrants. They include women whose husbands were migrants at the time of the survey and whose husbands had returned after migration to the Persian Gulf countries. The consequences of migration for those women would be different from those experienced by women in non-migrant households or who had themselves been migrants. Therefore, a special survey was conducted in 8 of the 14 districts to elicit information on the consequences of emigration on Gulf wives. Altogether, 891 women were included in this special survey. A little more than half the number were wives of emigrants (52 per cent) and the balance (48 per cent) were wives of return emigrants.

Characteristics of Gulf wives

The Gulf wives were neither very young nor very old. Nearly 80 per cent of them were in the 25-year to 40-year age group. The average age of wives of return emigrants was slightly higher (35.7 years) than that of the wives of current emigrants (32.5 years). The largest proportion of wives of emigrants was in the 30-year to 34-year age group, with the largest number of wives of return migrants being in the 35 to 39 year age group (table 7).

Table 8. Difference in age between husband and wife

Difference (years)	Percentage
Less than 2	5.2
2-4	12.9
4-6	19.3
6-8	20.8
8-10	20.5
10-12	13.9
12+	8.3
Total	**100**

The husbands of Gulf wives were, on average, seven years older. This difference is slightly more than the average difference among the general population. There were no cases of a wife being older than her husband, but there were a few cases (8.3 per cent) where the husband was older by more than 12 years (table 8).

The average age of Gulf wives at marriage was 20.5 years, slightly lower than the State average, while the average age of their husbands was 27.5 years, slightly higher than the State average. The average was slightly lower among wives of return migrants, compared with that of the wives of emigrants. Twenty-one per cent of the Gulf wives were married before the legal age of 18 years, but only 1.5 per cent of the Gulf husbands were married before they were 20 years old (table 9).

Table 9. Age at marriage of Kerala Gulf wives and husbands

		(Percentage)
Age at marriage (years)	Wife	Husband
Below 16	7.4	0.1
16-17	13.9	0.4
18-19	21.9	0.9
20-21	20.7	5.7
22-23	16.6	10.4
24-25	9.1	16.9
26-27	4.5	18.1
28-29	3.4	17.2
30-31	1.7	13.8
32-33	0.4	8.6
Above 33	0.4	7.7
Total	**100**	**100**
Average	**20.5**	**27.5**

Figure 3. Schematic diagram of the impact of migration on Gulf wives
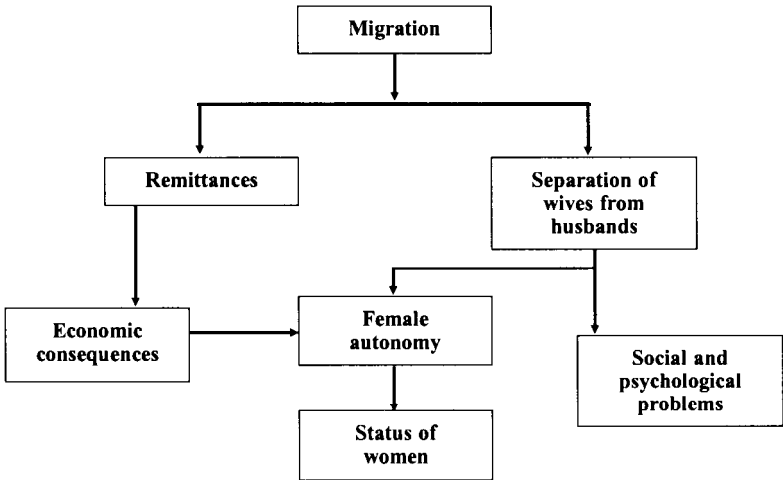
Impact of migration on Gulf wives

The impact of migration on Gulf wives has. made itself felt in several ways, but principally through remittances and husband-wife physical separation (figure 3). Remittances have brought in considerable income to Gulf wives and their households. Increased income has led to several changes in lifestyle and consumption patterns, such as ownership of land, housing and household amenities; the nutritional and health status of the members of the households; social status, as reflected in the relationship of the family and the community; and the quality of children's education. Women who had previously been accustomed to a protected lifestyle have been called upon to take charge of a number of household tasks, both within the house and outside it, as a result of their husbands' migration. Women who had been unaccustomed to handling large sums of money have become responsible for the financial management of the household. They have had to open bank accounts and approach public offices for a variety of purposes. Women who have succeeded in taking on the additional responsibilities have developed new expertise and self-confidence. They have become more autonomous and have risen in social status. Others who have failed to rise to the challenge have become targets of displeasure among their husbands and other members of their families and have even developed social and psychological problems.

Table 10a. Adverse consequences of migration reported by Gulf wives in Kerala in terms of choice

(Percentage)

Adverse consequences	First choice	1-3 choices
Loneliness	43.4	28.2
Added responsibilities	5.3	31.6
Worries about future	3.1	5.9
Debt	10.6	8.3
Less security	0.0	0.3
Children's health	0.2	0.3
Mental anxiety	2.1	2.6
Things not done properly	0.4	0.5
Land dispute	0.2	0.1
No financial gains	12.9	10.2
Dependent on others	1.2	12.0
Total	**100**	**100**

The impact of migration on women can be positive, negative or both, depending on the ability and background, as well as the family environment in which the women are placed. A starting point for examining the impact is provided by the answers given by Gulf wives to the question about problems they have faced and the benefits they have received from the migration of their husbands. All the Gulf wives in the sample were asked a general question about the good and the bad things they had experienced as a result of the migration of their husbands. They were asked to list three good experiences and three bad experiences in their order of importance. The answers on adverse experiences are detailed in tables 10a and 10b.

Table 10b. First choice of adverse consequences of migration reported by Gulf wives in Kerala by age group

(Percentage)

Adverse consequences	First choice	
	Below 30 years	30+ years
Loneliness	55.0	39.9
Added responsibilities	15.0	28.4
Worries about future	1.7	3.5
Debt	11.7	10.3
Less security	0.0	0.0
Children's health	0.0	0.3
Mental anxiety	5.0	2.0
Things not done properly	0.0	0.5
Land dispute	0.0	0.3
No financial gains	10.8	13.6
Dependent on others	0.8	1.3
Total	**100**	**100**

Adverse consequences of migration

As tables 10a and 10b indicate, loneliness is by far the leading problem, followed by added responsibilities, indebtedness owing to loans raised at the time of emigration, inadequate fmancial returns from emigration, and anxiety.

Loneliness

In the multiple-choice question, 43 per cent of the women reported loneliness as their most important problem. However, if the first three choices are combined, the proportion who reported loneliness declines to 28 per cent, which is lower than the number of respondents who felt that "additional responsibilities" constituted their major problem .

More than half the number (55 per cent) of the younger wives (aged below 30 years) felt that loneliness was their main problem. Among the older women the proportion was lower at only 40 per cent, but loneliness retained the leading position. Loneliness of wives is thus observed to be the most important, but unfortunately, unavoidable consequence of emigration from the State.

Under the current pattern of emigration in Kerala, the separation of married emigrant men from their wives lasts for several years. In this study, the extent of loneliness was reckoned in terms of three measures: (a) the number of women living apart from their husbands; (b) the period of separation; and (c) the frequency of communication between husbands and wives.

