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COVER PHOTOGRAPH

A family in Mumbai, India, sharing a simple lunch in a makeshift shelter by the beach (photo by Wanphen Sreshthaputra).

Family transition in South Asia is the focus of the first article published in this issue of the *Asia-Pacific Population Journal*. It finds that with the process of modernization and rural-to-urban migration, extended families are becoming a thing of the past, while various new social problems and disorders arise. Ageing, Activities of Daily Living (ADL) Disabilities and the Need for Public Health Initiatives is the focus of the second article, which examines the prevalence of ADL impairments in two health domains (physical and sensory) of older adults in India.

The third article in this issue of the *Journal* provides a general overview of the New Zealand health and disability system, while the Demographer's Notebook looks into the changes in age-sex mortality patterns and causes of death in the Republic of Korea.

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UNESCAP works towards reducing poverty and managing globalization

Why is Funding for Population Activities Declining?

*Only by putting women and their reproductive freedom
at the centre of development will we see true progress
in alleviating the plight of poverty and win back donor support.*

By Steven W. Sinding[*]

The sexual and reproductive health community heralded the International Conference on Population and Development (ICPD) held in 1994 at Cairo as a new dawn in reproductive rights. ICPD saw a seismic shift in the way we look at reproductive health, away from the narrow confines of family planning and demographic targets to the broader areas of women's empowerment and young people's reproductive health needs. Most importantly, ICPD strengthened the concepts of "rights" and "choice" as the backbone of reproductive health. But many of the declarations hailed at the time remain just that – declarations. Many of

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the positive changes mooted at the Conference have not been implemented. No doubt this is partly owing to a lack of political resolve – particularly around sensitive issues of young people's sexual rights and abortion – but also, crucially, a lack of financial will.

It seems that population and development issues are losing ground against new and competing priorities. Why is this happening and how can we in the development community convince donors of the value of the ICPD agenda and help win back their support?

Are donors delivering?

Popular support affects the monies allocated to any policy area and, as purses have been tightened across the globe and budgets tailored to political ends, so the Cairo goals have begun to slip from the global agenda.

Let us begin with the positive news; in 2002 the world's wealthiest countries made more progress towards their ICPD goals than in the previous two years. Nordic countries are consistent voices in the battle for better reproductive health, as are Canada, the Netherlands and the United Kingdom of Great Britain and Northern Ireland. The European Commission is an increasingly important channel for development aid from European Union member States, not only in terms of funding but also political leadership.

But this progress is not consistent – some failed to deliver even a tiny fraction of their share. A number of donors have made commitments to make development aid proportional to their economies. Five countries, Belgium, France, Ireland, Spain and the United Kingdom, have pledged to provide 0.7 per cent of gross national income before 2015. But Japan and the United States of America, the world's two largest economies, remain far from the 0.7 per cent goal.

In short, donor countries would have had to triple their population assistance to meet the funding goal for 2005 agreed at ICPD.

Moreover, the target of allocating 4 per cent of official development assistance (ODA) to population programmes has not yet been achieved, with the current share resting at 2.46 per cent of ODA. Add to this the fact that ODA itself has remained stagnant for more than a decade and there is reason for real concern about fulfilling the ICPD agenda.

While the average of GNP given in official aid is 0.39 per cent across all 22 Organisation for Economic Cooperation and Development (OECD) donors, there

are differences between countries. The average for EU countries is 0.33 per cent, while for six of the Group of Seven countries (Canada, France, Germany, Italy, the United Kingdom, Japan and the United States of America) it is 0.19 per cent. Germany gives 0.27 per cent. Only four countries, Denmark, the Netherlands, Norway and Sweden, have consistently met or exceeded the goal of 0.7 per cent of GNP allocated to ODA.

Competition for Funds

We find ourselves competing for funds from dwindling reserves of development aid. Competition comes from three main areas.

1. Sector-wide approaches and health sector reform

Despite the fact that high fertility, in particular, unwanted fertility, is known to contribute to high morbidity and mortality rates among infants, women and children, many Governments downplay the priority of preventative health services and look instead to secondary and tertiary health services in high-cost facilities. Preventative and promotive services, such as those at the centre of the sexual and reproductive health agenda, often end up with little or no funding at all.

2. HIV/AIDS

An analysis of the breakdown of spending within the health sector confirms that family planning is losing ground to HIV/AIDS when it comes to funding. During the last 10 years, spending on HIV/AIDS has increased by 300 per cent, while the proportion spent on family planning has actually decreased in the last couple of years.

3. Millennium Development Goals

In 2000, the United Nations Millennium Summit gathered 189 Member States to adopt a Declaration and an ambitious set of eight goals, the Millennium Development Goals (MDGs). The overarching goal is to halve the level of poverty by 2015. While the MDGs represent a step forward in highlighting the plight of the poor, unfortunately they are silent on a number of goals and objectives of ICPD, in particular, its core goal of universal access to reproductive health services by 2015.

The MDGs are now providing the framework both for donors to allocate resources and Governments to determine their priorities at the national level. This makes it of paramount importance that the reproductive health and rights community *demonstrates* the impact of our work on poverty alleviation and also

shows how our efforts are succeeding in reducing maternal mortality, infant mortality and new cases of HIV/AIDS. I firmly believe that fulfilment of the Cairo goals is fundamental to the MDGs, and without reproductive freedom, a significant reduction of poverty is not possible.

The donor community's increasing attachment to MDGs can be problematic. In theory the goals related to maternal heath, HIV and gender equality should reinforce donor support for reproductive health care: but do they?

Some aid agencies and charities think not; they feel frustrated at the omission of reproductive health and rights from the plans for halving poverty. Since the adoption of the Millennium Development Goals, we have been working actively to demonstrate that without the active promotion of reproductive health and rights, poverty will continue to grow. But more needs to be done. This is why we will call for the adoption of a *universal access* indicator that can be used to hold Governments accountable for their progress, or lack of progress, on sexual and reproductive health and rights.

Our advocacy has already had some success, as seen in the inclusion of much of what we seek in the new Millennium Project report, *Investing in Development: a Practical Plan to Achieve the Millennium Development Goals*. This report, which will form the basis for the deliberations at the MDG Summit in September 2005, includes strong statements on sexual and reproductive health and rights, including both targets and indicators. We welcome this step forward and are prepared to strongly defend the robust language on sexual and reproductive health from attacks that we anticipate from various Member States, the Holy See and conservative non-governmental organizations.

Only by putting women and their reproductive freedom at the centre of development will we see true progress in alleviating the plight of poverty and win back donor support.

Ideology and its influences on donor support

A shortfall in funding is not the only threat to reproductive health care; ideological constraints pose a more insidious risk and influence donors' attitudes. As George W. Bush begins his second term as President of the United States of America, we are going to have to fight hard for sexual and reproductive health care which is firmly grounded in science, not ideology.

The Government of the United States made its intentions clear from the outset. One of the Government's first acts in January 2001 was to reimpose the

Mexico City Policy, more commonly known as the "Global Gag Rule". Under the Rule, no United States family planning assistance can be provided to foreign NGOs that use funding from any source to perform abortions, provide counselling or referral for abortion, or to lobby to make abortion legal or more available in their country.

When an NGO refuses to accept the Gag Rule it loses much more than funding: contraceptive supplies, technical support, partnerships and valuable contacts are also forfeit. The International Planned Parenthood Federation (IPPF) has witnessed the effects at first hand-closed clinics, community outreach programmes slashed, family planning scaled back and, inevitably, many more unsafe abortions.

HIV/AIDS assistance from the United States is subject to similarly punitive controls. So restrictive in fact, that they sever the obvious links between HIV activities and basic reproductive health services. The irony is that HIV is predominantly spread through sex: thus an essential tool to contain the virus remains basic contraceptive and family planning programmes.

To date, most United States support for HIV/AIDS has focused on prevention, most of which must conform to the ABC model, but with the emphasis firmly on A (Abstinence) and B (Be faithful), and C (Condoms) only deemed appropriate for certain designated "high-risk" groups. It also favours faith-based organizations promoting the kind of abstinence-only programmes that frustrates the more effective comprehensive prevention strategies.

A recent Human Rights Watch report provides an example of how abstinence- only programming can jeopardize an otherwise successful fight against HIV/AIDS. In Uganda, the report documents how United States-funded abstinence-only programmes are denying young people information about any method of HIV prevention other than sexual abstinence until marriage. Now Uganda is removing condoms from its HIV/AIDS strategy and Human Rights Watch fears that this triumph of ideology over fact-based public health strategy could be fatal. Of course, delaying sexual debut is a healthy choice for young people but they have the right to know that there are other effective means of prevention. We believe that abstinence messages should complement other HIV prevention strategies and not undermine them.

My hope is that donor countries resist efforts to impose a particular morality on individuals. Forty years of experience in family planning and reproductive

health have shown us that empowering individuals to make informed choices is the only approach that really works.

Conclusion

In the face of competing demands for funding and ideological threats to reproductive health, what should be our response? Since the 1970s we have seen great progress in the history of family planning – it is one of the great success stories of development history – and enormous strides in girls' education and women's reproductive rights. I believe that if the sexual and reproductive health community pulls together, if reproductive health and AIDS organizations integrate their work, if we work together to prove the critical link between ICPD goals and fighting poverty, then and only then will we see donors re-committing to funding reproductive health. If not, we risk losing those hard-won gains.

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Abstracts

An accelerated creation of nuclear families occurred with the process of modernization when large-scale migration from rural to urban areas occurred largely among young adults who left their villages and extended family systems, seeking employment in urban centres. This blurred their memory of the extended family model. Owing to the large-scale occupational mobility of younger generations to new geographical horizons and the associated erosion of the extended family system, new social problems and disorders emerged. It paved the way for long-term demographic implications, such as declining fertility, as demonstrated by low birth rates, and ageing and increased age at marriage for both genders. Thus the structure and functions of a nuclear family have a different form than when compared with the extended family. Families have moved from being extended to being more isolated. Consequently, many modern nuclear families are in crisis, both socially and economically, making the provision of social services and protection a necessity. Most of the welfare programmes are remedial in nature, making recipients of welfare services dependants. Therefore, social services have become a burden on national economies. The slower growth rate of economies in South Asian countries has forced national Governments to borrow money from international agencies such as the International Monetary Fund (IMF) and the World Bank. Since, those organizations advise governments to cut down expenditures on social services, some social service experts have suggested community-based services as an able alternative. However, without government

assistance and support, communities will not be able to initiate welfare services of their own, though they are much needed by the people in South Asia.

Ageing, Activities of Daily Living Disabilities and the Need for Public Health Initiatives: Some Evidence from a Household Survey in Delhi   47

Using a survey of 1,000 households in Delhi with elderly co-residents, this paper attempts to examine the prevalence of activities of daily living (ADL) impairments in two health domains of older adults in India physical and sensory. Three issues have been examined more specifically: (a) the prevalence of ADL dependence among the aged by gender and four socio-economic groups, (b) some of their causal risk factors and (c) public health as a route to forestall some of those conditions. The results indicate a very high prevalence of non-senescent ADL impairments in both the health domains, with the causal risk factors involving frailties, diseases, sedentary lifestyle and poor financial status of the aged. Women were found to have suffered more. This paper therefore derives a set of public health initiatives as a mechanism to prevent (or at least forestall) large-scale slippage in the functional health of the aged. Arguably, those interventions may also help the country to achieve its ultimate objectives of healthy and active ageing.

The New Zealand Health Care and Disability System   77

The purpose of this paper is to give a general overview of the New Zealand health and disability system. Following a brief description of the demographics of the population in New Zealand, the paper focuses on some important health outcome measures. Although significant achievements have been made in the New Zealand health sector, a greater proportion of people are being hospitalized for conditions that could theoretically be prevented through population-based health promotion strategies, possibly in combination with primary health care and support services. To address those emerging health issues the Government of New Zealand has implemented a number of strategies under the framework of the New Zealand Health Strategy.

This study analyses the patterns of and changes in mortality in the Republic of Korea in order to enhance understanding of the mortality transition in that country.

The mortality patterns of males used to match the Far Eastern Pattern until the 1980s, but it has been approaching the Western standard since then. Changes in mortality pattern in the Republic of Korea suggest that the Far Eastern Patterns is a phenomenon of incomplete mortality transition that may be expected to disappear with further declines in mortality.

The specific causes of death have also changed in the process of the mortality transition. In 1966, pneumonia and tuberculosis were the most important causes of death. In the 1990s, malignant neoplasms, cerebrovascular and heart diseases, as well as traffic accidents have emerged as the major causes of death. Chronic liver diseases and cirrhosis ranked as one of the top five causes of death in 2000.

Family Transition in South Asia: Provision of Social Services and Social Protection

Based on the existing policy, projects programmes and specific plans of action should be formulated in order to reduce the gravity of problems that is arising in South Asian countries in relation to the dynamics of family change.

By W. Indralal De Silva*

Family may be defined as a group of persons related to a specific degree, through blood, adoption or marriage. The difficulty is that comparative data on the family in the broad definition of the term are not available. The available statistics relate to households, defined by location, community or living arrangements. Surveys and censuses usually cover all households, not merely family households. Nevertheless, the latter type constitutes a major proportion enabling the characteristics of the totals to be identified as those of family households. For many demographic, socio-economic and political reasons, family members may disperse and consequently, the size of the household could be reduced although the size of

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the family would remain unchanged. In Asian countries, most young people live with their parents after marriage and later move to another place whenever custom imposes or the economic condition of the new couple permits. Lloyd and Duffy (1995) believe that, beyond this natural ebb and flow of family members, families are becoming more dispersed. Young and elderly adults, spouses and other relatives who might otherwise have shared a home are now more likely to live apart from one another. In 2004, the United Nations observed the tenth anniversary of the International Year of the Family. Thus, it appears timely to review some of the trends, such as fertility, marriage dissolution, migration, urbanization and ageing, that affect the family in the region.

Change in size and structure of the family

For practical reasons, censuses and surveys deal with the household unit rather than the family unit, since the meaning of the family differs across cultures. Households grow larger when children are born or ageing parents move in and then shrink again when elderly parents die and grown children leave to start their own households (Lloyd and Duffy, 1995). A household is defined in many surveys as a person or a group of persons that usually live and eat together. It is important to distinguish between a family, where members are related either by blood or by marriage, and a household, which involves the sharing of a housing unit, facilities and food.

Table 1. Average household size in South Asian countries

Region and country	1970s	1980s	1990s
South Asia			
Afghanistan	-	5.9	7.4
Bangladesh	-	5.7	5.2
India	-	5.5	5.4
Nepal	5.5	5.8	5.5
Pakistan	5.7	6.6	6.7
Sri Lanka	5.2	4.9	4.5

Source: *Demographic Yearbooks* 1973, 1987, 1995: UN.ORG – habrdd; Demographic and Health Surveys database.

Since average household size could be considered as proxy for the average family size, estimates obtained for the former are presented in table 1. A comparison of average household size over the period of the 1970s-1980s to the

1990s for South Asian countries in general indicates a declining trend. The largest country in the region, India, indicates a marginal decline in average household size from 5.5 to 5.4 persons during the 1980s and 1990s. Over the period 1970s-1980s to the 1990s, an increase in average household size is noted for Afghanistan and Pakistan, where fertility had not declined significantly. In those countries, the nuclear family is not the norm. High fertility and social and cultural factors favour co-residence of the extended family where non-relatives also may live. Over the past three decades, Sri Lanka has demonstrated a clear decline in average household size and reported the lowest figure for the region.