In a previous section, it was indicated that 981,000 women (one out of every eight married women) were beset with the problem of living apart from their husbands. Classification of wives by age indicated that the number of married women aged 20-29 years was larger than the number of married men aged 27- 36 years by 24 per cent (the interval between the age at marriage of men and women was assumed to be seven years on average). The husband-wife physical separation ratio decreased with the age of the woman, but it remained at about 15 per cent even in the age group of 40-49 years. Thus, the problem of separation of wives from husbands was clearly more severe among younger women than older women,

The length of separation is another measure of the HWSR problem. Table 11 gives the distribution of Gulf wives according to the period of separation. It shows that in 2.4 per cent of the Gulf wives, the husband emigrated within a few days of his marriage. In about 13 per cent, the husband emigrated within a month after marriage.   In a vary large proportion of cases (about 45 per cent), the husband emigrated in the first year of marriage. However, the departure of the husband occurred more than five years after marriage in about one third of the cases.

Table 11. Interval between marriage and first emigration from Kerala

Interval between marriage and first migration (in months)	All women	Women aged below 30 years	Women aged 30+ years
Less than a month	2.4	2.7	2.3
1	10.1	12.5	9.2
2	12.7	20.1	10.0
3	7.7	14.7	5.2
4	3.7	6.3	2.8
5	1.4	1.8	1.3
6 months	2.0	2.7	1.8
7-12	3.6	2.7	3.9
12-24	7.7	14.7	5.2
24-36	6.5	5.3	6.6
36-48	4.8	4.9	4.7
48-60	4.0	2.7	4.5
60+	32.0	5.8	41.5
Husband migrated before marriage	1.3	2.2	1.0
Total	**100**	**100**	**100**

Younger women were affected by the separation problem more frequently than older women. In the case of half the younger women, the husband emigrated within the first three months after marriage. The corresponding percentage among the older women (aged above 30 years) was only 27 per cent.

The main message to be drawn from the table is not completely contrary to the commonly held view. Our data support the commonly-held notion that in Kerala, a fairly large number of Gulf brides were left alone by their migrant husbands within days or a month of their marriage. But for the majority, the emigration of the husbands occurred several years after the marriage.

The interval between the first emigration and the first homecoming is equally relevant in assessing the degree of loneliness of Gulf wives. The longer the interval, the higher the degree of loneliness. The average interval is about two years, but here again, the average masks the intensity of loneliness. For example, in more than 40 per cent of the cases, the interval was more than two years (table 12).

There is little that the husband or the wife can do, under current conditions, to avoid physical separation. However, there are several ways of mitigating the pain of separation and lessen the feeling of loneliness, such as communication and family and community networks. Periodic remittances, gifts and messages received from husbands through visits from friends returning on leave also help to lessen the severity of the problem.

Table 12. Distribution of "Gulf wives" in Kerala by the interval between first emigration after marriage and first homecoming

Interval (months)	Percentage
0-6	3.9
7-12	12.9
13-24	39.5
25-36	26.9
37-48	10.8
49-60	3.9
60+	2.2
Total	**100**

Communication between a Gulfwife and her husband

One way to ameliorate a woman's problem of loneliness, mental strain and misunderstanding is to have constant contact with her husband through letters, telephone calls and other means of communication. In this matter, the Gulf wives from Kerala are fairly well placed. Almost all Gulf wives indicated that they regularly communicated with their migrant husbands. They used all available means of communication, the most common being letters and telephone calls. Nearly 70 per cent of the Gulf wives used both letters and telephones for communicating with their husbands. The remaining women used only letters.

The majority of the husbands wrote letters at least once in two weeks. Another 36 per cent wrote once a month. The husbands called their wives by telephone less frequently. Only 37 per cent of the respondents reported having received telephone calls from their husbands. Thirty per cent had never received telephone calls.

The frequency of letter writing by Gulf wives to their emigrant husbands followed the same pattern as that of the husbands: 42 per cent wrote once in two weeks and 34 per cent sent mail once a month. Thus, the frequency of letter writing by the wife was dependent on the frequency of letters received from the husband.

Frequent communication links between husband and wife therefore play a major role in easing the severity of loneliness and avoiding its extreme consequences.

Increased responsibilities

"Increased responsibilities" was another common complaint of the Gulf wives. Tables 10a and 10b show that (all the three choices together) about 32

per cent of the Gulf wives felt "added responsibility" to be their main problem; loneliness came second, with 28 per cent. However, if we consider the first choice only, "added responsibilities" takes second place, as only 25 per cent of the Gulf wives mentioned it as a problem. On the other hand, 43 per cent mentioned loneliness as a problem. Among the younger women, "added responsibilities" was much less important, with only 15 per cent mentioning it as a problem. Among the older women, the proportion was higher (28 per cent), but even among them, it stood only second to loneliness. Increased responsibility occurs in several areas, the most important among them being management of children's education.

Education of children

One of the major additional responsibilities of Gulf wives that resulted from their husbands' emigration was the management of their children's education. Before migration, the husbands were largely in charge of their children's education; after the husband's departure, the wife had to take over the responsibility.

Almost all Gulf wives had children. Nearly 80 per cent had two or more children, 3 per cent had four or more children. The average was, however, much smaller, at 2.2 children.

About 74 per cent of the women had children who were students. Most of the children were attending school classes 1 to 10. Nearly two fifths of them were attending lower primary school. Thus, the children of Gulf wives fall within age groups that demand concentrated attention from their mothers.

About 41 per cent of the children were taking private tuition, which necessitated the mother arranging tuition and making arrangements for the transportation of children to and from the place of tuition. Most of the students travelled to school on foot or by public transport. Travel in a family-owned vehicle was limited to a small percentage of children. The majority of children attending private tuition travelled independently. However, in about 8 per cent of the cases, their mothers took them to and from the place of tuition.

Most housewives helped their children with learning. Among the women whose husbands were, or had been, emigrants, more than 75 per cent helped their children with their homework. This was seen as a major added responsibility.

Taking care of children's education is not the only added responsibility they have taken upon themselves. Managing family finances and remittances received from husbands, keeping contacts with husbands abroad and taking care of the health of the members of the family are a few of the other added responsibilities.

Increased anxiety: problems with in-laws

About 6 per cent of the Gulf wives mentioned that one of the problems arising from their husbands' migration was a heightened anxiety level about the family and its future. About 3 per cent reported a high level of anxiety as their major problem. Young Gulf wives were new to their husbands' families, and had little time to get to know them before their husbands' departure on emigration. It is understandable that they encountered serious mental problems. With regard to the specific question of whether they had any problems with in-laws, more than 25 per cent gave a positive answer.

Problems could also arise between the husband and the wife due to living apart for several years at a stretch. However, only a very small proportion of the wives (2.1 per cent) mentioned that some misunderstanding had occurred with their husbands. They did not, however, discuss the matter with strangers.

Another point of strain was misunderstandings with the family of the husband. However, only 8.5 per cent mentioned that they had problems with members of the husband's family. What little misunderstanding there was mainly concerned financial matters.

One problem for the Gulf wife occurred during periods of illness of family members, particularly in cases where there was no one else in the family to take the sick person for medical consultation and treatment. This problem was observed, however, to be more imaginary than real in most cases. In an overwhelming majority (two thirds) of cases, the relatives had provided the needed services. It had been the sole responsibility of the wife of the emigrant in only 31 per cent of the cases.

The effect of the absence of the father on the education of his children is also likely to be serious. Indebtedness incurred in meeting the expenses of husbands' migration and inability to repay the debt was another problem about which a significant number of women indicated concern.

Specific reference was made to the effect of migration on children. Only 8 per cent of the women surveyed felt that because the father was away the children had become a problem to the mother.

Benefits from migration of husbands

As stated above, the women respondents were asked about the benefits accruing to them from the migration of husbands. According to 56.3 per cent of the women, financial gain was the leading benefit from emigration (table 13).

Seventy-five per cent of the women noted that the best part of their husbands' emigration was the financial gain. Almost all the beneficial aspects

Table 13. Distribution of Gulf wives in Kerala by gains accruing from emigration

(Percentage)

Benefit	All	Young women	Older women
Financial gain	56.3	64.7	53.1
Able to own a house	21.7	19.5	30.2
Able to own ornaments	1.6	0.8	1.8
Able to buy land	1.2	1.5	1.2
Able to improve nutrition	0.2	0.0	0.2
Able to help relatives	2.6	3.0	2.5
Able to pay back debt	6.0	9.0	5.1
Improved lifestyle	1.8	0.8	2.1
Better education	2.1	0.0	2.8
Others	0.5	0.8	0.5
Total	**100**	**100**	**100**

of emigration were economic in nature: ownership of land and houses, acquisition of jewellery, ability to help relatives, capacity to clear debts, and so forth. The economic gains came mainly through remittances.

Remittances

In addition to the fact that most husbands wrote letters or made telephone calls to their wives, they also sent remittances home on a regular basis. In the 12-month period prior to the survey, 60 per cent of the Gulf wives had received remittances. The average amount received by way of remittance was Rs. 21,141 (1997 exchange rate: approximately Rs. 46/US$ 1) when women who did not receive remittances were included. However, the amount increased to Rs. 34,924 when only those who received remittances were considered (table 14).

Table 14. Distribution of Gulf wives in Kerala by annual remittances received

Remittance per year	Percentage of Gulf wives
Below Rs. 10,000	2.0
10,000-20,000	7.5
20,000-30,000	14.0
30,000-40,000	15.4
40,000-50,000	9.8
Above 50,000	11.9
Not sent	39.5
Total	**100**

Table 15. Distribution of Gulf wives in Kerala according to disposition of own incomes

Category of use	First choice	All choices
According to husband's directions	50.7	19.7
Routine consumption requirements of the family	14.9	11.1
Emergency needs	9.1	13.5
Savings	0.4	0.8
Religious purposes	15.9	20.4
Buying ornaments	8.9	25.7
Other uses	0.1	8.7
Total	**100**	**100**

Most of the remittances were spent by the recipient wives in accordance with the directions of their husbands (59 per cent). However, in about 35 per cent of the cases, expenditure was made according to the recipients' own discretion. This fact indicates the considerable degree of autonomy enjoyed by the Gulf wives.

Women's autonomy

The study collected several pieces of information regarding the autonomy of Gulf wives. One important aspect of female autonomy is the role of the wife in managing the finances of the household. In reply to the question of who managed the family's financial matters, nearly 60 per cent of the women said that they did so themselves. Another 16 per cent said they followed their husbands' directions. In about 22 per cent of the households, it was the husband's family who managed the household finances.

More than 50 per cent of the respondent Gulf wives had some property in their name, either a house or a piece of land. About one third of them had houses. About 25 per cent some source of income of their own. Most of the personal income came from agriculture (43 per cent). The other major sources were wages (22 per cent) and salaries (17 per cent). Much of the money was used for the routine consumption requirements of the household, meeting emergencies and religious purposes (table 15).

A fairly large proportion of the Gulf wives said they kept bank accounts (69 per cent), but only a few had joined chit funds or similar financial investment schemes. About 75 per cent made independent decisions on matters of spending. In some cases, they consulted their husbands. In 10 per cent of the cases, permission was sought from the husband's family.

Conclusions

There are both positive and negative consequences for Gulf wives as a result of their husbands' emigration. On balance, the situation was clearly defined by the respondent through their answers to the following two questions concerning the net effect of migration.

1.   *"Would it not be nice if your husband left his Gulf job and returned home?"*

Surprisingly, nearly 60 per cent of the women answered that they really wished that their husbands would leave their Gulf jobs and return home. For them, the added responsibilities and the loneliness weighed too much. But for the other 40 per cent of respondents, the economic benefits outweighed the burdens and privations resulting from the absence of their husband.

2.   *"lf you have a daughter of marriageable age, whom would you like her to marry? Somebody working in Kerala, somebody working in another State in India, or somebody working in the Gulf countries?"*

Most of the respondents reported that they would like their daughters to marry persons working in Kerala (an overwhelming 83 per cent). The next choice was for persons working abroad (14 per cent). Surprisingly, very few wanted a husband for their daughters from among persons working outside Kerala but within India.

Thus, in spite of the huge increase in family income, women who had gone through the trauma of separation from their husbands did not want their daughters to go through the same experience.

The reason given for opting for a person working in Kerala was the idea that life in Kerala was more comfortable than anywhere else. Income was not the main consideration. A job in Kerala was likely to provide a better future than a job outside Kerala.

The women who opted for sons-in-law working in Gulf countries were of the view that a Gulf job ensured a brighter future for the family. Surprisingly, economic considerations were not specifically mentioned as a factor in their preference patterns.

How to interpret these figures? Having gone through the experience as a Gulf wife they appeared to have second thoughts about their husbands' emigration. It was acceptable from an economic point of view, but not acceptable when all the related factors were taken into consideration.

Those who had gone through the trauma of separation would prefer a job in Kerala for their husbands. For them, all that glittered in the Arabian sands was not gold. Considerable sacrifices had to be made on the part of the migrants themselves, as well as by their wives and children back in Kerala.

However, there is still another side to the whole question of balance. What is described above is the viewpoint of individual Gulf wives. The picture is different from the viewpoint of society in general. More important than the visible economic benefits to the Gulf wives, but partly as a result of them, are the subtle changes in the level of their self-confidence and ability to get things done in a man's world. Loneliness, mental strain, hard work, minor problems with in-laws and children all have to be faced; however, the Gulf wives will have developed an innate capacity to get things done, not only within the household but also in the community. The existence of International Subscriber Dialling and email booths in every part of the State have proved to be very useful in preventing the problem of loneliness from getting out of hand. The husband may be absent, but his helping hand is close by at the other end of a telephone line. The husband's absence, increased economic resources at the disposal of the wife and the ability to communicate with him whenever needed have all became instrumental in transforming a shy, dependent woman into a self-confident autonomous manager with a status equal to that of any man in the neighbourhood. She has also gained a larger vision of the world around her. The subtle transformation that has taken place among the Gulf wives will leave a more lasting imprint on Keralan society than any of the material changes that migration has brought about.

Acknowledgements

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Demographic Impact of AIDS on the Thai Population

**By Orratai Rhucharoenpornpanich
and Aphichat Chamratrithirong***

Thailand continues to feel the impact of a long-standing acquired immunodeficiency syndrome AIDS epidemic. Encouraged by the ready availability of epidemiological and behavioural data, a number of modelling efforts have been undertaken in an attempt to understand the impact of the epidemic since 1990. However, as better models are developed and the course of the epidemic changes, owing to behaviourial modifications as well as advances in therapy, there remains an ongoing need to provide new estimates and projections of the impact of AIDS on the Thai population. This paper projects the important demographic parameters of population size and annual growth rate. In addition, mortality indicators such as the crude death rate, age-specific death rate, infant mortality rate, child mortality rate (1-4 years) and life expectancy at birth are projected. These projections are made through a comparison of two scenarios: in the absence of AIDS and with AIDS. The paper concludes with a discussion of some of the potential social and economic impacts of AIDS.