Families with a large number of persons are still the norm in many South Asian countries. In the 1990s, Pakistan reported the highest percentage of households (74.2 per cent) with five or more members (table 2). While Bangladesh, India and Nepal all indicated a marginal decline in the prevalence of large households, Sri Lanka indicated the strongest decline.

Table 2. Households with five or more members in South Asian countries

	Percentage of households with five or more members	
	1990s	**Around 2000**
South Asia		
Bangladesh	60.2	57.4
India	63.4	59.0
Nepal	62.1	59.5
Pakistan	74.2	-
Sri Lanka	52.6	46.6

Source: Demographic and Health Surveys database.

With the onset of fertility decline in almost all the countries in South Asia, a strong negative impact on the prevalence of large families would soon be experienced. Thus, the declining trend in average household size would emerge in almost all countries in the region during the early part of the present century.

A few decades ago in South Asian countries, single-person households were virtually non-existent. Nevertheless, consequent on population ageing, migration and the social and economic changes occurring in the region, there is an emerging trend of single-person households. For example, over the last couple of years in Nepal, the proportion of single-person households increased from 3.2 to 4.0 per cent (table 3).

Female-headed households

In many societies in Asia, the oldest male is designated as the head of household regardless of whether he is the primary source of economic support, the authority figure, or fulfills other tasks purportedly performed by household heads (Ayad and others, 1997). In the mean time, female-headed households have become a steadily growing phenomenon in many countries in the world, including countries of South Asia.

This increase in female-headed households could be due to a variety of reasons and, as Bruce and Lloyd (1992) indicated, widowhood, migration, non-marital fertility and marital instability could be some of the important causes. In recent decades, an increasing number of women, particularly rural women, have become heads of households because men, the traditional heads of households, have gone to the war front or are working far away. Moreover, owing to civil unrest and displacement, a refugee situation exists in a number of countries in the region, leaving the females to take over the task of running the household.

The highest proportion of female-headed households in South Asia could be observed in Sri Lanka, where the figures have increased from over 19 per cent in the 1990s to over 20 per cent in 2000 (table 3). In Sri Lanka, the increase is mainly due to political unrest and social strife in the southern areas of the country in the late 1980s, and the civil war in the north and east. Consequently, a significant number of young widows have emerged as female heads of households.

Table 3. Percentage of single-person households and female-headed households in South Asian countries

	Percentage of single- person households		Percentage of female-headed households	
	1990s	Around 2000	1990s	Around 2000
South Asia				
Bangladesh	1.2	1.5	8.0	8.0
India	2.8	3.1	9.0	10.0
Nepal	3.2	4.0	12.0	16.0
Pakistan	2.9	-	7.0	-
Sri Lanka	3.3	3.7	19.2	20.4

Source: Demographic and Health Surveys database.

A noteworthy feature of female-heading households is that the majority of them are widowed. In addition, the average size of their households is usually smaller than male-headed households. As noted in the 1994 Demographic Survey of Sri Lanka, 56 per cent of the female heads were found to be widowed, while only 37 per cent were married. In contrast, a mere 2 per cent of the male heads were reported to be widowed, while 95 per cent were currently married (Department of Census and Statistics, 1997).

The proportions of female-headed households are relatively low in Bangladesh and Pakistan. In Nepal and India, the proportion of female-headed households is increasing (table 3). In most South Asian societies, the incidence of female-headed households was rare, though they shoulder most of the household responsibilities.

Even though the data discussed above do not permit the identification of single-parent households, data from developed countries have shown that in the vast majority, the single parent is the mother (Kamerman and Kahn, 1988). The households in South Asian countries too may contain a substantial proportion of female-headed single-parent households (Lloyd and Desai, 1992).

Table 4. Heads of household by household size, Sri Lanka, 1993

Household size	Women heads	Men heads	Total
Total	**100.0**	**100.0**	**100.0**
1	10.2	2.4	4.0
2-4	55.8	42.2	45.1
5-6	24.7	39.3	36.2
7+	9.3	16.0	14.6

Source: *National Household Survey 1993*, Department of Census and Statistics, Colombo (1995).

A new social issue in many developing countries is seen in the context of these female-headed households because they have mostly one adult who is solely responsible for earnings. A typical feature is that those households are smaller than male-headed households (table 4). The 1993 National Household Survey of Sri Lanka shows that 66 per cent of households in the country comprised 1-4 members, while male-headed are estimated to be only 44 per cent. Thus, in many instances, male-headed households comprise more than one member for economic participation. Consequent to this, female-headed households are poorer than male-headed ones.

Determinants of change in family size and structure

Fertility change

The reduction in the average annual rate of population growth, which is a global phenomenon, primarily occurred owing to a reduction in fertility levels. An inevitable outcome of declining fertility rates and increasing age at first birth in most countries of the world is a reduction in family size (Jones, 1995). Although the fertility rates in the rest of the Asian countries have declined significantly, in South Asia, the decline has been much slower (Freedman, 1995). The total fertility rate (TFR) of Bhutan, Maldives and Pakistan was well over five live births per woman, even during the period 1995-2000 (table 5). India, with the largest population in the region, still reports a TFR of over three children. Sri Lanka is the only country in South Asia which has reached replacement level fertility, with a TFR of 2.1. It is especially noteworthy that major fertility declines in Asia have occurred in populations that are poor, with large rural proportions (Caldwell, 1993).

Table 5. Change in total fertility rate in South Asian countries, 1970-1975 to 1995-2000

Region and country	1970-1975	1980-1985	1990-1995	1995-2000
South Asia				
Afghanistan	7.4	7.4	7.0	-
Bangladesh	6.4	5.3	4.3	3.8
Bhutan	5.9	5.9	5.7	5.5
India	5.4	4.5	3.7	3.3
Maldives	7.0	6.8	6.1	5.8
Nepal	5.8	5.5	5.1	4.8
Pakistan	6.3	6.2	5.8	5.5
Sri Lanka	4.1	3.4	2.4	2.1

Source: United Nations (2001). *World Population Prospects: The 2000 Revision*, vol. I
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The aforementioned fertility decline experienced in most South Asian countries is due to the combined effect of the substantial socio-economic development achieved by those countries in the last two decades and the effective implementation of family planning programmes. In traditional societies where human labour was a source of strength to the family, more children were preferred

to less. The emphasis was on the quality rather than the quantity of children, a new concept added to family values. A main feature in the modern family system that has emerged is the changing attitude towards the value of children. Moreover, the economic benefits derived from children in a family decreased, owing to the economic development path in the economy which caused structural changes in the economy promoting non-agricultural employment. The Asian experience shows that large-scale economic development, though experienced by the West before irreversible fertility declines occurred, is not always necessary for major fertility declines. Increased consumption by a large majority of persons, improving health, the education of women, and advancing their status, can be the reasonable causation of Asian fertility decline.

Mortality change

Everywhere, mortality declines, particularly infant mortality, preceded fertility declines. Improved survival rates of children mean that when women reached the age of 30, they increasingly had achieved the completed family size they desired. Earlier, much larger numbers of births had been required to achieve the desired completed family size. Many countries in South Asia that have achieved a low level of fertility also have a low level of infant mortality (table 6). Sri Lanka, compared with the rest of the South Asian countries, reports the highest life expectancy at birth and at age 60.

Marriage dissolution

All marital unions, formal or informal, constituting families in society, do not progress through to complete the marriage cycle to reach the final dissolution through death. A considerable proportion of unions are disrupted suddenly at various points in the lifetime of married persons for reasons such as desertion, separation or divorce. An obvious failure in family relationship is where husband and wife cease to live together.

Divorce is the final dissolution, leaving both spouses legally free to enter another marriage contract. The variety of grounds for divorce is recognized across the countries in the Asian region, and of those, the two broad categories are cruelty and desertion. The law has not only initiated legal changes to enhance the status of women and their children within the family, but also contributes largely to the dissolution of unsatisfactory marriages. Separation or divorce may stigmatize a woman in Asian countries, reducing her social status and shrinking her support network, sometimes causing community members or her ex-partner's kin to reject her (Bruce, 1995).

Table 6. Life expectancy at birth and at age 60 by gender

South Asia		1975-1980		2000-2005		2025-2030	
		Males	**Females**	**Males**	**Females**	**Males**	**Females**
Afghanistan	At birth	39.8	39.8	43.0	43.5	53.0	54.0
	Age 60	-	-	-	-	-	-
Bangladesh	At birth	19.1	46.4	60.6	60.8	69.6	71.6
	Age 60	-	-	15.2	16.4	16.9	18.4
Bhutan	At birth	44.5	46.5	62.0	64.5	69.9	74.0
	Age 60	-	-	17.1	18.1	18.7	20.2
India	At birth	53.3	52.4	63.6	64.9	69.9	73.4
	Age 60	-	-	16.1	17.9	18.1	20.7
Maldives	At birth	55.9	53.2	68.3	67.0	74.3	76.3
	Age 60	-	-	16.6	17.4	18.4	20.3
Nepal	At birth	47.0	45.4	60.1	59.6	69.4	71.6
	Age 60	-	-	15.2	16.3	18.5	18.4
Pakistan	At birth	51.3	50.7	61.2	60.9	69.2	70.4
	Age 60	-	-	16.1	16.7	18.2	19.3
Sri Lanka	At birth	65.0	68.5	69.9	75.9	74.4	80.3
	Age 60	-	-	17.0	20.0	18.6	23.1

Source: United Nations (2002). *World Population Ageing: 1950-2050* (New York).

In many countries in the world, the incidence of divorce is increasing and that phenomenon is no exception to South Asia. In the last decade, as indicated in table 7, Bangladesh, India and Sri Lanka reported an increase in the proportion of divorced women in the age group 45-49. In Nepal, divorce is virtually non-existent. It is worth noting that the risk of divorce is higher in younger women. This contention is supported by evidence gained from a number of demographic and health surveys. Nevertheless, most divorced women tend to remarry subsequently. Thus those women who are reported as divorced at later ages of the reproductive span will remain single for the rest of their lives and live with their dependants. As reported from Bangladesh and India, divorce rates are higher at younger ages, but with increasing age those rates drop off steeply (Shaikh, 1998).

Divorce is sometimes thought to be the only solution to an unbearable relationship. It frees the spouse and children from a situation which may be damaging to the entire family. The fact is widely accepted that in any society when

a couple have children it will deter their divorce. Even in Western societies, a significantly large proportion of divorced couples have no living children. Thus in South Asian culture, childlessness exerts a strong effect on the divorce rate (Shahidullah, 1979). However it is believed that in the last couple of years, even in most of the Asian cultures, a growing proportion of divorces involve couples with young children (Goode, 1993). Such a trend in marital dissolution would lead to single parenthood as experienced at present by Western societies.

Table 7. Percentage of widowed and divorced women aged 45-49 in South Asian countries

	Widowed		Divorced	
	1990s	Around 2000	1990s	Around 2000
South Asia				
Bangladesh	15.9	18.3	1.5	2.7
India	12.5	13.3	0.2	0.3
Nepal	12.0	10.1	0.1	0.0
Pakistan	6.5	-	0.2	-
Sri Lanka	12.4	10.4	0.4	0.5

Source: Demographic and Health Surveys database.

Widowhood is most likely to strike the elderly and therefore carry with it the economic problems of ageing (table 7). The death of a spouse can result in single parenthood for women in most South Asian countries primarily for two reasons. First, in most countries in the region, the expectation of life at birth for females is higher than that of males. Second, at the time of marriage in almost all couples, the husband is significantly older than his wife. Since marital fertility continues even in the advanced stages of the reproductive span, widows are often left with dependent children to support (Bruce, 1995).

Bangladesh reported the highest proportion of widowed women in the age group 45-49 in the 1990s and still shows a further increase. At present, approximately one out of every five women in that age group is already widowed in Nepal. Countries such as Bangladesh and India indicate an increase in the incidence of widowhood, while in Nepal and Sri Lanka, the opposite is true. Presumably in Sri Lanka the decline in widowhood is expected with the decrease in age difference between husband and wife. For instance, the age difference between male and female age at marriage in Sri Lanka in 1963 was about six years, while by 1981 the figure had dropped to 3.5 years (De Silva, 1997). This trend would have contributed to a reduction of the percentage of women widowed in the age group 45-49.

Women's economic participation

The commercialization process which opened markets in many developing countries has succeeded in replacing the traditional cooperation in economic relationship with that of competition. In this process, the social institutions in those countries found themselves in conflict with the key aspects of the new economic systems. The family, as a social institution, has been a major victim in this respect (Wijewardena, 1996).

The economics of the family and the sexual division of labour within the family are very much determined by opportunities in the labour market. The main economic system itself has facilitated the removal of women from household chores and their entrance into the labour market. The market has invented a number of new labour-saving methods to enable women to supply their labour in the market (table 8).

Table 8. Percentage change in women's share of the labour force in South Asian countries

	Women's share of the labour force (Percentage aged 15 and over)		Labour force (as percentage of total population) 1995
	1970	**1995**	
South Asia			
Bangladesh	40	42	50
Bhutan	39	39	49
India	33	31	43
Maldives	36	43	41
Nepal	39	40	46
Pakistan	21	26	36
Sri Lanka	25	36	42

Source: Key indicators of developing Asian and Pacific Countries 1998, Vol. XXIX, Philippines; Asian Development Bank (1998).

Furthermore, the deregulation of labour markets has resulted in weakening income and employment security and the "feminization" of many jobs traditionally held by men (Standing, 1989). The declining ability of men to earn a "family wage" along with the growing need of cash for family maintenance has resulted in an increasing proportion of female members (particularly the wife) in the family to engage in economic activities (Lloyd and Duffy, 1995).

How strongly did the "feminization" of the labour market take place in South Asia? The highest female share of the labour force in 1970 was noted in Bangladesh while the least was noted in Pakistan (table 8). In almost all countries in South Asia, the women's share in the labour force increased.

The increase of divorce and separation, female-headed households and single-parent households all indicate the pressure on females, particularly mothers, to engage in economic activities in order to maintain the family unit. However, in many instances the income that she receives is not sufficient to support her family. This trend could be noted as "feminization of poverty" in which the poorest quartiles of society are increasingly made up of women and children.

Mothers throughout the region are expected to carry a significant domestic workload which is a vital form of economic production, though often not remunerated in cash. When both wage-earning and non-wage-earning forms of economic activity are accounted for, it becomes evident that mothers provide substantial or sole economic support to a larger proportion of families in the region (Bruce, 1995).

Migration and urbanization

International migration is about the movement of people beyond the defined boundaries of a country. Population movements beyond country boundaries, especially in the South Asian region, have increased, particularly during the period encompassing the last two to three decades. Issues relating to international migrants have become extremely important in international relations. Some of the major causes of such migratory trends are increasing globalization, economic interdependence, rapid population growth, ecological deterioration, civil war, ethnic and religious conflicts and the worsening of poverty.