AIDS is recognized as a critical problem that will lead to increased adult and child mortality in many countries around the world, particularly in Africa, where HIV prevalence rates are high and mortality among adults is rising. However, the fact that many questions remain regarding the severity of the impact of the AIDS epidemic mortality in the Thai population has encouraged

***** Orratai Rhucharoenpornanich, Academe of AIDS Control Division, Bangkok Metropolitan Administration, 124/16 Krungthonburi Road, Klongsan, Bangkok 10600, Thailand; Aphichat Chamratrithirong, United Nations Population Fund, Country Technical Service Team for East and South-East Asia, ESCAP. Any correspondence may be directed to the first author at the following email address: **orrataimoo@hotmail.com**

extensive modelling to clarify that impact. However, only a few studies have focused directly on the impact on demographic processes (Brown and others, 1994; Van Griensven, Surasaingsunk and Alessio, 1998; Wongboonsin and others, 1997).

The extent of the impact of AIDS upon demographic processes depends on the degree of severity of the HIV/AIDS epidemic and the age pattern of HIV infection among the adult population. Since AIDS victims are mostly in the highly sexually-active age range, the potential exists for both fertility and economic productivity to be affected. This is true in the Thai setting, as can be inferred from the age pattern among reported AIDS cases, which shows that 90 per cent are in the 20- to 49-year age group, with the peak age for developing AIDS coming between 25 and 34 years. In addition, over 80 per cent of AIDS cases have acquired HIV through heterosexual transmission, showing that the type and pattern of the HIV epidemic in Thailand has been driven by heterosexual transmission. This suggests that the HIV/AIDS epidemic affects both adult and child mortality.

In terms of impact, HIV prevalence among the general population indicates the potential severity of the effect on the Thai population. Rates of infection on pregnant women attending antenatal clinics (ANC) can provide a major source of information on HIV prevalence, which is useful for estimating the prevalence in the whole population. However, the quality of ANC data is based on the quality of the sentinel sero-surveillance system. Therefore, it is necessary to determine accuracy, both of prevalence data and the sentinel system, before undertaking the projections.

Accuracy of ANC data

Although ANC data have been collected from all provinces in Thailand, from 1989 to 1995 the sentinel sites for the population were based only in urban areas. Rural coverage only began in 1996 when the Ministry of Public Health expanded the sites to include community hospitals. The ANC data show the prevalence level derived from rural sites to be lower than that of urban sites. This implies that national HIV prevalence derived from ANC data prior to 1996 may have been overestimated.

Variations in the method of data collection may affect the accuracy of ANC data. Some sites use an unlinked anonymous process, while other sites use voluntary confidential testing for collecting blood tests. The latter method typically results in much larger sample sizes, leading to a high level of diversity in sample sizes among the sites. Since such variations can result in under- or over-representation of prevalence, some adjustment is required.

The initial adjustment to reduce bias is made by using median prevalence instead of mean prevalence when representing national HIV prevalence. By

Figure 1. Weaknesses in ANC prevalence data from sentinel sero-surveillance system and adjustments

Weaknesses | **Adjustments**

Whole population

Age-sex structure of population, age ratio of HIV cases — All adults of reproductive age — Percent age-sex distribution of HIV infections

Age-sex structure of population, sex ratio of HIV cases — All women of reproductive age — Male-female ratios

Age-specific fertility of HIV infected and uninfected women — All pregnant women — Rely on assumption that fertility between HIV-infected and uninfected women are similar

Attendance bias age, sex, locality socio-economic status, education etc. — Pregnant women attending ANC clinics — Use median prevalence

Source: Adapted from UNAIDS (1999) . *Trends in HIV incidence and prevalence: Natural course of the epidemic or results of behavioral chan*ge? UNAIDS in collaboration with Welcome Trust Centre for the Epidemiology of Infectious Diseases, UNAIDS/99.12E.

using the median approach, the effect of outliers in the sample among sites is reduced (Schwartlander and others, 1999). This adjustment also reduces urban bias, lowering the estimated prevalence outside urban areas.

Another weakness of ANC data is that, if not adjusted, such data cannot represent the prevalence for all women or the general population. The age-sex distribution of HIV prevalence can be used to adjust the ANC data in order to provide an estimate of the HIV prevalence for the overall adult population. The data required are the female-to-male ratio of HIV infection and the age distribution of HIV infection, while the adjustment for the difference in the age-specific fertility rate between infected and non-infected women relies on the assumption that they are similar. The weaknesses in, and adjustments to, ANC data are illustrated in figure 1.

Figure 2. Epidemiological curve of the Thai AIDS epidemic for 1985-2010, with and without smoothing
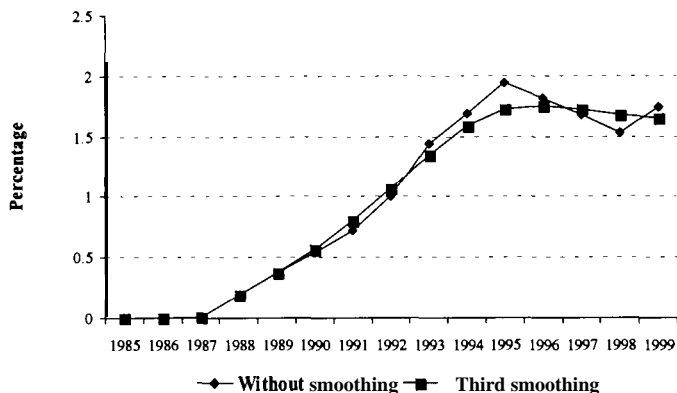
Methods used for projection

The method of projection used for this study involves two main steps. The first is to estimate and project HIV prevalence for adults. The second step involves using the model to estimate and project the magnitude and mortality impact of HIV/AIDS on the Thai population.

Procedure for estimating and projecting HIV prevalence

Prevalence estimates require two basic inputs. First, the year the epidemic began and the point prevalence estimates for 1985-1999. The starting year of the Thai epidemic is generally taken to be 1985 and the point prevalence estimates are based on median prevalence derived from ANC data. The prevalence over time and the starting date of the epidemic are then used to determine the epidemiological curve of prevalence that best describes the HIV epidemic in Thailand. A three-year moving average is used to create the Thai epidemiological curve. These new values of prevalence derived from this technique are used as the prevalence estimates for 1985-1999 (figure 2).

The prevalence during the period 2000-2010 was projected and illustrated using two scenarios, based on the assumption that prevalence would slightly decline until the end of the projection periods. The first scenario, derived from forecasting the trend, assumed that the prevalence would decline slightly at a linear rate to 1.27 per cent by 2010. The second scenario showed a faster rate of decline, with a decrease to 1 per cent by the end of the projection periods. Such a rate came from the Ministry of Public Health objective of controlling

Figure 3. Comparison of two scenarios of HIV prevalence, 2000-2010
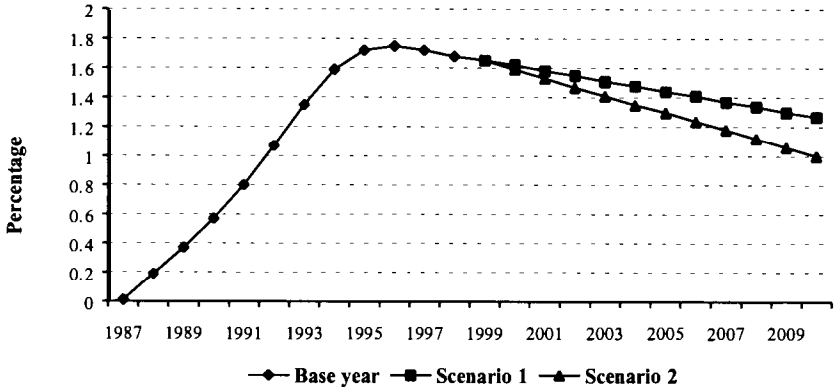
HIV infection among pregnant women at no higher than 1 per cent (Ministry of Public Health, 1997). However, the first scenario was chosen to represent the most feasible picture of the Thai epidemic (figure 3).