International migration

The outmigration process of professionally qualified persons in search of employment overseas from South Asian countries to the United Kingdom of Great Britain and Northern Ireland, North America and Australia dates back to the late 1960s. In recent decades, labour migrants, refugees and asylum seekers have migrated largely because of prevailing internal strife in the region (table 9). Since 1995, Canada, Australia and New Zealand have opened new avenues for permanent migration to their countries, opening their doors to all those types of migrants and paving the way for thousands of professionally and technically qualified persons to migrate to those countries. Such induced migration has amounted to a fairly massive brain drain from the third world countries (Skeldon,

1993).   Contract labour migration involves most countries of South Asia. However, the major players are Bangladesh, India, Pakistan and Sri Lanka.

Table 9. Net migration and refugees: South Asian countries

Country	Population 2000 (thousands)	Migration stock 2000		Net migration 1995-2000		Number of refugees 2000
		Number (thousands)	Percentage	Number (thousands)	Rate per 1,000 people	
South Asia						
Sri Lanka	18,924	397	2.1	-31	-1.7	0
India	1,008,937	6,271	0.6	-280	-0.3	171
Pakistan	141,256	4,243	3.0	-70	-0.5	2,001
Nepal	23,043	619	2.7	-24	-1.1	129
Bangladesh	137,439	988	0.7	-60	-0.5	22
Maldives	291	3	1.1	0	0.0	**
Bhutan	2,085	10	0.5	-1	-0.5	00

Source: United Nations (2002), *International Migration 2002: Data Sheet*, New York.
Note: ** Insignificant.

The impact of international migration on the family

The intention of those migrants was purely to achieve a better livelihood for their families. A majority of the migrants were migrating for the first time, which indicated that they were inexperienced and had only an average level of education. A large percentage of such persons, especially females, were either semi-skilled or unskilled. Unskilled labour was provided largely by females who migrated as housemaids. The intention of some of the migrants to achieve a better livelihood was never achieved because of the absence of knowledge and guidance to utilize the earned foreign exchange at a maximum scale.

Contract migration required a temporary separation from the family and living in a culturally, ethnically and religiously different environment in the host country. Neither male nor female migrants to the Middle East are usually accompanied by their families (Ministry of Finance and Planning, 1996). For the successful implementation of such a migration policy, training for migrants and an adequate comprehension of cultural differences at the social point of destination for the migrants, and training for adjustment and coping during the period of

absence for the family at the point of destination, as well as avenues for alternative service provision for the family, are required. Nevertheless, the mechanisms for such training were not in place at the point of origin or at the point of destination during the initial phase of the process of contract migration. Since then some of the countries have attempted to put in place some administrative mechanisms to impart the necessary training and adjustment.

There seems to be a sharp impact of temporary migration on families of female migrants and on the migrants themselves. In Sri Lanka, the proportion of married persons among total migrants has been estimated to run between 50 and 70 per cent; however, an overwhelmingly large proportion of female migrants are married.

Within Sri Lanka, in the last quarter of 1995, various reports by the news media throw light on the dimension of the social impact of the migrant family. During the observed period of three months, 49 migration-related adverse incidents had been reported in the daily newspapers. Such incidents included 13 suicides and deaths of the migrant or members of the family. Other cases of clandestine love affairs (migrant or spouse) and instances of abandoning the family have been observed. Some of the evidence available at the Foreign Employment Bureau of Sri Lanka also establishes some of those contentions. The tabulations presented in this article provide useful insights into several aspects often overlooked in mapping out policy which looks at migration for employment as one answer to the high levels of unemployment prevailing in some of the countries of origin. The magnitude and dimension of the social consequences demand a serious in-depth investigation into the issue from the sociocultural angle. The negative consequences of labour exports, particularly of female migration, have led to vocal lobbies urging a ban on or regulation of such movement from time to time (ibid.).

Signs of stress and strain are becoming increasingly evident in marital and family relationships. Successive empirical investigations have demonstrated that the costly price paid by families were in the form of disruption of family life and disorientation of matrimonial and social relationships (Ministry of Finance and Planning, 1996; Eckenrode and Gore, 1990). Incidents of family break-up owing to migration are reported to be increasing. Sociologists have found a high tendency towards bigamy or polygamy following the separation of married couples as a result of migration. The past experiences in Sri Lanka show that the divorce rate is higher among migrant families (Dias, 1984). Another survey conducted in Sri Lanka (Hettige, 1992) indicated that wasteful consumption, an epidemic of alcoholism and gambling, devaluation of the moral values of migrant women, particularly the unmarried, and the problem of social reintegration upon return are

among the negative effects highlighted. Those are "symptomatic of the emigrant social order" (ibid.). The consequences of male outmigration have also been observed. Cases of men gambling and wasting money, obliging their wives to repeat migration as a mode of survival, were also noted in that survey.

Transfer of the dependency burden of the family from the younger to the older generations is an immediate outcome of the migration of prime working-age members of the family. This change in the age composition of the family occurs with a skewed effect in the direction of the bulged proportion of older persons in the family (UNESCO, 1982; De Silva, 1994).

Transference of decision-making in the family from traditional male heads of household to female members who are earning substantial incomes for the family from foreign employment is observed. The emergence of a new phenomenon in the form of female-dominated household planning has become a significant feature among some of the migrant families. Women's contribution to the household economy in the poor South Asian countries is not well documented and hitherto unrecognized in the national accounts (Bruce, 1995). In recent years, that contribution enhanced foreign remittances brought into those poor countries, creating a new socio-economic scenario which significantly increased the account and recognized the economic role of women in the community and family structure.

The majority of migrants intemporary employment abroad are married and have left their spouses and children behind. The duration of stay by migrants in Middle Eastern countries is approximately two to three years with the opportunity for home leave on completion of one year of work. The workers' long absences from their households, especially in the case of married persons with young children, make it necessary for them to seek the assistance of one parent or other siblings to attend to the needs of the young children and to assist the spouse left behind. When an immediate family member is not available, the assistance of distant relatives is sought.

A parallel development is the more active participation of the male spouse in multiple family roles hitherto performed by females only, particularly in families where married women have migrated. A redistribution of responsibilities among other members of the family has taken place. To a very large degree the migrant's spouse takes over some of the additional responsibilities (child care, marketing etc.). In some instances, such redistribution of family responsibilities within the family has had a negative effect. For example, the elder child may be discontinued from schooling to look after the young siblings left behind or to attend to other

household chores (De Silva, 1998). Such instances are a matter of concern and have caused a breakdown of family ties and family disruption.

The consequences of parental outmigration for extended periods have to be seen in their manifold dimensions. In Sri Lanka for example, if a rough estimate could be made for 1996 on the basis of the Sri Lanka Bureau of Foreign Employment estimates, the stock of contract workers currently abroad amounts to 550,000. A survey of 224 children left behind by their mothers revealed that 80 per cent of them were less than 15 years of age (Fernando, 1996). Such separations had lasting repercussions on the child's personality, development, conduct, performance in studies and even attitude to society and life. Experiences of the socio-economic, cultural and psychological impacts of contract migration on the immediate family system in Sri Lanka is also highlighted in several surveys (Fernando, 1989). Hettige (1992) refers to psychological and behavioural problems of children, deterioration of parent-child relationships, etc. Interviews with doctors and counsellors reported in the same study in Sri Lanka bring out the concern expressed by health, nutritional and education experts over those negative aspects of the migration phenomenon. The extent to which surrogate parents can make up for the deprivation of maternal care is a controversial issue. In urban areas where the extended family system is more diluted, the adverse impact on children would be stronger (Fernando, 1989).

The social impact of return migration is mainly related with the reintegration and social adjustment of returnees. The problems of readjustment/reintegration of the returnee migrant to the family and community appear to have visible manifestations, because of the prolonged exposure of that member of the family to work and distance. For example, a higher incidence of divorce is reported among migrants. The incidence of divorce and separation was found to be higher in the first year after return. One conclusion can be that migration has a negative effect on marital stability (Ministry of Finance and Planning, 1996).

Internal migration

Internal migration may be defined as the movement of people from one geographical area to another within an internationally recognized State border. Two such migration streams may be rural-to-urban and rural-to-rural migration.

Rural-to-urban migration enhances the process of urbanization and is inevitably linked to the process of economic development. The flows of people from rural to urban areas occur largely for economic reasons (Naveen, 2001). Nevertheless, there are other reasons, such as the need to access the better educational or health services available in urban areas, that function as pull factors

to draw people from rural to urban areas. Two other reasons contributing to urban population growth may be changes in administrative boundaries which cause physical expansion of, and a natural increase of population in, urban areas. In India, during the period 1981-1991, the in-migration process accounted for at least 34 per cent of the urban growth (Mathur, 1992).

Social and economic disparities and lack of job opportunities in rural areas have resulted in the increased rural-to-urban migration in many South Asian countries (Perera, 1992). The process of urbanization may be described as an irreversible process. The emergence of the "big city" phenomenon in Asian countries is linked to large-scale rural-to-urban migration in Asian countries. Such a migration pattern occurs within the framework of high population growth in which the agricultural sector is unable to absorb the additional labour supply of the growing rural population. Syed (1992) notes that "population mobility whether between or within the rural and urban sectors, is related to sustainable development. People who moved out of unsustainable systems in rural areas to rapidly growing urban centres often move into urban poverty". Thus, development planners are faced with problems of growing demands on inadequate urban infrastructure. The vicious circle of poverty continues to move from rural to urban areas. Such mass poverty associated with the process of urbanization requires immediate attention and urgent solutions.

Impact of internal migration on the family

While international migration has a substantial impact of on the family, internal migration also affects the structure and functions of the family. For married women, the chance to break out from a confined role appears to be greater in urban than in rural areas. They can evade the direct control of their family, causing traditional family structures to collapse and paving the way for the development of new ones (Findly and Williams, 1991). Such outcomes are particularly important in patrilineal and patrilocal societies, when migration results in the woman living away from her in-laws, which in turn encourages the development of more intimate and egalitarian relationships between husband and wife. Thus, a study of urban neighbourhoods in a city in northern India revealed that the trend towards the incorporation of married women into their husband's kin network was weak; nevertheless, stronger ties were observed between the women concerned and the family of origin than was typical in traditional rural India (Perera, 1992).

Married women migrating from rural to urban areas of South Asian countries often experience not only a transition from an extended to a nuclear family but also an important change in the nature of their economic activity. From being unpaid

family workers, they become wage earners. Such a change is likely to enhance the independence of women and to strengthen their role in decision-making within the family. In general, the higher a woman's income as a proportion of total family income is, the more power she holds in the family (ibid.).

Urbanization and the effects on the family

The increased proportions of population residing in urban areas of South Asian countries, observed during the last two decades, and with a potential for faster growth in the immediate future (table 10), is a major development trend affecting families. The urbanization process tended to influence the stabilization process of the nucleation of the family system because of urban congestion and the housing patterns, particularly of the low-income groups. The demographic transition occurring in some of the South Asian countries, which had reached a stage of low mortality and low fertility (tending towards replacement-level fertility), contributed to enhancing the process of family nucleation. A gradual collapse of the extended family system in those countries tended to create new problems of family support for the young dependants and the elderly in the family. Time series data showing the age structure of urban areas of South Asian countries show that the proportion of the elderly has increased while the proportion of working-age population and of working parents has remained high. Moreover, consequent to rural-to-urban migration and rapid urbanization, a small average household size is observed for urban areas, compared with rural areas, in most of the South Asian countries (table 11).

Table 10. Percentage of population residing in urban areas by South Asian countries (1980-2020)

Country	1980	1990	2000	2010	2020
Afghanistan	15.7	18.2	22.2	28.2	35.9
Bangladesh	11.3	16.4	22.9	30.3	38.2
Bhutan	3.9	5.3	7.8	11.4	16.2
India	23.1	27.0	32.3	39.9	47.3
Nepal	6.1	9.6	14.3	20.0	26.8
Pakistan	28.1	32.0	37.9	45.4	53.1
Sri Lanka	21.6	21.4	24.2	30.7	38.6
South Asia	**23.1**	**27.3**	**32.8**	**39.9**	**47.7**

Source: United Nations (1991).

The adoption of urban lifestyles triggered changes in the quality of food consumed in the family. The adoption of the fast-food culture for convenience and increased preference for such food types, particularly among the younger generation, in addition to stress from work and family, brought about a change in the epidemiological profile of the urban population in the region by increasing the mortality and morbidity rates owing to diseases originating from those lifestyle changes (Eckenrode and Gore, 1990).

The various types of unhealthy housing prevalent in urban areas caused unhealthy lifestyles in the family. Congestion and pollution have become synonymous with living in slum and shanty dwellings. Unplanned industrial development in urban areas and the resultant overurbanization seen in most of the major cities and other urban centres of South Asia have caused massive environmental degradation and pollution problems. The provision of necessary services, safe water supply, sewerage and other services and facilities for the families living in urban areas have become major problems for urban planners.

Table 11. Average household size in urban areas in 1990s

Region and country	Urban	Rural	Total
South Asia			
Bangladesh	5.2	5.2	5.2
India	5.2	5.6	5.4
Nepal	5.0	5.3	5.3
Pakistan	7.2	6.5	6.7
Sri Lanka	4.8	4.5	4.5

Source: Demography and Health Surveys Database.

Ageing and retirement

Population ageing is emerging as a serious problem in many South Asian countries. Those trends have interacted with major changes in patterns of individual and family life. In combination with economic development and social change, increases in the average lifetime of the individual allow for greater time spent in family roles (United Nations, 1994).

Improvements in mortality have contributed to higher survivorship of the populations. The adoption of new techniques to combat infectious diseases has resulted in increases in infant and child survival during the first half of the twentieth century. In more recent years, a dramatic turn of demographic events is experienced, resulting in longevity of older ages.

The ageing process and the resultant issues are an outcome of the irreversible changes experienced by the demographic dynamics in the region. Among the observed effects of mortality decline are the changes that occurred in fertility. In addition to the effects of the social change, the success of family planning programmes contributed to a decline in fertility. Lower fertility had an indirect effect on the issue of the elderly as the proportion of the elderly to the total population began to rise. International migration of younger persons further aggravated the situation. The age selectivity of migration skewing towards younger ages contributed to making the proportion of the elderly population significant in relation to the other age segments of the total population (United Nations, 1999).

Comparative to any country in the South Asian region, the highest proportion of elderly population i.e. those persons of age 60 years and more, is reported to be in Sri Lanka. The medium variant projection shows that this proportion would increase to 18 per cent by 2025 (table 12). The country least affected by ageing is Afghanistan, where at present less than 5 per cent of the population is enumerated as elderly. By contrast, owing to the advanced stages of demographic transition that occurred in the country, Sri Lanka will have the highest proportion of elderly persons by 2025 (De Silva, 1994).

**Table 12. Percentage of population aged 60 years and over
in South Asian countries**

Region and country	1975	2000	2025
South Asia			
Afghanistan	4.7	4.7	5.2
Bangladesh	5.5	4.9	8.4
Bhutan	5.7	6.5	7.0
India	6.2	7.6	12.5
Maldives	6.9	5.3	6.2
Nepal	5.7	5.9	7.1
Pakistan	5.5	5.8	7.3
Sri Lanka	6.3	9.3	18.0

Source: United Nations (2002), *World Population Ageing: 1950-2050,* New York (2002).

In South Asian countries the growth rate of the population aged 60 and above exceeds that of national populations. More significant is the progressive upward trend in the growth rate of the elderly and declining trends in national growth rates. Projections indicate a pronounced increase in the elderly population in the decades

to follow. The growth of the elderly population, relative to the prime age segment of the total population, has led to changes in the dependency ratios. The effects of those changes are that increasingly large proportions of the elderly (those who are aged more than 60) will be increasingly dependent on a gradually declining proportion of the working-age population (those who are in the age group 15-59 years). Associated with those trends affecting the economy are implications related to family support of the elderly, as one would anticipate that fewer persons in the younger generation would be available to support and care for the growing number of the elderly in the family (United Nations, 1999). The potential supply ratios, which measure the number of persons in the working ages per every elderly person, have declined in most countries in South Asia (table 13). The support ratio will decline significantly in the next two decades and Sri Lanka is likely to experience the highest decline.

Table 13. Potential support ratio in South Asian countries

Region and country	1975	2000	2025
South Asia			
Afghanistan	19.4	18.9	17.8
Bangladesh	14.8	18.6	12.9
Bhutan	15.8	12.5	12.4
India	14.7	12.4	8.2
Maldives	12.2	15.0	15.0
Nepal	16.1	14.8	13.6
Pakistan	16.1	14.8	12.7
Sri Lanka	14.8	10.8	5.5

Source: United Nations (2002), *World Population Ageing: 1950-2050*, New York (2002).
Note: The Potential Support Ratio is the number of persons age 15-64 per every person ages 65 or older.

The elderly in South Asian countries face many problems such as insolvency, loss of authority, social insecurity, insufficient recreational facilities, lack of overall physical and mental care, problems associated with living arrangements etc. Ultimately those problems affect the family.

Impact of ageing on the family

Caring for older persons seems to have other implications that are an outcome of changing societal norms and the resultant changes that had taken effect within families. Despite the fact that children, in the region as a whole, are given high

priority, the traditional obligations towards parents and thefeeling duty-bound that they are to provide them with the love and care that they deserve in the twilight years of their lives are now difficult to fulfill. The prospect of the younger generation living with their parents is becoming increasingly difficult, if not impractical, to realize as the search for employment opportunities takes them increasingly to locations away from their homes and to distant lands (ibid.).

The process of ageing leads at a point in time to loss of occupation and loss of income, causing, in most cases, economic hardship in old age. Not only is the self-sufficiency and economic independence of the person likely to be lost, but also his/her overall standard of living is expected to decline. The contention that old age is often characterized by diminishing income is postulated by the age income cycle theory, which proposes that relative to the income of a person's working life, the income of those at retirement is low.

The bulk of employment in South Asian countries is in the agricultural sector. The large majority of persons are employed as casual and regular labourers, farmers, part-time workers and other types of wage labourers, self-employed persons, domestic labour and other minor employees. Those types of traditional occupations bring only a marginal income, sufficient for one person to lead a hand-to-mouth existence. Hence at retirement, low-income earning segments of the labour force become more vulnerable to economic hazards (Perera, 1989).

In the South Asian countries, a substantial proportion of the working-age populations, who are in the non-formal sector, are left without a secure definite source of income in their old age. This category includes those who have been employed in the non-permanent subsidiary industries. The chronic levels of unemployment prevailing in the region entail that in South Asian countries, most of the older persons have not been working in recent times.

After retirement a major proportion of people and their families feel additional economic hardship (United Nations, 1999). In the rural sector, the proportion engaged in agricultural self-employment is observed to be highest in Sri Lanka, with around 42 per cent, followed by Bangladesh and Pakistan with around 21 and 10 per cent, respectively (table 14). Only the government servants and employees in the private sector are assured of a pension or a superannuation benefit. The degree of benefits at retirement is directly linked to the type of employment of persons (Chen and Jones, 1989).

In South Asian countries, there has been a long tradition of supporting the elderly members of the family, a feature which is still dominant, providing economic security for the majority of the elderly in the rural areas. Nevertheless,

the changing family patterns and sizes have negated this security blanket for the elderly. The reduction of the family size could be attributed partly to economic difficulties, the low level of income, the high cost of living, the costs of education of children and the need to maintain a better standard of living, which is best achieved within a smaller-size family. Consequently, the nuclear family became a model and soon ruled out the traditional, extended family usually consisting of three generations. The direct outcome of such a situation is the decrease in the quantum of the family support and protection provided for the aged.

Table 14. Distribution of elderly persons by type of occupation

Occupation	Bangladesh		Pakistan		Sri Lanka	
	Rural	Urban	Rural	Urban	Rural	Urban
Agriculture, self-employed	21.4	2.9	10.5	1.0	42.3	0.5
Agricultural workers	5.5	2.9	2.0	0.5	-	-
Non-agricultural, self-employed	2.3	9.3	2.5	14.9	5.6	25.2
Non-agricultural, private Individual employed	0.0	2.4	1.5	1.0	1.4	2.4
Non-agricultural, private company employed	0.5	1.0	1.0	4.4	0.5	1.4
Government	0.5	4.4	0.5	1.5	7.5	27.5
Non-worked	69.8	77.1	82.0	76.7	42.7	43.0

Source: United Nations (1999).

There is a wide variety of family forms in Asia's diverse cultures, perhaps with more variations now than in the past. Demographic change has altered the membership of families in terms of numbers, types and characteristics of kin, both within and across generations, and also within the age structure. Despite that, the institution of the family is the basic institution around which societies organize themselves. Changes in family structures would, therefore, affect the care and support of the elderly (Tan, 1992).

In Asian countries, there is a long-standing family tradition of mutual support between the elderly and other family members. It is therefore important to understand the demographic, social and economic facets of such mutual support, which are interrelated with the continuous concern, ability and participation of the elderly to play an active role through support, including financial given to the

family. Such support, given by the elderly reflects not only their concern for the well-being of the family but also their ability to work. To understand the demographic and socio-economic dimension of support given by the elderly, the consumption patterns of the family resources out of the total earnings, and the patterns of savings of the family, have to be examined (United Nations, 1997).

The experience of Pakistan shows that monetary assistance had been given to the family budget by older persons drawing on their savings. In such instances, the economic status of the elderly is positively associated with their ability to be self-sufficient in basic needs. Data from the same country show that the financial contribution of the older persons to the family budget is positively associated with their good health and other variables, such as not being too old, being relatively more educated, resuming work after completing a longer working life, being self-sufficient in basic needs, having a higher income at age 50, having family help in working (not monetary) and children not self-sufficient in basic needs. To achieve such a secure situation, it is assumed that the elderly drew at least some money from their savings accumulated over their working lives. Those who worked as employees of some organization may also have some money from their employment but the pensions paid in Pakistan are generally too small (United Nations, 1997).

Details of the responses given by the elderly in a survey in Pakistan –whether they helped their children in income-generating work, with or without getting paid – are contained in table 15. Of the elderly males questioned, 191 said that they did help in their children's income-generating activities, but without being paid. This may also imply that the help was given in a family enterprise or work situation. Only 11 elderly males said that they were remunerated for their work contribution. The remainder either gave a negative reply or no response was available. The mean income of those who contributed to the work of their children was higher than those who did not do so.

Among the elderly females, 81 said that they helped their children without getting paid, while only one woman said that she was paid for her work (table 15). The remainder either gave a negative reply to the question or did not respond because they were not economically active (ibid.).

The need to restructure family roles appears increasingly evident. The earlier role, definition and responsibility no longer "fit".

The large majority of elderly Sri Lankans are cared for by their families, in most cases by co-residing children. More than 80 per cent of the elderly aged over 60 live with their children and two thirds live in households along with at least four

other people. In this environment, most elderly people are expected to be cared for in their children's households.

Table 15. Social support pattern and income of the elderly by gender: help to children in generating income

Social support question	Gender	How	Case
Do elderly help children to generate income without or by getting paid?	Male		334
		Yes, without getting paid	191
		Yes, by getting paid	11
		No	69
		Not available	63
	Female		186
		Yes, without getting paid	81
		Yes, by getting paid	1
		No	62
		Not available	42

Source: United Nations (1997).

In traditional agrarian societies, production tends to be family-based and unspecialized (Ogawa and Rutherford, 1994). Successive generations tend to have the same occupation, typically farming. Parental authority over children is reinforced by a parent's greater experience and expertise, while the co-residence of parents and adult children makes both economic and social sense. With modernization, production shifts to a more specialized process and modern market economies are dependent on an inherent division of labour. Increasing individualism in the labour market eventually diffuses into other areas of life, including the legal system, family relations and social values. Parental authority of elderly parents over adult children loosens, and generally weakens most of its economic and legal basis. Changing outlooks, and the need for adult children to move in search of employment, results in a decline in the coexistence of multigenerational members of the family. This is particularly the case in the event of rapid urbanization, where members of the extended family living in rural areas are left behind as children move to the cities. This is an important process affecting the family structure (IPS, 1998; De Silva, 1994).

Increased schooling may break down traditional values and norms, including the family values, which entails a specific obligation for the children to support and

care for their elderly parents. Although the evidence for such effects remains incomplete, such situations may occur for two reasons. First, increased schooling results in children spending less time receiving care and guidance from their parents and hence the feeling of a debt towards the parents is reduced. Second, because the content of classes provided in formal schooling tends to be heavily westernized, the system appears to inculcate western values of individualism and self-realization (Caldwell, 1980). Both processes make the younger generation less willing to sacrifice their time to provide physical care for their elderly parents (Mason, 1992). This may be a major problem in the family in relation to the caregiving aspects of old age support.

With further development, are the elderly in South Asia less likely to receive care and support from their children? The answer given by most experts on ageing in South Asia is a qualified "yes". Norms about the care of the elderly by their children were traditional and strong in most of South Asia and appear to remain strong. Despite this, traditional patterns of co-residence are eroding in many countries. There are also isolated reports of physical separations between elderly parents and their children contributing to the neglect of the elderly. Intergenerational co-residence and support of the elderly by their children also appear to be less common in the more "modernized" sectors of the population, suggesting that as societies modernize, the traditional intergenerational relationship will tend to break down. Thus, although family support and care of the elderly are unlikely to disappear in the near future, family care of the elderly seems to be decreasing, as the countries and areas of the South Asian region indicate (ibid.).

The current levels and patterns of the prevalence of disability among the elderly need to be appropriately assessed. Mobility is one of the first things to be affected by disability. In old age, the usual weaknesses are worsened by disabilities. With increasing numbers of the elderly, the proportionate number of disabled among them is likely to grow (United Nations, 1996). This trend constitutes a major economic hardship for many South Asian families, because a major proportion of them are poor or very poor.

Impact of ageing on health-care costs

Population ageing leads to increased health-care costs in almost all developing countries. The impact can be evaluated from government health expenditures as well as from an overall societal perspective.

After the age of 65, the probability of disability or of impairment in general functioning increases dramatically. While people are increasingly living beyond

70 years of age, the increased life expectancy does not necessarily mean additional years of life free of disability. As the number of disabled elderly grows, those individuals will need additional support in order to maintain themselves (Rannan-Eliya and others, 1998).

Within the domain of extended family relationships, the concern expressed and help given by the family members during sickness or disability of the aged is usually more conspicuous. In fact, the main source of social security for the elderly consists of physical, emotional and monetary support provided by the family or close relations (United Nations, 1996).

The traditional solidarity between generations who work through the institutions of the family and who receive further motivation from religious and cultural values has so far worked in Pakistan to ensure a sufficient level of social security. Such mutual help has not only been prevalent for the sustenance of family, social and economic ties but has also extended beyond the domains of the family to the community level, especially at the time of marriages, sickness, old-age disability and in the event of emergencies (United Nations, 1997).

The problem of care for the elderly is likely to be especially acute for older women, who constitute the majority of the elderly in virtually all low-mortality populations (Andrews and Hennink, 1992; Martin, 1988). Because of the greater longevity among women in most countries in Asia, and the tendency for men to marry women younger than themselves, women are more likely than men to end their lives widowed. The implication of this is a serious gender asymmetry in the support and care of the elderly (Martin, 1988).

In many South Asian countries, because of the increased life expectancy of women and the higher proportions of widowed, divorced or lonely among them, the economic and social problems for women are often worse than for men. The incidence of marriage among elderly women being low, their economic dependence on others is higher, especially in populations where female economic activity in general is low. With increasing physical and mental capacity, their economic dependence on family members is higher than that of men. The prolonged care of such women (because of their longer lifespan) necessitates that those on whom they depend for their livelihood have sufficient financial resources (United Nations, 1996).

Provision of social services and social protection

Social services refer to programmes that help people deal with various social problems (Gilbert and others, 1980). Social services are responses to new social

institutions and therefore the field of social services is expanding. Social protection incorporates programmes providing social welfare that are directed to help people who cannot meet their needs by the open market system or the family. Thus, social protection is not only a welfare issue but also a social and economic development issue.

According to some schools of thought on welfare, people can meet their basic needs through two mechanisms: one is the family and the other the market. When a person fails to meet his/her basic needs through those mechanisms, social welfare comes to help. This is specially done through the State, in this case, the welfare state. The welfare state can be defined as a country with legislation and programmes that protect and support its citizens through governmental provision of direct services that contribute to improve their quality of life. However, for various reasons, the welfare state is in crisis.

According to some writers (Taylor-Gooby and Dale, 1985), despite factors of uncertainty and instability, the major contributory factor for a crisis to erupt is the scarcity of resources. This is much more applicable to the developing world, including countries in South Asia. This challenge spans all countries in that region and has major implications for many marginalized families that have emerged in the processes of rapid economic growth, economic transition, liberalization and globalization.

Most welfare programmes are remedial in nature, making recipients of welfare services dependants. Therefore, social services tend to become a burden on national economies. Slower economic growth rates have forced national Governments to borrow money from international agencies such as the International Monetary Fund and the World Bank. Those two organizations often advise Governments to cut down expenditure on social services. Therefore some experts on social services suggest community-based services as an able alternative (Jim Ife, 1995). However, without government assistance and support, communities will not be able to initiate welfare services of their own, though they are much needed by the people, particularly in developing countries.

For many reasons, the modern nuclear family is in crisis and this is making the provision of social services more urgent. For instance, caring for the older persons in the family is becoming a problem. The decrease in family size, the migration of younger members to urban areas for employment, the problems of housing in urban centres and the high cost of living are some of the factors affecting the traditional support system. As a result, greater demands are made on the welfare system of the Government in view of the increasing number of elder persons with greater dependent ratios.

Unemployment and underemployment are common problems in almost all the developing countries. Unemployment affects people's self-esteem and dignity. Further, it contributes to many other social evils such as crime, prostitution, child abuse etc.

Although Governments are highly dependent on the private sector for job opportunities, the social responsibility of the private sector is not yet recognized as a priority. Thus, private companies are mainly focused on making maximum profit. Therefore, Governments in the region must take the initiative to implement development projects that can absorb the existing labour force. However, owing to new trends in the open economic policies of the countries in the region, Governments appear reluctant to take the responsibility of unemployment and such problems are being transferred to the private sector. The available alternative to government is the introduction of a social insurance policy. Such an insurance system could cover unemployment, old age, family allowances, health and maternity, disability insurance and workers' compensation. Therefore, government intervention is very necessary in South Asian countries in order to strengthen and support the functions that the family performs through formulating family policies within the framework of socio-economic development in areas such as social protection against poverty and health. Thus, problems arising from family transition could be minimized.