Projecting the demographic impact of AIDS

The models used to produce the estimate and projection were demographic projections and the AIDS Impact Model (AIM) (Stover, 1997 and 1999). The first model was used to prepare a population projection as the basis for the HIV/AIDS calculations, while the second model was used to project the past and future course of the HIV/AIDS epidemic in the population. These models was the latest version of a computer program prepared in 1991 in collaboration with the Futures Group International and Family Health International, under the AIDS Technical Support and AIDS Control and Prevention Projects. The latest version (1.52), revised by John Stover, was used for this study.

The impact of HIV/AIDS on the demographic process was assessed by comparing estimates and projections that make allowance for the impact of AIDS with those that hypothetically exclude AIDS. The estimates and projections were made in several steps. First, the model was used to estimate the annual incidence of the disease on the basis of the estimate and projection of prevalence; that is, the annual number of newly infected individuals was derived from the information on the total number of HIV positive individuals at particular points in time. Second, with an assumption about the probability of

progressing from HIV to AIDS and from AIDS to death, the model was used to estimate the annual number of deaths caused by AIDS.

The estimated number of paediatric HIV cases is necessarily based on the assumption about the proportion of HIV cases that occur among women, the likely age distribution for the total number of infected women and a set of age-specific fertility rates. On the basis of these assumptions, and assuming 25.7 per cent to be the average percentage of children in the Thai setting who are born to HIV-positive women and who will themselves be infected, the number of new paediatric HIV-positive cases expected per year is calculated by the program.

The mortality impact of AIDS on demographic parameters is then calculated. The impact will be illustrated in terms of important demographic parameters of population size, annual growth rate and mortality indicators, such as the crude death rate, age-specific death rate, infant mortality rate, child mortality rate and life expectancy at birth. The impact is displayed through a comparison of two scenarios: the absence of AIDS and with AIDS.

Assumptions about disease progression rates and vertical transmission

Data on the rates of disease progression are still scarce in Thailand and there is little knowledge about the incubation period among Thai HIV-infected persons. Two cohort studies in Thailand related to the rate of disease progression were undertaken among female sex workers and military conscripts. Those studies only suggested that the median survival time from HIV to AIDS deaths might be more than seven years. However, individuals included in specific cohort studies were aware of their HIV infection and therefore might not be representative of the general population of HIV-infected persons, many of whom were unaware of their infection. The progression rate among those who did not know they were infected could be expected to be equal to, or slower than the rate among those who enrolled in the cohort studies.

Moreover, the specific progression rates need to be based on judgements about access to and the quality of the health-care system. The slower rate of 10 years or over may best represent progression in Western countries with good health-care systems. However, the progression rate among Thais may not be as slow as those in developed countries. Therefore, we set the median time of the expected progression rate from HIV to AIDS at approximately eight years for infected Thai adults and 2.5 years for children. The survival time from AIDS to death is assumed to be approximately one year, for both adults and children.

Vertical transmission has also seen substantial variation in the overall rates between developing and industrialized countries. In countries where breast feeding is the norm and access to obstetric care is lower, vertical HIV transmission is expected to be 35 per cent (Schwartlander and others, 1999). In Thailand, where voluntary HIV counselling and testing was introduced comparatively early and more mothers have therefore been made aware of their infection, the approximate rate of 25 per cent is appropriate. Some studies in Thailand have found relatively high rates of HIV transmission from mother to child that varied between 24.2-35 per cent among the regions. The highest rate was found in the northern region (Brown and others, 1995) while the lowest rate was recorded in Bangkok (Chotpitayasunondh and others, 1994; Shaffer and others, 1999; Wasi, Chearskul and Roongpisuthipong, 1995). The rate of 25.7 per cent is the average expected value from the studies.

Age-sex distribution of HIV infection in the Thai population and fertility rates

Calculating the number of HIV-infected children and AIDS orphans requires data on the age distribution of HIV-infected women and age-specific fertility rates. The age-distribution for HIV-infected women is derived from reported AIDS cases, while the age-specific fertility rate is based on projections made by the National Economic and Social Development Board Working Group (1995) and the Survey of Population Change undertaken by the National Statistical Office (1997). These data are used, together with estimates of prevalence among women and the rate of vertical transmission, to produce the number of infected children and AIDS orphans.

The assumption about the percentage reduction in fertility for HIV-infected women is related to the impact of HIV/AIDS on children. Recent studies in Africa have shown a reduction in fertility among HIV-infected women, but no data are available for Thailand. Data from the sero-surveillance system collected among women attending ANC clinics, provide information showing that the proportion of infected women with 1-2 children is parallel with those women who were primigravida (Division of Epidemiology, 1999). This information suggests that the expected reduction in fertility among infected women in the Thai setting, where low fertility is the norm, should be less limited. Therefore, we assume that the fertility of HIV-infected women will be 10 per cent lower than that of non-infected women.

To estimate the impact of AIDS on the infant mortality rate requires information about the proportion of infants with AIDS that die in the first year of life. This information is used to calculate the number of infected infants who have developed AIDS in their first year and will die before their first birthday.

Figure 4. Number of people living with HIV/AIDS in Thailand, 1985-2010
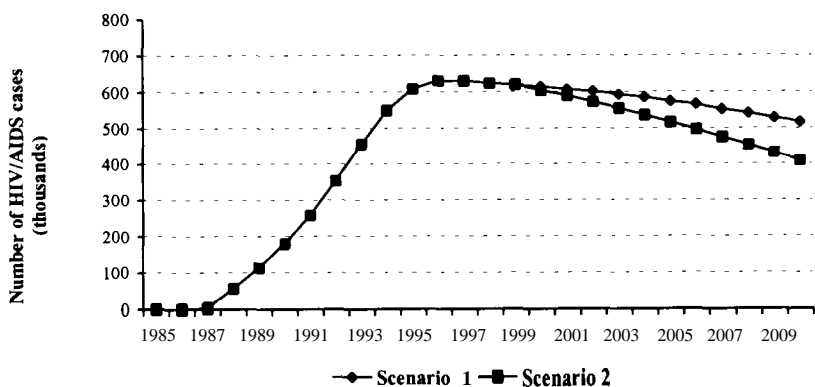
The proportion of children who will develop AIDS and die in that year is set at approximately 0.67. Such a value is used as the best estimate, based on international literature, and is applicable to any country (Stover, 1997 and 1999).

Results

The results of the two scenarios are presented in figures 4-6. A comparison of the estimates and projections for the with- and without-AIDS scenarios shows that the disease has already affected the Thai population.

Figure 5. Annual number of AIDS deaths in Thailand, 1985-2010
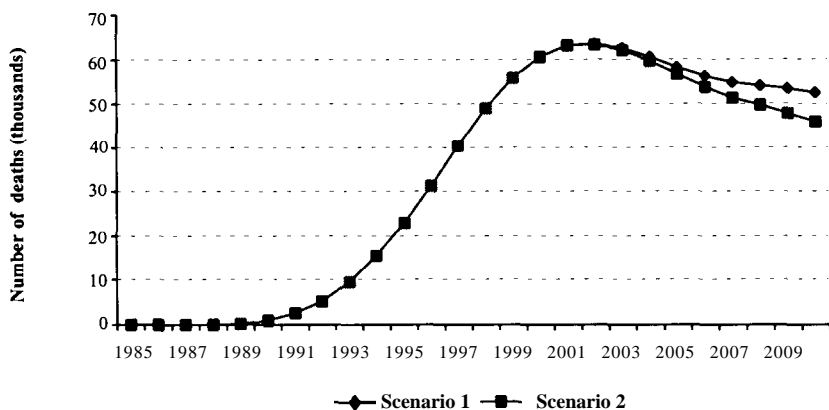
Figure 6. Cumulative AIDS deaths in Thailand, 1985-2010

☐ Scenario 1 ■ Scenario 2
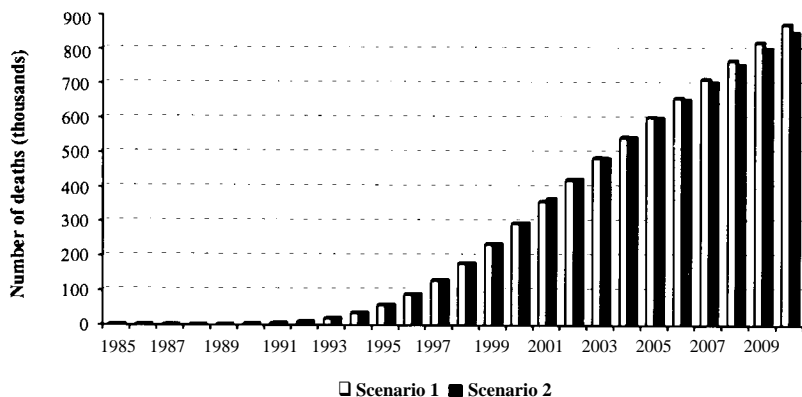
In the fist scenario, the number of people living with HIV/AIDS in Thailand climbed rapidly from 1987 to 1995, reaching a peak of more than 600,000, or around 1 per cent of the population during 1996 and 1997. Subsequently, the number of infected persons is projected to gradually decline to less than 600,000 by 2005 and to just over 500,000 by 2010.

In the second scenario, the projected number of infected persons is lower after 2000 because the prevalence is assumed to fall more rapidly than in the first scenario. This scenario produces approximately 100,000 fewer infected persons by 2010 (figure 4).

The projected number of AIDS deaths is shown in figure 5. In the first scenario, the number is projected to increase rapidly to approximately 60,000 per year from 2000 to 2005, then decline slightly to approximately 50,000 by 2010. The second scenario produces some 6,000 fewer AIDS deaths by 2010.

According to data on cumulative AIDS deaths in Thailand (figure 6), there were approximately 300,000 AIDS-related deaths from the beginning of the epidemic until the end of 2000. More deaths occurred among males than females, with the ratio being around 2.5:1. It is projected that this ratio will decrease to approximately 1.6:1 by 2010. The cumulative number of AIDS deaths among the Thai population is projected to reach nearly 900,000 by the end of the projection period. If the prevalence falls more rapidly as in the second scenario, that number will be reduced to approximately 25,000 by 2010.

Figure 7. Population size in with- and without-AIDS scenarios for Thailand, 1985-2010
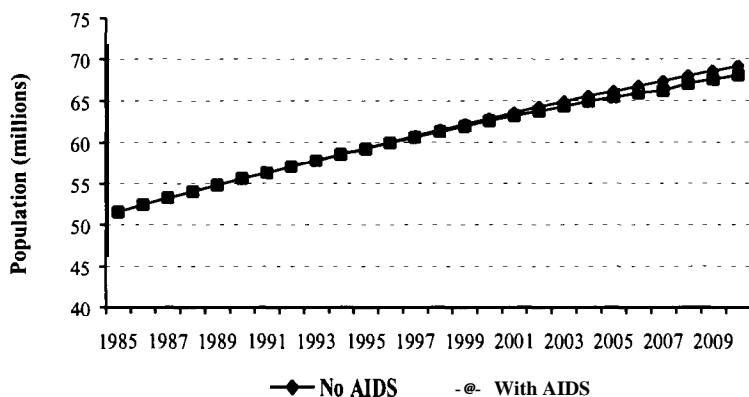
Demographic impact of AIDS

The impact of AIDS on the demographic process in Thailand can be illustrated by population size, annual growth rates and mortality indicators such as the crude death rate, age-specific death rate, infant mortality rate, child mortality rate and the life expectancy at birth. These parameters are projected through a comparison of scenarios for absence of AIDS and with AIDS.

It is now clear that the mortality impact of the AIDS epidemic on the Thai population has been substantial. However, comparisons of the estimates and projections of with- and without-AIDS show that the disease has had a more limited effect on Thai population dynamics.

Population size and annual growth rate

Figures 7 and 8 present the projected population sizes and annual growth rates for the with- and without-AIDS scenarios for 1985-2010. The difference between the projections indicates that by 2010 the cumulative impact of AIDS will result in the population size being 1-2 per cent lower than it would have been in the absence of AIDS. Although the impact of AIDS on population size does not appear large when examining the total population, the effect on the increase over the period 2000-2010 is, in fact, substantial. This can be seen from an examination of population growth-rate projections.

The data shown in figure 8 indicate that the with-AIDS scenario results in a growth rate that is substantially displaced by approximately three years compared with the scenario without AIDS. For example, in the presence of AIDS, the growth rate in 2000 was approximately equal to the expected growth rate in 2003 without AIDS.

Figure 8. Annual population growth rate for with- and without-AIDS scenarios, in Thailand, 1985-2010
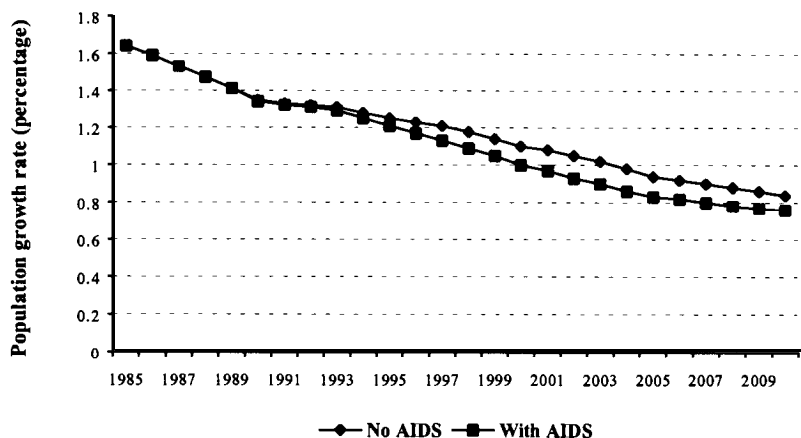
Number of deaths

The impact of AIDS is projected to be most severe in Thailand when the focus shifts to mortality. The total annual number of deaths in 2010 is projected to be 17 per cent higher under the AIDS scenario compared with the non-AIDS scenario. By the end of the projection period, AIDS is projected to result in approximately 50,000 more deaths per year than would have occurred in the absence of AIDS (figure 9).