Policy implications

The importance of the family as a component of society needs no further emphasis but the mention of policy issues has not received the attention that it deserves. Migration of family members can have favourable or adverse effects on the family, depending on the circumstances. The provision made by households to cope with the void created by the migration of a family member is a dimension which has a far-reaching social impact.

Legislative enactments for the provision of adequate supplementary social services and social protection of occupationally mobile younger generations and the members of their eroded families have imminent policy implication. If occupational migration is to be adopted as a solution to the prevailing high level of unemployment in the country, the implementation of such a policy requires the potential employees to be temporarily separated from the family and to live in a culturally, ethnically and religiously different environment in the host country. Neither male nor female migrants to the Middle East, for instance, are usually accompanied by their families. Thorough professional training to enable the migrants to fit into the sociocultural, economic and legal environment of the host

country is needed. For the successful implementation of such a training programme, adequate comprehension of cultural differences at the social point of destination for the migrants, and training for adjustment and coping during the period of absence for the family at the point of destination, avenues for alternative service provision for the family are required. Nevertheless, adequate mechanisms for such training are in place neither at the point of origin nor at the point of destination during the initial phase of the process of contract migration. The programme that some of the countries have attempted to put in place requires further administrative mechanisms to be improved in order to impart the necessary training and adjustment.

The magnitude and dimension of the social consequences of migration-related adverse incidents reported in the various news media demand serious in-depth investigation from the sociocultural angle. Protection, training and awareness of law, the level and practice of human rights existing at the points of destination, legal implications in situations of adverse accusations and help in inquiring into the truthfulness of these various contentions, are some of the foreseen policy implications. The negative consequences of labour exports particularly related to female migration have led some countries in the South Asian region to enact regulations banning female migration for employment as domestic servants to some Middle Eastern countries.

The effects of demographic transition on the composition of the family entail the need to conceptualize and restructure family roles. In spite of the fact that in daily life, children, parents and spouses are associated with specific roles within the traditional family system, such a role division no longer fits in the transitional society.

The current growth patterns of the transitional economy have adverse implications for the prevailing traditional family support systems of the elderly, the main area of policy concern being the availability of a smaller number of younger persons in the family to support and care for a growing number of the elderly. Potential supply ratios, which measure the number of persons in the working ages per every elderly person, have declined in most countries in South Asia. The support ratio is expected to decline significantly in the next two decades and Sri Lanka could experience the highest decline.

The promotion of research to comprehend the demographic and socio-economic dimension of the support given by the elderly to the family budget, the consumption patterns of the family resources out of the total earnings and the patterns of savings of the family are matters demanding immediate policy attention. In Asian countries, there is a long-standing family tradition of mutual

support between the elderly and other family members. Awareness of the demographic, social and economic facets of the mutual support mechanisms of the transitional family, which are interrelated with the continuous concern, ability and participation of the elderly to play an active role through support given to the family matters, is important in policy formulation as well as in implementation. The support given by the elderly reflects not only their concern for the well-being of the family, but also their ability to work. Nevertheless, due consideration should be given to the fact that at retirement, the low-income earning segments, who constitute the major proportion of the labour force, become more vulnerable to economic hazards.

Other areas of policy concern associated with elderly segments of the transitional family demanding immediate attention are the problems of insolvency, loss of authority, social insecurity, insufficient recreational facilities, lack of overall physical and mental care and problems associated with the living arrangements of the elderly. Those areas are important all the more because they affect the family.

Population ageing leads to increased health-care costs in South Asian countries. In the formulation of the budgetary expenditure policies of the national budgets of countries in the region, further research is needed to understand the impact of additional expenditure on health and other costs of the growing elderly population. Such research should aim at understanding the overall effect of the aged segment on the transitional families, the societal perspectives on such issues and the impact on overall household expenditures.

In addition, the current levels and patterns of the prevalence of disability among the elderly need to be assessed. Mobility is one of the first things to be affected. In old age, the usual weaknesses are worsened by disabilities. With the increasing number of elderly persons, the proportionate number of disabled persons is likely to grow. This impact constitutes a major economic hardship for many South Asian families, because a major proportion of them are poor or very poor.

Women-focused specific policy legislation is a dire need in the current Asian society. As shown earlier, the migration of women and the associated considerations is one facet of such potential policies. In the sphere of care for the elderly, the problem is likely to be especially acute for older women, who constitute the majority of the elderly in virtually all low-mortality populations. Because of the greater longevity among women in most countries in Asia and the tendency for men to marry women younger than themselves, women are more likely than men to end their lives widowed. The implication of this is a serious

gender asymmetry in the support and care of the elderly. The economic and social problems for women are worse than for men in many cases. The incidence of marriage among elderly women being low, their economic dependence on others is higher, especially in populations where female economic activity is low. With increasing physical and mental capacity, their economic dependence on family members is higher than that of men. The prolonged care of such women (because of their longer lifespan) necessitates that those on whom they depend for livelihood have sufficient financial resources (United Nations, 1996).

Based on the existing policy, projects, programmes and specific plans of action should be formulated in order to reduce the gravity of the problems that are arising in South Asian countries in relation to the dynamics of family change. Such policies and programmes would be more effective if they were integrated into the overall socio-economic development strategy of the country. As an example, the Government of Sri Lanka recently introduced a National Policy and Plan of Action for the welfare of older persons which aimed at preparing the population for a productive and fulfilling life in old age, socially, economically, physically and spiritually and ensuring independence, participation, care, self-fulfilment and dignity for those in old age.

An act of parliament was enacted to protect the rights of the elderly in Sri Lanka in 2000. Until the enactment of the Elders Act of 2000 there was no specific legislation to provide general social and financial security for older persons. This is an important policy initiative by the Government which paved the way for establishing the National Council for Elders and a Secretariat to assist in the implementation of its policies, and the establishment of a National Fund for Welfare of Elders. One of the salient features of this Act is that the indigent elders may request maintenance from their children and boards would be established to examine such claims.

Acknowledgement

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Ageing, Activities of Daily Living Disabilities and the Need for Public Health Initiatives: Some Evidence from a Household Survey in Delhi

With downsized families, changes in older values, out-migration, and growing female participation in income generating activities, sustained and full-time family support to many dependents is likely gradually to wear-off.

By Moneer Alam and M. Mukherjee[*]

India is fast becoming a graying society as a result of its upcoming prospect to achieve an accelerating growth in the size of its ageing population. Two causal factors are: (a) a varying but persistent fertility-mortality decline across the country, and (b) added lifespan with increased survival chances, especially at the later end of the life cycle. Those changes, and in particular the added life years, have, however, been mired in the high prevalence of chronic diseases, affecting over half of the country's population aged 60 and over (NSS 52nd round,

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1995-1996). Such a situation – coupled with large-scale poverty and the poor financial status of the older persons (Alam, 2004) – is likely to pose many serious issues for the country. One of the more critical may indeed be the higher incidence of frailty, senescence,[1] functional incapacitation and dependence of older men and women in activities of daily living (ADL)[2] – raising questions for the caregivers, especially the families. With large-scale migration, declining family size and growing participation of women in economic activities, this traditional support mechanism is apparently on the verge of losing its sheen. Somewhat inexplicably, this aspect has been almost completely missed in the analytical literature on health and ageing in India. The analysis presented below is therefore a modest attempt to fill some of this void by looking into the following:

    a) The ADL disabilities as reported by a sample of 1,385 elderly persons aged 60 and above – cross-classified by sex and four socio-economic groups decided on the basis of their residential characteristics;

    b) Socio-economic risk factors in functional disabilities of the aged;

    c) Need for public health initiatives in preventing or forestalling ADL disabilities and physical incapacitation.

The need for public health initiatives has been highlighted by describing three major pathways of old-age frailties and functional dependence involving (a) physiological or senescent changes in an individual owing to the age factor, (b) non-senescent changes owing to the morbidity or poor health stock, and (c) poor living environment of the older persons. As many of the disabilities reported in our sample are due to the poor health conditions, it was decided to make use of the public health institutions with well-identified measures targeting the frail and the non-frail older adults separately. The authors also posit that in a country like India with very high old-age poverty, public health and its involvement in managing the health issues of the ageing population is the only cost-effective solution. It may, as well, help the country to meet its objectives of healthy and active ageing.

Besides highlighting the need for public health initiatives, the present paper may also serve to make a case for evolving a long-term care strategy for the physically challenged aged. This is particularly important owing to the growing disengagement of families in providing care to their ADL dependent elderly. Any such arrangement may, however, have important financial and subsidy implications. This paper refrains from going into those issues as they fall beyond the scope of this work.

The rest of the paper is organized as follows: The next section provides a few conceptual details about the ADL disabilities, followed by an application of this concept based on a household survey with elderly co-residents drawn from all the nine administrative districts of the national capital territory of Delhi. This discussion also briefly mentions the relevance of such exercises from different angles, ranging from families to care providers and insurance agencies. The following section is devoted to an econometric analysis dealing with the socio-economic risk factors in causing disabilities in later years. The next section, as noted earlier, deals with the three different pathways of the disabilities with the intrinsic objective of suggesting that a considerable numberof disabilities in India are non-senescent. Hence, public health agencies should strive to make people aware of the need for healthy ageing, and adopt a clinical approach with the distribution of health- augmenting medicines such as vitamins to the needy aged. Certain policy imperatives are discussed at the end of the paper.

Ageing and ADL disabilities: concept, data and empirical results

ADL disabilities: a functional definition

Conceptually, disability is a complex phenomenon that manifests itself in many ways and evolves over time (Manton and Stallard, 1994). Also, it has in its making the socio-economic conditions of an individual. At a simplistic level, however, it can be defined as an individual's inability to perform a set of household and self-maintenance activities such as eating, dressing, bathing, walking, cooking, cleaning and climbing stairs etc. Under this paradigm, an individual can be described as disabled if his/her personal capabilities fall short of what has been actually demanded by his or her own environment or family conditions. When people are unable to perform their basic tasks, they become dependent and seek outside assistance – formal or informal, but mostly informal in a country like India with no social protection or community support mechanism.

Despite being conceptually difficult, measuring disabilities is important because of its association with decreased functional autonomy and the increased demand for long-term care (LTC). Its usefulness in making assessments about the morbidity, mortality and certain health-care needs is also very obvious. To illustrate, studies by Mor and others (1994) and Severson and others (1994) have shown that the ADL difficulties are significant indicators from which to derive estimates about the use of nursing home and hospital facilities. Similarly, an increasing number of long-term care insurance policies are now relying on the ADL disabilities as a trigger for paying the benefits to those covered against those risks (Van and Johnson, 1989).

Attempts have also been made in the geriatric literature to assess the hierarchy by which the loss of functional (or self-maintenance) abilities progresses among the human beings.[3] Those hierarchies or their validity in Indian conditions have, however, not been studied in this analysis, which remained confined to the self-reported disabilities and support requirements of a cross-section of elderly men and women aged 60 and more.

The data

As already mentioned, the data for this analysis were obtained from a multi-stage survey of over 1,000 urban households in all the nine administrative districts of Delhi.[4] This survey, originally designed for a more comprehensive study on health and livelihood issues of the aged in India against the backdrop of its ongoing pro-market economic reforms (Alam, 2004), was held during the period June to September 2002. A total of 1,385 elderly respondents were finally covered in the survey: 617 (or 44.5 per cent) males and 768 (or 55.5 per cent) females. Using their residential location as a criterion, those households were further classified into four socio-economic groups:

(a) *High-income localities (HIG) households:* the affluent households residing in posh localities of all the nine urban districts in Delhi. Such households constituted 4.9 per cent of the total sample;

(b) *Slum dwellers:* residents of identified slums with low economic means. A large fraction of them were without any health or social security provisioning, constituting about 15.7 per cent of the sample households;

(c) *Residents of government colonies/apartments:* comprising elderly dependants of public sector employees with significant health benefits and treatment in government-run facilities (3.8 per cent of the total sample);

(d) *Households residing in mixed-income localities and housing complexes:* those were mostly the households excluded from the other three categories. A large proportion of those responding households was middle- and lower-middle-income traders, employees and businessmen with good financial status and constituted over three fourth of the total sample.

The socio-economic identification of localities were entirely drawn according to the maps and the guidelines prepared by the Directorate of Census (Delhi) as part of its house-listing operation for the 2001 Population Census (for further details and sample design, see Alam, 2004). The authors premised that the

respondents drawn from those four categories of household would be facing different sets of ADL issues and prevalence rates.

WHO model of functional disabilities

In 1981, the World Health Organization (WHO) has presented an International Classification of Impairment, Disability, and Handicap (ICIDH) to catalogue the functional limitations suffered by individuals because of physiological impairments and bad health. The model was subsequently revised in 2001 to make further explorations in the relationship between functioning, disability and health (International Classification of Functioning, Disability and Health (ICF), WHO, 2001).

Figure 1. Partitioning survival by functional status:
a hypothetical diagram
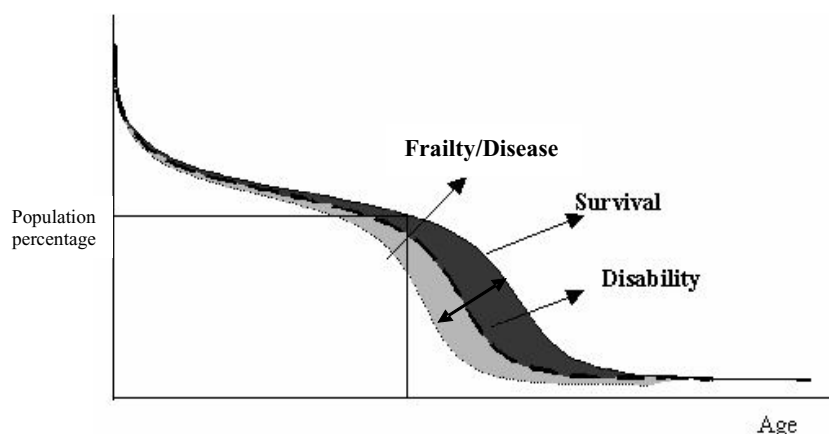
Source: Albert (2004), p.34.

Note: The length of individuals' survival, separated by the light gray and the dark gray colours in figure 1, suggest the onset of disease, eventually converting into disabilities. Once set in, those disabilities generally persist till the end of the entire lifespan shown under the dark gray colour. Arguably, public health may be geared to prevent this phenomenon and minimize the length of individual's survival halved by the light and dark gray across the double-edged arrow.

An interesting feature of the ICF (2001) was that it allowed survival to be partitioned according to the functional status of the aged (Albert, 2004). The exercise presented below is largely drawn on the basis of this partitioning

assumption, with two additional premises: the frailty precedes disability, so that people reach frailty before disability, and the states of disability precede mortality. With the high incidence of chronic and multiple diseases suffered by the aged in India, old age may turn into a painful process for many in that country with high risks of ADL impairment and dependency. Figure 1 illustrates a hypothetically partitioned survival curve underlining the basic argument that frailty followed by disabilities worsens the quality of life in the later years of survival. This also poses question about the prospects of healthy ageing in India as envisaged in many of the national and international policy pronouncements, including the National Policy on Older Persons (1999) and the Madrid International Plan of Action on Ageing (2002).

Tasks of daily living and measurement of ADL disabilities

This analysis seeks to examine the ADL difficulties in terms of two health domains, namely, the physical and the sensory. In all, nine physiological and two sensory tasks of daily living were included in the survey, and respondents were asked to provide details about the difficulties in performing each of them. They were also requested to provide corresponding details about: (a) the assistance required by them in their daily activities, and (b) the availability (or non-availability) of that assistance. Thus, no assistance, even partial, may be considered as the unmet need for assistance required by the functionally disabled.

The 11 ADL difficulties under consideration are as follows.[5]

(a) *Physical domain*: (1) Eating, (2) Dressing, (3) Bathing, (4) Walking indoors (for example going to the toilet), (5) Outdoor walk (such as for routine shopping), (6) Cooking/home cleaning, (7) Climbing stairs, (8) Combing hair and (9) Getting up from a sitting position.

(b) *Sensory domain*: (1) Hearing losses (or limitations of the auditory system) and (2) Vision impairment.

Using those domains and their respective tasks, attempts are made below to index the functional capabilities of the respondents into the following:

- Persons in no difficulty and requiring no help: (ND/NH)
- Persons in difficulty and receiving no help: (D/NH)
- Persons in difficulty and helped by family or friends: (D/H)
- No difficulty/getting help: (ND/H)

Persons with no major difficulty or help requirements (ND/NH) have been considered healthier with relatively better health stock. Similarly, a few respondents did not suffer from any difficulty and yet drew assistance (ND/H). These were, however, very few in number, and hence had no effect on the overall results. The problem groups therefore included the persons in the second (D/NH) and third (D/H) categories. Especially, the numbers in the D/NH group suggest the magnitude of unmet assistance to the ADL impaired elderly. Arguably, with shrinking family size, increasing outmigration of younger siblings and growing participation of women in economic activities, that problem is expected to increase significantly with time. A long-term care apparatus has to be developed through both private investment and public subsidies.

The functional capability indices (FCIs) may also be used to identify the size of ADL-impaired persons with and without multiple impairments. Those details, especially the number of functionally impaired (or those within the frailty-disability space in figure 1.), are expected to undermine the gains of survival longer years. Another set of questions may relate to the preventive measures required for the later life disabilities.

Prevalence rate of ADL disabilities: FCI results

Table 1 presents the prevalence rate of ADL dependence in both the health domains and those with or without assistance. There is evidence in this table of wide-ranging disabilities in each of the 11 activities under reference. Another point of even greater concern may be the spread and magnitude of those disabilities. For example, the disabilities – causing functional dependence and need for care (D/H) – are present even in modest activities like eating, dressing, combing hair or bathing, although the size of dependencies reported for those activities are not too high and mostly vary between 3 and 6.5 per cent of the sample population. To illustrate, the lowest level of dependency is found in combing hair (3.3 per cent) followed by bathing (5.8 per cent), dressing (5.9 per cent) and eating (6.6 per cent).

By contrast, the remaining five activities in the physical domain suggest a very high prevalence of impairments, resulting in large-scale dependencies and the need for assisted care. It appears from those results that climbing the stairs, with 80 per cent of dependencies, is the most difficult task for an elderly person in India. Getting up from a sitting position is another difficult activity for more than three fourths of the survey respondents. Moreover, it also generates high levels of unmet care. Other difficult tasks included outdoor walking and cooking or cleaning for own sustenance (see table 1).

Table 1. Functional capability index (FCI) of respondents aged 60 and above

Daily activities (ADL)	Functional difficulties and need for help (percentage)				
	ND/NH	D/NH	D/H	ND/H	N
	Physical				
Eating	93.3	1.3	5.3	0.1	1,004
Dressing	94.1	1.7	4.2	0.0	1,004
Bathing	93.9	2.0	3.8	0.3	1,003
Indoor walk	71.2	9.6	19.2	0.0	1,003
Outdoor walk	41.4	19.3	39.1	0.1	999
Cooking/cleaning	53.5	13.2	33.2	0.1	873
Climbing stairs	20.0	19.3	60.6	0.1	999
Combing hair	96.5	0.8	2.5	0.2	1,003
Getting up	22.2	24.4	53.2	0.2	1,001
	Sensory				
Reading	83.9	2.4	13.6	0.1	997
Hearing	81.5	2.6	15.6	0.3	1,001

Source: IEG/CIDA Ageing Survey (2000).

Figure 2. Share of functionally impaired with and without assistance
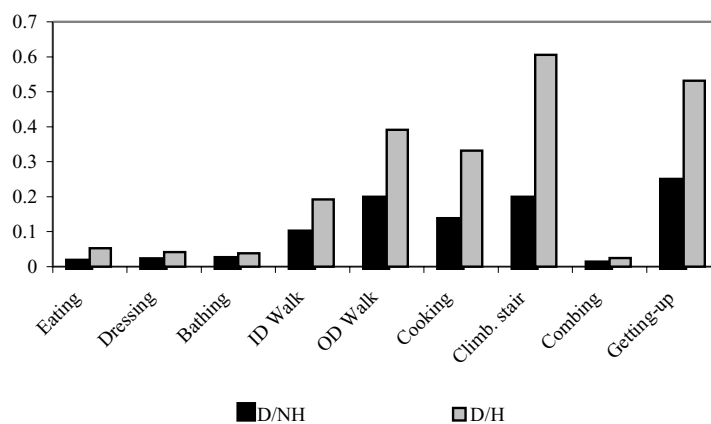
Source: Based on table 1 (columns 3 and 4).

Unmet assistance to functionally impaired

The worst are those who are impaired and remained unassisted. Figure 1, for example, depicts a considerable amount of unmet assistance faced by persons with poor lower extremity strength, needing them to rely on others in activities including climbing stairs or getting up from a sitting position. Lack of assistance is also reported by persons unable to go outside for routine work or visiting relatives and friends. Many of those unable to cook or clean also remain unassisted. And yet, the present results indicate that a much larger fraction of the aged still draw assistance from their families or other informal sources (see figure 1). Further, the share of assisted older persons in all the activities is always higher than those unassisted. This is particularly true for the activities requiring greater physical effort. However the bottom line of those results may be to expect growing changes in the traditional patterns of care provision, emphasizing the need to develop alternative mechanisms for caring for the aged, especially in urban areas.

As was expected, persons with no difficulty and yet receiving help are only few in number and, therefore, needed no comment (column 5, table 1). In cases of sensory impairments, one observes that persons with hearing losses exceed those with impaired eyesight. However, the reverse was expected. Instances of unmet assistance can be noticed from those results as well (table 1).

ADL impairments by socio-economic group

With the preceding evidence suggesting large-scale functional impairments and dependencies among the aged, a question to examine may be: how are those impairments distributed across the four socio-economic groups listed in section 1.2? In other words, do the poor elderly suffer more from the functional disabilities than the non-poor? Another related question of considerable significance is the share of disabled with and without filial assistance in each stratum. The authors seek to examine both of those questions by redistributing the details provided in table 1 into: (a) HIG, (b) slum-dwellers, (c) residents of government apartments and (d) mixed income respondents. Those results are shown in tables 2a (ND/NH), 2b (D/NH), and 2c (D/H) and 2d (i.e. share of assisted to the total disabled in each stratum). As the ND/H cases were just a few – not more than three or four in total sample – this category was dropped from the rest of this analysis.

Table 2a suggests a positive association between the income level and the ADL competence. This is borne out as the respondents from HIG reported lesser reliance on outside support for many of their day-to-day activities. Table 2a, for

example, reveals that the activities involving eating, dressing, combing hair, walking outdoors, climbing stairs, getting up from a sitting position, reading and hearing have the highest share of HIGs with ND/NH status. Close to the HIGs in terms of lesser difficulties are those from middle- or lower-middle-income categories. Though elderly persons residing in slums are more ADL-deficient, they appear to rely less on others even in somewhat tougher activities like cooking, cleaning and so on. By contrast, the HIGs turned out to be extremely poor in those activities. To a certain extent, this may as well be a reflection of their affluence that allows them to hire domestic help. As a whole, however, there is no denying that the self-perceived health status – physical or functional − is more a question of social awareness and access to medical facilities. The poor, with limited means and awareness, may have fewer complaints even if surviving in poor health conditions. This may alsol be noticed from the discussion in section 3.

Table 2a. Respondents with ND/NH by socio-economic group

(Percentage)

ADL type	High-income locality	Slum	Government	Mixed
		Physical		
Eating	97.9	83.3	95.1	95.1
Dressing	100.0	91.4	92.7	94.4
Bathing	91.7	93.8	95.1	94.0
Indoor walk	81.3	75.3	82.9	69.0
Outdoor walk	55.3	47.5	43.9	39.1
Cooking/cleaning	54.1	76.7	72.5	46.5
Climbing stairs	33.3	31.5	22.0	16.6
Combing hair	97.9	93.8	97.6	96.9
Getting up	27.1	20.4	12.2	22.8
		Sensory		
Reading	89.6	82.4	78.0	84.1
Hearing	87.5	82.8	78.9	85.0

Table 2b. Respondents with D/NH by socio-economic group

(Percentage)

ADL type	High-income locality	Slum	Government	Mixed
	Physical			
Eating	2.1	3.1	0.0	0.9
Dressing	0.0	0.6	2.4	2.0
Bathing	6.3	0.0	0.0	2.3
Indoor walk	12.5	3.1	2.4	11.2
Outdoor walk	27.7	11.1	24.4	20.3
Cooking/cleaning	10.8	5.0	5.0	15.9
Climbing stairs	27.1	22.2	17.1	18.3
Combing hair	0.0	1.2	2.4	0.7
Getting up	39.6	16.0	14.6	25.7
	Sensory			
Reading	0.0	2.5	0.0	2.7
Hearing	0.0	2.1	0.0	5.0

Table 2c. Respondents with D/H by socio-economic group

(Percentage)

ADL type	High-income locality	Slum	Government	Mixed
	Physical			
Eating	0.0	13.6	4.9	4.9
Dressing	0.0	8.0	4.9	4.9
Bathing	0.0	6.2	4.9	4.9
Indoor walk	6.3	21.6	14.6	14.6
Outdoor walk	17.0	41.4	31.7	31.7
Cooking/cleaning	35.1	18.2	22.5	22.5
Climbing stairs	39.6	46.3	61.0	61.0
Combing hair	0.0	4.3	0.0	0.0
Getting up	33.3	63.0	73.2	73.2
	Sensory			
Reading	10.4	14.5	22.0	13.1
Hearing	12.3	15.0	21.0	10.1

Table 2d. Stratum-wise distribution of assisted respondents

(Percentage)

ADL type	Share of assisted to total disabled respondents: D/H ¸ D/H+D/NH			
	High-income locality	**Slum**	**Government**	**Mixed**
	Physical impairments			
Eating	0.0	81.5	100.0	80.6
Dressing	0.0	92.9	66.7	64.3
Bathing	0.0	100.0	100.0	60.5
Indoor walk	33.3	87.5	85.7	63.9
Outdoor walk	38.1	78.8	56.5	66.6
Cooking/cleaning	76.5	78.4	81.8	70.3
Climbing stairs	59.4	67.6	78.1	78.0
Combing hair	0.0	77.8	0.0	78.3
Getting up	45.7	79.7	83.3	66.6
	Sensory impairments			
Reading	100.0	85.2	100.0	83.1
Hearing	100.0	88.9	100.0	66.4

Source: IEG/CIDA Ageing Survey.

* Includes instrumental assistance as well.

Despite the relatively less impaired in certain activities, table 2a also revealed a sizeable fraction of high-income aged persons reported disabilities in walking, cooking, climbing stairs, getting up and hearing. They appear to be more constrained in climbing stairs (67 per cent dependence), getting up from a sitting position (73 per cent dependence) and hearing losses (12.3 per cent dependence). It therefore testifies that income alone cannot be the sole protective mechanism against the disabilities. Lifestyle may have a role to play.

Another source of vulnerability for the higher-income aged is the lack of assistance available to many of them in their daily living. This is clearly borne out from table 2d. However, given their smaller family size and outmigrating siblings, this result does not appear very surprising. Problems of inadequate ADL support may also be observed for the mixed income households. Low-income slum-dwellers are, however, better placed in this respect (table 2d). Does this mean that the family size, especially the number of children, helps to minimize the risks of unmet assistance of those functionally impaired? Perhaps yes, though the evidence drawn in this exercise may not allow the drawing of a conclusion.

Gender and ADL disabilities

Gender differentials in the underlying context may be noted from table 3. In line with the general expectations, ADL-impaired women outnumber men to a considerable extent. In addition, barring cooking or cleaning, it is true for all other activities under consideration (table 3). The share of functionally handicapped women is shown to be disturbingly high in activities requiring more physical strength such as climbing stairs (86 per cent of women are impaired and need help) followed by the tasks requiring getting up from a sitting position (85 per cent impairment), going outdoors for routine shopping or other activities (65 per cent dependence) etc. Even cooking or home cleaning was found to be difficult for more than half of the sample women. Further, one in every seven women is shown to be suffering from auditory problems. By contrast, men were found to be less impaired, though a bigger share of them reported serious difficulties in activities requiring lower extremity strength like climbing stairs (73 per cent), getting up from a sitting position (69 per cent) or going outside the home for routine activities (49 per cent).

Table 3. Aged males and females with or without ADL impairments

(Percentage)

Nature of ADL	ND/NH		D/NH		D/H		N	
	Male	Female	Male	Female	Male	Female	Male	Female
Physical								
Eating	95.5	91.4	1.1	1.5	3.2	7.1	470	533
Dressing	96.2	92.3	0.8	2.4	3.0	5.3	471	533
Bathing	95.3	92.7	1.5	2.4	3.2	4.3	471	534
Indoor walk	78.5	64.7	7.9	11.1	13.6	24.2	470	533
Outdoor walk	51.2	33.4	21.7	17.1	27.2	49.3	471	532
Cook/clean	66.2	43.7	15.3	11.5	18.2	44.7	378	494
Climb stairs	27.1	13.7	25.0	14.3	47.9	71.8	468	530
Combing hair	97.5	95.7	0.6	0.9	1.7	3.2	470	531
Getting up	30.4	14.9	30.9	18.6	38.7	66.1	470	529
Sensory								
Reading	81.8	5.7	3.2	12.4	14.8	81.8	469	527
Hearing	86.0	3.2	1.5	10.8	12.3	86.0	470	531

Source: IEG/CIDA Ageing Survey. Row totals may not add up to one hundred because of the exclusion of ND/H.

Table 3 also helps to identify a set of most impairing tasks for both the genders. Those are,

- Climbing stairs
- Getting up from a sitting position
- Outdoor walk
- Cooking and cleaning

Suggesting lower extremity strength

Figure 3. Four most critical ADL functions and their gender differentials
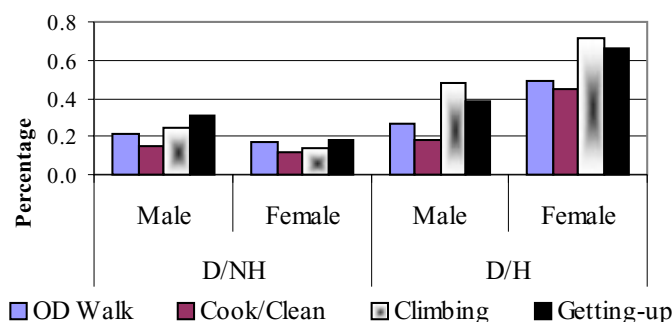
Source: IEG/CIDA Ageing Survey.