Figure 9. Total deaths in the with- and without-AIDS scenarios in Thailand, 1985-2010
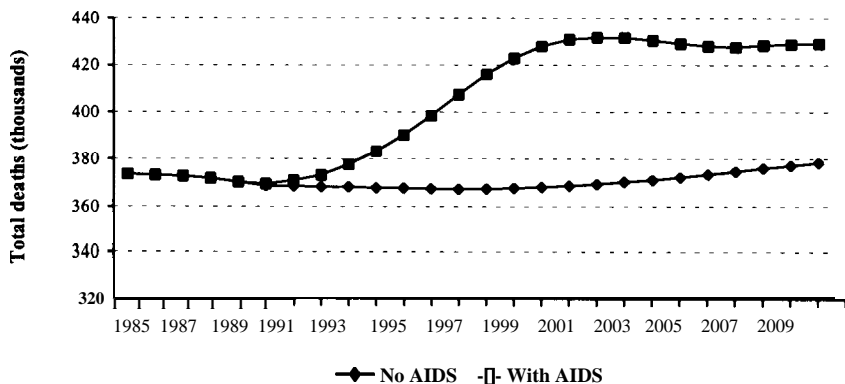
Figure 10. Crude death rate in with- and without-AIDS scenarios in Thailand, 1985-2010
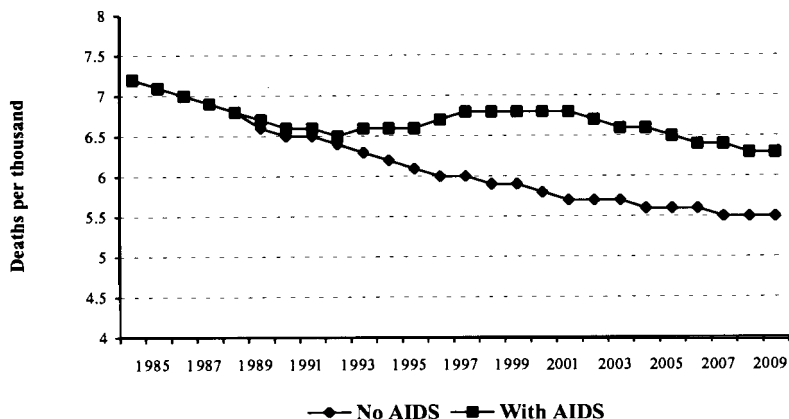
Crude death rate

In the absence of AIDS, the crude death rate is expected to decline from 7 deaths per 1,000 during 1985-1990 to 5.5 per 1,000 at the end of the projection period. AIDS will result in the crude death rate remaining at approximately seven deaths until 2000. The percentage difference of the crude death rate according to the with- and without-AIDS projections will peak during 2000-2005, when AIDS will be responsible for an increase of approximately 17 per cent in the crude death rate. At that point, the crude death rate is projected to be around 7 deaths per 1,000 with AIDS, instead of 6 deaths per 1,000 without AIDS (figure 10).

Age-specific mortality rate

The impact of AIDS on the age-specific mortality rates in Thailand is shown in figure 11. The greatest impact is in the group of highest sexual activity, aged between 25 and 39 years. The increase in mortality rates in that group is quite large, with a peak between the ages of 30 and 34 years.

Life expectancy at birth

Life expectancy at birth is a measure for indicating the average number of years that a newborn child can expect to live. Even in the presence of AIDS, life expectancy is projected to increase until the end of the projection period. However, for the years 2000-2005, life expectancy is estimated at 71 years, or three years less than without AIDS. In addition, levels are expected to remain unchanged until the end of the projection period (figure 12).

**Figure 11. Age-specific mortality rates with and
without AIDS in Thailand, 2000**
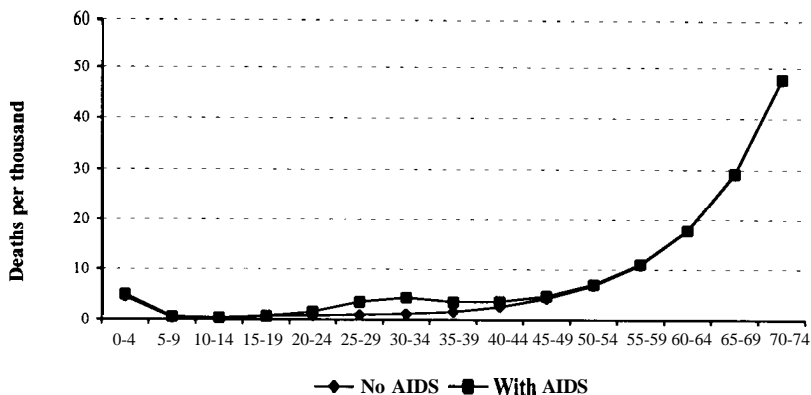
Infant and child mortality

Approximately 25 to 33 per cent of children born to HIV-positive women are likely to acquire the infection from their mothers. Paediatric HIV infection is expected to have a substantial impact on mortality during infancy and childhood, particularly among children aged 1-5 years.

Even in the presence of AIDS, infant mortality is projected to decline from 39 deaths among infants aged less than 1 year per 1,000 live births

**Figure 12. Life expectancy at birth with and without
AIDS in Thailand, 1985-2010**
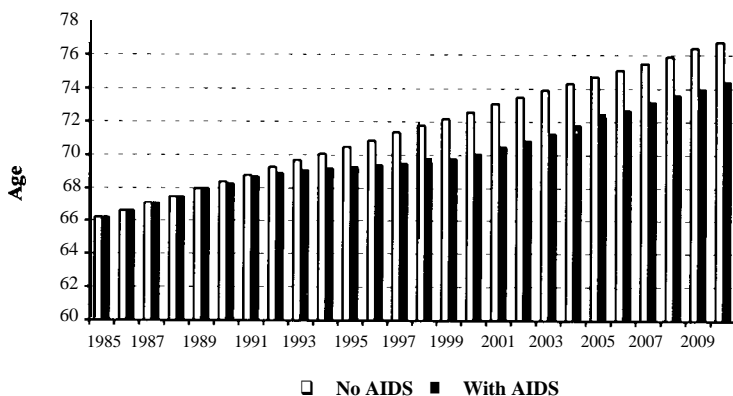
**Figure 13. Infant mortality rate with and without
AIDS in Thailand, 1985-2010**

☐ **No AIDS** ■ **With AIDS**
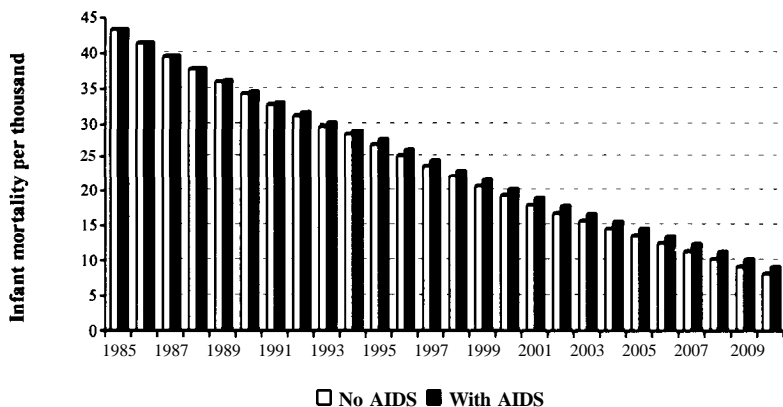
between 1985 and 1990 to 12 per 1,000 live births from 2005 to 2010. Even in
the absence of AIDS, a similar decline to 11 per 1000 is expected by the end of
the projection period (figure 13).