Figure 3 makes those conditions further visible. It can be noticed from this figure that climbing the stairs is the most impairing task for aged persons as about three in every four men and six in every seven women are seeking help from the family for this particular task. Getting up from a sitting position is almost equally difficult. Not only that, even more than half the sample women reported their inability in cooking or cleaning the place in which they live.

Women are not only suffering because of the higher disablements; a sizeable fraction is also reporting lack of filial assistance. This is clearly highlighted by figure 3, which underlies two significant observations: (a) unmet assistance is perceptibly large in all the four ADL domains under reference, and (b) in relation to their male counterparts, disabled women are less assisted. At the broader level, this poses many serious issues for both the disabled men and women, and their caregivers, especially if the caregivers are in paid employment. Shrinking family size, outmigrating children and fast erosion in non-market institutions are expected to complicate this whole scenario even further.

Sample population with multiple ADL impairments

The level of disabilities and functional dependence as shown above is clearly an indication that caregiving would soon be a difficult and time-consuming responsibility, with implicit risks of neglect by care providers. This problem may increase even further if the disabilities are multiple. The needed support in those situations may prove more intense, and the unmet assistance, if any, become more traumatic. Considering this, the sample was redistributed into those who are: (a) ADL efficient (i.e. ND/NH), (b) faced with single, (c) double, or (d) three and more difficulties. Arguably, those computations would help to give an idea about the burden of dependence imposed on families if the disabilities follow the pattern emerging from this survey.

Table 4 presents a break-up by gender of respondents with single or multiple disabilities. Those results in many ways conform to those presented earlier. For instance, this table also shows women in a more pitiable situation. Further, while the shares of those with no difficulties are much less for both the genders, the ADL efficient men outnumber their women counterparts. However, the more significant observations arising from those computations relate to the gender-wise distribution of persons with multiple impairments. Three points are particularly significant, especially from the policy angle. Those are:

(a) The share of persons in the sample with multiple disabilities isfar higher;

(b) Compared with men, women suffer a greater number of disabilities (figure 4);

(c) Nearly half of the responding females (49.7 per cent) reportedly suffer from three or more disabilities. In contrast, this share is much less for the males (38.4 per cent).

Table 4. Respondents with single and multiple ADL impairment
(Percentage)

Count of disabilities/impairments	Gender		M+F combined
	Male	Female	
No disability	35.98	34.38	35.09
One disability	8.59	4.95	6.57
Two disabilities	17.02	10.94	13.65
Three or more disabilities	38.41	49.74	44.69
Total respondents (N)	617	768	1,385

Source: IEG/CIDA Ageing Survey.

Note: The column total may not compare with table 1 or table 3 owing to differences in response formats.

**Figure 4. Distribution of responding males and females
by number of disabilities**
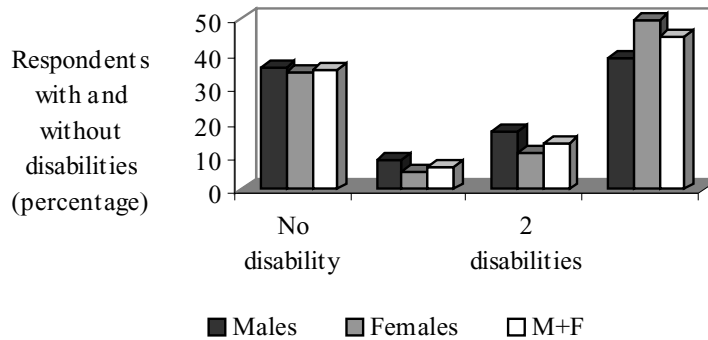
Source: Based on table 4.

Many issues arise from those results. One is the quality of survival at the tail end of the life-span, especially when the tail is increasing with time (figure 1). Another is the gender dimension of the functional health. Particularly women with their multiple disabilities may ultimately drop below the threshold of physical, sensory or cognitive capacities and, as a result, need more intense care to perform their basic activities. Could the required care be arranged informally through familial sources? This is indeed a big question and needs to be examined in more specific detail. Yet another aspect of this issue relates to the ongoing debate on healthy ageing. With so many cases of disabilities and dysfunction, the whole idea of healthy ageing may lose much of its relevance. Further, it may also require broadening the concept of health by taking into consideration the special needs of the aged, especially the disabled. As a first step, perhaps, an attempt may be made to identify a few of the major risk factors associated with the ADL disablements. Next to this is the question of a cost-effective solution to some of those problems. The rest of this analysis is directed to both those issues. The risk factors in ADL disabilities are first considered.

Socio-economic and lifestyle factors in ADL disabilities

Health −physical or functional − outcomes are often studied by using two different methods. One may require a more medically oriented approach with a study of a prospective cohort and its lifelong history, including health behaviours and health risks. This approach is, however, not in practice among health

economists. Even the gerontological research cohorts usually begin from age 55 and above (Albert, 2004). Another method is to use certain proxy measures and capture the likely risk factors in health or disabilities. The authors have relied on the latter and have used a host of socio-economic and lifestyle indicators to assess the possible risks of ADL disabilities among the aged.[6] Below is a brief discussion of the model, including the construction of variables chosen for the exercise. This is followed by the results.

Description of the model

As explained, the exercise reported below is based on a survey of household with elderly co-residents in urban Delhi. The survey, which also relates to a number of other issues, including the changes in economic environment of the country and its societal ageing, was designed to identify a set of risk factors in functional capabilities. Also, this analysis assumes that the aged, especially the women of lower socio-economic status (SES), bore greater risks of functional incapacitation. Those with a sedentary lifestyle may also be exposed to similar risks. The necessary details of the model are given in tabular form below. Given the multiple and discrete nature of our dependent variable (i.e. number of disabilities) a count data model is employed. Methodologically, those models usually rely on the Poisson process where each y_i is drawn from a Poisson distribution with parameter $ë_i$ (related to the explanatory variables X_i). A serious drawback of this or similar models, however, lies with its assumption of a conditional mean and equal variance. In reality, however, those assumptions are highly unlikely.[7] In order to minimize this problem, a Negative Binomial Model – which allows a cross-sectional heterogeneity – has been suggested in the literature (Greene, 2002). The Poisson model is generalized by introducing an individual, unobserved effect into the conditional mean (i.e., $\ln \lambda_I = X'_I \hat{a} + \mathring{a}$). This leads to bringing about a difference in the conditional mean and conditional variance. It was therefore decided to use two different specifications of this model for the analysis reported below.

Description of the count model to estimate the risks of disabilities		
Estimation model	Dependent variable	Independent variables

Count data regression (Negative binomial)	ADL disability index (0-3) as shown in table 4.	(i) Initial health stock (ii) Standard of living index (iii) Habit index (iv) Age and age square (v) Sex (vi) Marital status

Construction of variables

The following seven socio-economic and health variables have performed better in explaining the risks of ADL disabilities (descriptive statistics of those variables are given in appendix table 1).

1. *ADL disability index (0-3)*: A composite index of disability was generated to characterize the number of disabilities suffered by the sample population (see table 4).

2. *Income status*: The individuals' income is proxied by their standard of living indices (SLI). The SLI was constructed on the basis of the asset holdings of individual households, where the assets were scored on the basis of their notional market prices (for those scores, see appendix table 3). Finally, these overall scores were aggregated for every sample household, and assigned to each household member (for further discussions on this, see Alam 2004).

3. *Initial health stock index (1-4)*: It is usually believed that the healthier an individual, the less he will suffer from disability. In order to capture this effect, the authors tried to formulate a health index by taking into consideration the number of diseases an individual has suffered over the past one year from the date of the survey. Respondents were asked about a total of 17 common diseases of later ages (appendix table 2). A scrutiny of this data suggested that none of the individuals in the sample was suffering from more than four diseases. Individuals were then indexed on a scale of 1 to 4. An individual suffering from one disease is considered healthier (and scored 1) than any other suffering from a greater number of diseases.[8]

4. *Habit index (0-2)*: Healthy habits will also help to make a person less prone to disability. In the survey, the authors tried to capture this effect by considering the lifestyle of the sample aged, e.g. whether or not they go for a walk or meditate. In addition, in order to capture the effect of regularity or irregularity, the sample was segregated into three broad categories: (a) those regular in their routine, (b) those not so regular, and (c) those sedentary, i.e. without any exercise/meditation regime. Those with regular habits got the highest index value (i.e. 2) followed by the remaining two with 1 and 0, respectively. Finally, meditation was dropped to avoid the co-linearity arising between this and the exercising habit.

5. *Sex*: This variable was considered in a binary format with 1 assigned to males and 0 otherwise.

6. *Age and Age-square*: Persons aged 60 or above as reported by them at the time of the survey. Age-square was used to make assessments about certain non-linearity (e.g. a kind of parabolic relationship) between the age and number of disabilities.

7. *Marital status*: Another binary variable with currently married men and women were assigned 1, and 0 otherwise. This variable was included to judge the role of companionship in functional health.

Discussion of the results

Two specifications were used to examine the socio-economic factors in explaining the risks of functional disabilities suffered by the old. One, with the age and age-square along with remaining socio-economic and habit-related variables. Age-square, as noted, was especially introduced in response to an earlier argument that functional disabilities in India are not essentially the outcome of age-related senescence. Frailty and poor health stock have a role. The second specification, however, replaces the age-square as a safeguard against co-linearity risks between the age and the age-square. Instead, a marital status dummy was used assuming that companionship protects against the risks of disablement. The two specifications are discussed below.

Specification 1:

As was expected, specification 1 in table 5 reveals that the number of diseases – or the health stock of individuals – is one of the most potent factors causing the ADL disabilities. It implies that individuals with multiple diseases bear greater risks of disabilities than others with better health stock. This highlights the importance of an emerging concern by medical gerontologists, namely, the health linkages between the early and later years of an individual's life. As most of the existing gerontological literature on this issue relies on the higher age cohorts, those linkages are not yet fully established (Albert, 2004). For a country like India with a very high prevalence of early life diseases (World Bank, 1993), this issue has serious policy implications.

Another notable finding of this analysis is the significance of the lifestyle, particularly the habit of regular exercising. The present results clearly indicate that persons with regular walking habits are less susceptible to ADL disabilities. The coefficient of habit index in table 5 is statistically significant at the 1 per cent level with a negative sign, implying greater risks for persons with a sedentary life.

Another significant factor in this context is the income status of the aged. Persons with higher SLI values are less likely to suffer disabilities in the physical domain. Gender is yet another risk factor, with women being at the receiving end. It validates earlier findings showing women outnumbering men in many activity-specific disabilities. Age is also a factor linked with the impairment risks, but those risks may subside with advancing age. However, it cannot be argued conclusively as the age-square remains statistically insignificant.

Specification 2:

The second specification drops the age-square on grounds of its collinear relationship with the age, while a marital status dummy was added to explore its relationship with old-age disability. All other explanatory variables remained the same. While this equation considerably improves the age factor as one of the serious challenges to old-age health, it fails to signify the presence of a conjugal partner as a shield against the risks of functional disability. The coefficient nevertheless yields the correct sign. The rest of the variables behave as in the preceding specification.

Table 5. Risk factors in ADL disabilities

Dependent variable: ADL disability index (Number of observations = 959)

Specification 1

Variables	Coefficients	St. error	z	P>|z|
Constant	-2.5661	1.7162	-1.495	0.135
Health stock index	0.12043**	0.0219	5.500	0.000
Habit index	-0.0656*	0.0257	-2.556	0.011
Age	0.0837	0.0478	1.750	0.080
Age-square	-0.0005	0.0003	-1.534	0.125
Sex	-0.0917*	0.04624	-1.982	0.047
Income status	-0.0035*	0.0016	-2.234	0.025
	Log likelihood = -1473.975		Pseudo R^2 = 0.0262	

Specification 2

Variables	Coefficients	St. error	z	P>|z|
Constant	0.0424	0.2180	0.195	0.846
Health stock index	0.1224**	0.0218	5.603	0.000
Habit index	-0.0610*	0.0256	-2.387	0.017

Age	0.0105**	0.0031	3.336	0.001
Marital status	0.0097	0.0494	0.197	0.844
Sex	-0.0986	0.0525	-1.878	0.060
Income status	-0.0036*	0.0016	-2.303	0.021
	Log likelihood = -1475.172		Pseudo R^2 = 0.0254	

* Statistically significant at the 5 per cent level.
** Statistically significant at the 1 per cent level.

The results drawn on the basis of those specifications are indeed informative and likely to help in designing policy responses to improve old-age health in India and its neighbourhood. However, one has to exert caution in that the pseudo R-square in both the equations is quite low, which is often the case in several cross-sectional exercises. Nonetheless, it clearly underlines the critical nature of excluded factors. In the present context, it seems that the risks of old-age disabilities cannot be fully accounted for by considering the socio-economic conditions alone. Other adverse determinants need to be considered. Some of the more recent literature, for example, describes important biological, environmental and genetic factors in determining an individual's health.[9] Similarly, the health stock characterized by early childhood diseases may considerably affect the health in later life years (Barker, 1997). Taking into account the cumulative effects of prolonged exposure to individual stressful events (Seeman and others, 1997) or reactions to the poor past of many individuals (Wilkinson, 1996) may also help to improve the health models.

Ageing, functional disabilities and public health: tracing for a link

Over the recent past, India has been transitioning in many ways – economically, demographically and in terms of its epidemiology. At the economic level, for instance, India is in the process of growing privatization, especially in the realms of major health and non-health services. That process has, however, been initiated without working to develop a credible social safety net for the vulnerable segments of the population such as the aged. At the demographic level, India is largely out of the high fertility-mortality syndrome with major gains in terms of added lifespan and increased survival chances. In terms of the disease pattern also, India is fast getting out of the early twentieth century phase of contiguous and poverty-driven ailments. Obviously, the last two transitions – demographic and epidemiological – have largely been the outcome of improved living standards, better medical infrastructure and effective public health measures, including a high rate of vaccinations to prevent major childhood diseases.

Despite those improvements, most of the preceding results are mired inthe poor health status of the aged with a very high prevalence of co-morbid conditions and multiple ADL disabilities. With an increasing market role, growing cost of medical care, persisting poverty, declining quality of services provided by public hospitals, non-existing social health insurance, and the degenerating old-age diseases, it appears that a large fraction of the elderly population in India is running out of options. With time, some may even lose family care, as noted earlier. Clearly, those issues need serious attention.

Some of those considerations drove the authors to examine in the remainder of this study: (a) pathways that produce ADL disabilities, especially in the present context, and (b) their likely public health responses. An understanding of those issues is important perhaps because a good fraction of the disabilities in the sample was not simply age-determined. They were rather caused by disease-induced frailties. Hence, a preventive route through low-cost public health measures may well be considered as a solution.