Child mortality rate is defined as the probability of dying between the
ages of 1 and 5 years. In the presence of AIDS, the child mortality rate will be
affected more than the infant mortality rate, as most infected children will
survive their first year of life only to die before they reach their fifth birthday.
The projections show that AIDS can be expected to result in child mortality
rates that are 14 per cent higher than they would have been in the absence of
AIDS between 2000-2005, and 30 per cent higher in 2010 (figure 14).

AIDS orphans

HIV/AIDS will have a serious impact on children, both directly and
indirectly. Some children of infected mothers will be infected with HIV and
will die from AIDS; the remainder will not be infected, but will be at risk of
becoming orphans when their mothers die from AIDS. With anti-retroviral
intervention for preventing mother-to-child HIV transmission, these relation-
ships will change. A positive impact is that a large portion of children will be
protected from HIV infection; only about 10 per cent of children born to
HIV-infected mothers will be infected. However, those surviving children will
become orphans, because the same anti-retroviral therapy will not benefit their
mothers.

The number of orphans resulting from AIDS mortality is already large
and is expected to increase rapidly in the near future. The projection shows that
the cumulative total number of AIDS orphans in Thailand is expected to climb

Figure 14. Child mortality rate with and without AIDS in Thailand, 1985-2010
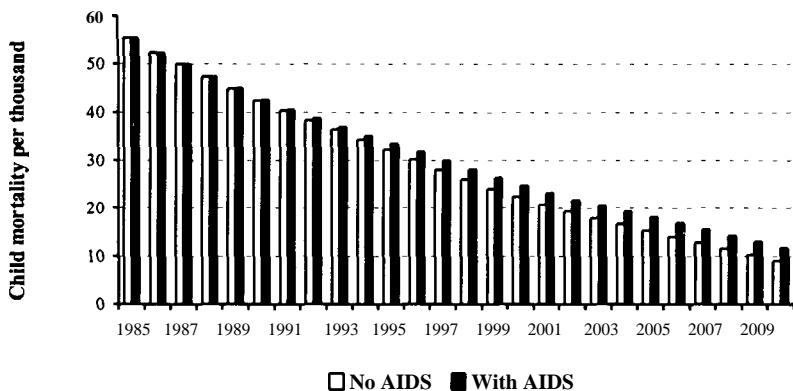
to 60,000 by 2000, then to double by 2005. The projection also shows that the number of AIDS orphans in Thailand is expected to reach nearly 200,000 by the end of the projection period (figure 15).

The seriousness of the dramatic increase in orphans due to the AIDS epidemic has not been fully appreciated nor planned for. Some studies in Thailand show that AIDS orphans are brought up by extended families, for example, by grandfathers and mothers (Brown and others, 1995; Thamathikul, 1997; Yoktri, 1996). However, those children are mostly in resource-poor

Figure 15. Number of AIDS orphans in Thailand, 1985-2010
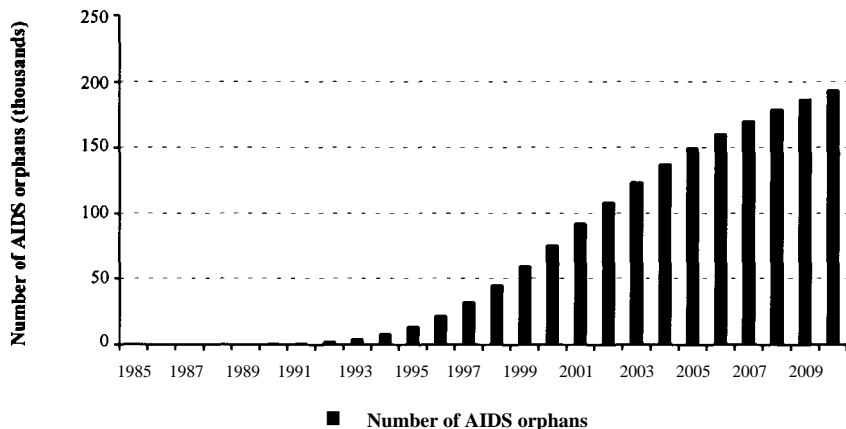
families that need social and financial support. They also face discrimination and social exclusion by neighbours and the community. This translates into the denial of access to playing, joining activities and schooling within the community. Any help or support for children orphaned by AIDS within the family network or community should therefore be aimed at reducing discrimination in society and at providing necessary financial subsidies in terms of nutrition and school fees for such children.

Discussion and conclusion

The results of the projections presented in this paper may differ from projections given elsewhere, owing to varying assumptions about past and current adult HIV prevalence as well as future prevalence. Differences may also result from the assumed length of the incubation period and the rate of perinatal transmission. Median prevalence, which is derived from ANC data, is used instead of mean prevalence in this paper as it is more representative of adult prevalence at the national level. Therefore, the projected numbers of those who will be affected are somewhat lower than those found in other studies. However, considerable effort was devoted during this study to examining the accuracy of ANC data and adjusting those data so that they could best represent the level of prevalence in adult Thais.

HIV prevalence in Thailand is declining. Furthermore, current levels of prevalence are low when compared to African countries. However, even with this low level of HIV prevalence (not more than 2 per cent), the impact is large, partly because most of those infected are within the reproductive age group. Although the AIDS epidemic in Thailand is not expected to reduce population size and growth rate, it will substantially reduce the amount by which the population would have grown in the absence of AIDS. The projections suggest a decline in total population size of about 1-2 per cent. The decline in the population growth rate as a result of HIV/AIDS mortality will be about 0.1 percentage point.

The long-standing nature of the AIDS epidemic in Thailand means that the cumulative impact of mortality will have a significant impact on some demographic parameters. Since the increase in mortality as a result of AIDS has occurred mainly in adults of reproductive age, it inevitably has an impact on child survival. Both adult and child mortality indicators show AIDS is having a large impact. The social, economic, emotional and health costs of this impact will be enormous. By 2010, AIDS is projected to result in 50,000 additional deaths, or a 17 per cent increase in the number of annual deaths that would have occurred in the absence of AIDS. The effect on child mortality is projected to be even greater.

The economic impact of AIDS derives, in part, from its demographic impact. AIDS kills prime-age adults, many of whom are at the peak of their economic productivity. Thus, it affects the productivity and efficiency of low- and semi-skilled workers, creates labour shortages as a result of sickness and strains the effectiveness of both formal and informal insurance mechanisms. That may encourage the replacement of sick or deceased workers with migrant labour from neighbouring countries. However, that approach could further emphasize any problems created by those migrants.

Although the macroeconomic effect of AIDS is likely to be small in Thailand, the effect on the health sector and the poor will be severe. Among the households that suffer AIDS deaths, lower income will mean that those households will be less able to cope with the medical expenses and loss of incomes. Therefore, AIDS will tend to worsen poverty and increase equality among the poor households.

One of the most tragic effects of the AIDS epidemic is the increase in the number of orphans who have lost one or both parents. AIDS is the cause not only of orphanhood but also of a decrease in human resource development in children, in terms of both physical and psychosocial aspects, as well as a decline in nutritional status, a reduction in schooling and an increase in the numbers of street children. These aspects form only the measurable impact. There remains the immeasurable impact of grief and phychological pain that is experienced by children who lose a parent. These effects are likely to be greatest among the poor, since they are more likely to become infected with HIV.

The projections presented in this paper have one core message. The human and social costs of AIDS are enormous, even at relatively low levels of prevalence. Prevention is straightforward and is much cheaper than treatment. Small decreases in prevalence can have significant effects in reducing the demographic impact of AIDS and, therefore, the economic and social costs that society has to face.

Acknowledgements

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