Figure 5 is drawn on the assumption that disabilities are the outcome of three-way causations: (a) age-determined senescence, (b) general or disease-related frailties, and (c) social environment of the older persons (Albert, Im and Raveis, 2002). Pathway A, for example, exemplifies the direct effects of age-related physiological changes in the human body resulting in senescence, contraction or thickening in many vital organs, frailty, lack of body resistance, memory run down, and loss of functional abilities. Those changes may eventually
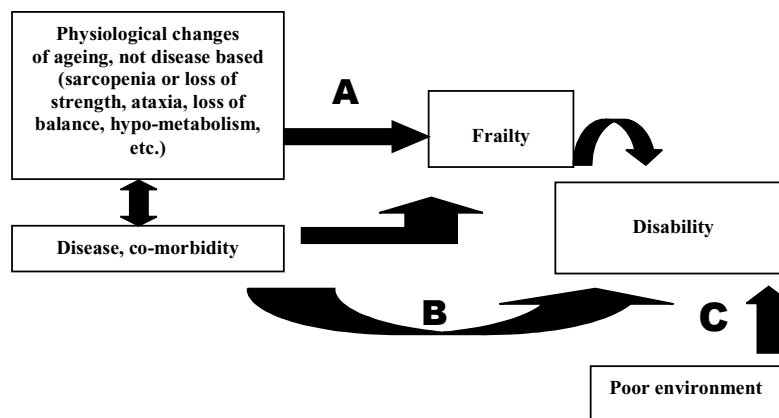
leave the aged in an incurable condition with an ultimate option of seeking medical or home care. In India, only a few can afford those options.

Pathway B to fall into disabilities, by contrast, is a direct outcome of various ailments and frailties, a situation presented in appendix table 2. It can be observed from this table that over half of the respondents (over 52 per cent) reported frailty as the cause of their disabilities.

Figure 5. Pathways of frailty and disability

Source: Albert, Im and Raveis.

The environmental condition of individuals, marked by arrow C in figure 5, may also be a factor in producing severe disabilities. Especially, the lack of a supportive environment, such as those marked by the D/NH in tables 1 to 3, is likely to push people into an insecure condition. Geriatricians now already recognize that an unsavoury atmosphere can yield disabilities to people who are otherwise the same in terms of frailty or medical conditions.

Of those three pathways, the roles of B and C are turning out to be a highly potent causal factor of disabilities in the Indian context. And, for a majority of the ageing Indians, getting away from those conditions seems difficult without concerted efforts by major stakeholders, including the families, the community, non-governmental organizations and, above all, the Government. At the government level, the public health strategies perhaps offer a viable and more cost-effective solution. It may, however, require changing the pathways of disabilities and preventing people from falling into B and C (figure 5).

Role of public health in preventing disabilities

A big question in this context may be: how can the public health institutions help to alter the pathways leading to the disabilities? A recent study by Albert (2004) has tried to examine this issue at a much broader level. An important contribution to this study is the identification of a set of public health goals for four different categories of older persons: (a) robust (like the ND/NH in tables 1-3), (b) demented with cognitive impairments, (c) older old or senescent, and (d) frail owing to poor health stock. Table 6, devoted to summarizing each of those goals, underlines the need for preventing frailties among the robust, and making improvements in the living conditions of the frail by helping them to retain their remaining physiologic abilities.

Table 6. Ageing experiences and goals of public health strategies

Type of older persons	Goals of public health
Robust	Prevention of frailty and disability
Demented	Prevention of excess morbidity, and excellent custodial care
Late stage of life (older old)	Reduction of isolation, maximization of choice
Non-senescent frail	Environmental modification to reduce task demand; rehabilitation to increase capacity by developing spared abilities

Source: Albert (2004).

Albert's study further argues for changing the pathways of ageing by sensitizing people to improve their post-50s lifespan. This, inter alia, requires individuals to take up enhanced habits of cognitive engagements, physical exercises, balanced diet, moderate drinking, no smoking and frequent health screenings. The study also recommends providing mineral supplementation by primary health institutions to forestall the decay in bone mass of the very old (e.g. 75+). As a part of public health measures, those aged persons may also be provided with statins and aspirins to cut down the risks of cardiac deaths.

The third pathway, the unsupportive environment, is another critical factor and needs serious consideration. Understanding the social context of ageing may therefore be significant to devise ways for creating a more amenable atmosphere for the aged.

Considering those facts, it is almost imperative for a country like India to draw up a comprehensive preventive mechanism to make the process of ageing a more endurable experience. But the question is: are we doing this? At least for now no such efforts are visible. The public health route of ageing particularly remains completely unexplored. We may, however, soon need to take this recourse and work to integrate public health institutions with old-age health.

Summary and conclusion

The following issues were at the core of this analysis:

- Physical and sensory impairments of the older adults and their ADL dependencies, cross- classified by gender and a set of four socio-economic groups

- Likely causes of those impairments, and

- Some of their public health responses, especially in the form of primary prevention strategies.

Functional impairments in both the physical and sensory health domains were judged by the curtailed activities of the older adults in their tasks of self-maintenance. In all, 11 ADL tasks from the two health domains were considered. The present results indicate a very high prevalence of disabilities in both the domains – dropping a majority of the older males and females below the threshold of their ADL capacities. At the sensory level, a larger number of people had reported suffering from hearing losses. The vision impairments (i.e., poor eyesight) came next.

Physically, more than three quarters of the responding elderly reported disabilities, particularly in activities like walking outdoors for a routine walk, getting up from a sitting position or climbing stairs. This indicates the lower extremity strength as one of the biggest old-age problems, causing large-scale ADL dependencies. With downsized families, changes in older values, outmigration, and growing female participation in income-generating activities, sustained and full-time family support to many of those dependants is likely to gradually wear-off.

Despite good instances of family support to their elderly, persons with unmet assistance did exist, and in significant proportions. This proportion is likely to increase with time.

The gender dimension of disabilities appears much worse, with a big fraction of women reporting disabilities and lack of a supportive atmosphere. More than half of the women reported incompetence in cooking or cleaning. In addition, a majority of them reported impairment in lower extremity strength, constraining their movement outside or climbing stairs. Out of every seven women, six suffer from most of those conditions.

Among the causal risk factors in those ADL disabilities, individuals' health stock – proxied by the number of diseases suffered by respondents at the time of the data collection – turns out to be a major source of functional impairment. Similar other risk factors included age, lower financial status, and sedentary lifestyle. Being a woman is another very significant risk factor.

To conclude, two specific observations emanating from this analysis are particularly significant for institutions engaged in policy planning. One is the low quality of survival owing to the high prevalence of ADL disabilities in later years.

The second relates to the fact that in many cases the disabilities are not simply senescent or age-determined. Gender and health-related factors, e.g. disease, frailties and lifestyle, do play significant roles. It is therefore advisable to follow a public health regime by resorting to:

(a) Creating awareness among people about healthy ageing and its prerequisites;

(b) Setting up public health goals for different segments of the older population – robust, frail, demented and very old;

(c) Taking up drug supplementation activities to ensure primary prevention of complex conditions.

Acknowledgements

Endnotes

1. Senescence is usually defined as caused by non-disease-related physiological changes of ageing like poor reflexes, sensory decline or loss of skeletal muscle resulting in poor endurance and functional disabilities. Senescent changes can, however, be advanced or accelerated in presence of diseases. The process of ageing in India is currently mired by disease-linked senescence.

2. ADL refers to the activities of daily living like eating, using the toilet, bathing, cooking, combing hair, etc. Albert, Im and Ravies (2002) present an interesting discussion on the three pathways to disability in the editorial of the *American Journal of Public Health*. Those pathways will be described in greater detail later.

3. Katz and others (1963) have, for example, developed a hierarchy for a set of daily functions including bathing, dressing, using the toilet, transferring, feeding, continence etc. Theoretically, this ordering was justified on the consideration that, generally, people lose abilities and become disabled in a manner

opposite to the order in which primary biological and physiological functions are acquired (Dunlop, Hughes and Manheim, 1997).

4. A proportionate share of population for all the nine urban districts was obtained by using the 2001 Population Census for Delhi. Those proportions were later used to distribute the sample of households by district all over Delhi (see Alam, 2004).

5. In addition, there may be many other disabilities caused by cognitive, psychological or other forms of impairments. This analysis, however, failed to include them for lack of information.

6. For a good discussion on the relevance of socio-economic factors in health outcomes, see Smith (2004).

7. For more discussion on those issues, see Cameron and Trivedi (1986), Grootendorst (2002) etc.

8. The authors have, however, failed to account for the nature and gravity of those diseases/conditions.

9. A recently edited volume by Keleher and Murphy (2004) includes several good articles on many of those health determinants. Specially, for example, see Nicholson and Stephenson (2004, pp. 23-39) and Swinburn and Cameron-Smith (2004, pp. 40-57).

Appendix table 1. Descriptive statistics of variables used in table 5

Variable	Observations	Mean	Standard deviation	Mini-mum	Maxi-mum
Disability index	1,385	1.6440	1.3315	0	3
Habit index	1,019	1.0304	0.9181	0	2
Age square	1,385	4,685.678	971.6838	3,600	9,801
Age	1,385	68.1199	6.7377	60	99
Gender	1,385	0.4455	0.4972	0	1
Health stock index	959	2.5735	1.0281	1	4
Standard of living index	1,385	38.1603	14.6255	1	90
Marital status	1,018	2.065815	1.01638	1	5

Appendix table 2. Disease-disability (or difficulty) matrix

Diseases	Disability index				Percent-age
	0	1	2	3	
1. Poor vision/cataract/other eye impairment	31.7	34.1	19.5	14.6	4.28
2. Lung problem/respiratory problem/asthma	7.7	23.1	15.4	53.8	1.36
3. Tuberculosis/other chronic fever	33.3	33.3	33.3	0.0	0.31
4. Diarrhea/gastroenteritis/stomach ulcer	33.3	66.7	0.0	0.0	0.31
5. Skin disease	33.3	33.3	0.0	33.3	0.31
6. Angina/chest pain/cardiac problem	5.9	5.9	11.8	76.5	1.77
7. High blood pressure	19.4	9.7	19.4	51.6	3.23
8. Arthritis/rheumatism/joint pain	3.9	5.2	10.4	80.5	8.03
9. Back pain/slipped disc	8.3	4.2	25.0	62.5	2.50
10. Neurological or mental problems (depression)	50.0	0.0	0.0	50.0	0.21
11. Cancer (of any form)	0.0	0.0	0.0	100.0	0.10
12. Demented/memory loss	0.0	0.0	100.0	0.0	0.10
13. Alzheimer's	0.0	0.0	0.0	0.0	0.00
14. Frailty/general weakness/run down condition	7.9	10.2	24.4	57.5	52.97
15. Injury and related disabilities	0.0	0.0	0.0	100.0	0.73
16. Burn and related disabilities	0.0	0.0	100.0	0.0	0.21
17. Diabetes and other problems like prostate/dental, etc.	2.7	6.6	21.2	69.5	23.57
Row total (number)	76	97	208	578	959
Row percentage	7.9	10.1	21.7	60.3	100.0

Source: IEG/CIDA Ageing Survey (see Alam, March 2004).

Appendix table 3. Standard of living index (SLI)

Assets and services	Score
Truck/van	12
Cars	11
2-wheelers	10
Computers	10
Refrigerator	9
Television	9
Telephone	8
Sewing machine	7
Table fan	6
Cycle	5
Banking and other facilities combined	5
Radio	4
Immoveable assets	
Pucca house	3
Semi -kucha	2
Kucha	1
Flush toilet and inside the house	3
Dry toilet and inside the house	2
Outside toilet/no toilet	1

Source: Alam (March, 2004).

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The New Zealand Health Care and Disability System

It is important to address the financial, structural and attitudinal barriers to good quality health care in order to improve the health of New Zealanders.

By Durga S. Rauniyar*

The purpose of this paper is to give a general overview of the New Zealand health and disability system. It provides a brief description of the demographics of the population and the health and disability status of New Zealanders by focusing on some important health outcome measures. It addresses some emerging issues and the Government's initiatives to promote the health and well-being of all New Zealanders.

Population in New Zealand

New Zealand had a population of just over 4 million in 2005. The age-sex distribution shows that 22 per cent of the total population is aged below 15 years, 66 per cent is in the age group 15-64 years and the remaining 12 per cent aged 65 years and older, based on the 2001 Census data (figure 1).

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Figure 1. Age-sex distribution of New Zealand population, 2001

Figure 2 shows the estimated and projected population distribution by broad age groups from 1951 to 2051. The overall New Zealand population is projected to grow slowly, but the proportion of older people is expected to increase at a faster rate, particularly from about 2010 onward, as the baby-boom generation begins to reach 65 years of age. By around 2021 there will be more people over the age of 65 than under the age of 15. By 2051, 26 per cent of the population will be aged 65 and older (Statistics New Zealand, 2002).

New Zealand has a multi-ethnic population. The 2001 census revealed that 15 per cent of the total population is Mâori[1], 7 per cent of Pacific origin and another 7 per cent Asian. The Mâori, Pacific and Asian ethnic groups tend to have a younger population compared with the New Zealand European group. As a result, those ethnic groups make up a much smaller proportion of the older population in New Zealand. For example, in 2001, Mâori, Asian and Pacific people represented 3.9, 2.2 and 1.6 per cent, respectively, of the people aged 65 and older. New Zealand's publicly funded health-care system, which provides free hospital services, accident compensation and care from

non-subsidized general practitioners and other allied care providers, such as physiotherapists, serves the New Zealand population.
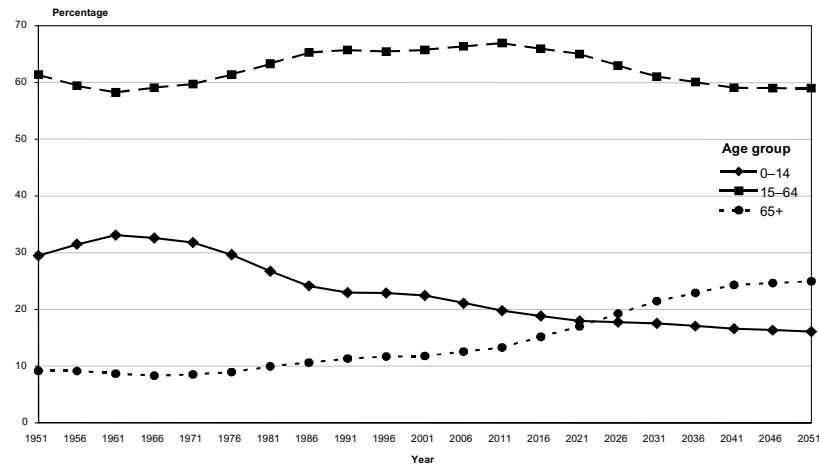
Figure 2. Percentage age distribution of New Zealand population: 1951 to 2051

Source: Statistics New Zealand, *Census of Population and Dwellings 1951–1991* and *Population Projections* (1999 base assuming medium fertility, mortality and migration).

### The health status of the New Zealand population

Currently, a single measure of health status has not been developed, in part because health status is multidimensional; however, there is a general consensus that the measure of health status should embrace physical, mental and social dimensions. The physical dimension of health status is commonly used as data have become easily available, particularly in the areas of mortality, morbidity and disability. In this paper, physical health status is indicated by life expectancy, rates of disability and morbidity. Those measures also indicate the contribution of the health and disability system in New Zealand. Wherever possible, the trend analysis of selected health outcomes is presented by ethnicity and the New Zealand Deprivation Index[2] in recognition of the association between those factors and the greater extent of disparities in health.

Mortality

In New Zealand, about 4,700 people die each year from cancers, cardiovascular diseases, chronic obstructive pulmonary diseases and other diseases caused by personal risk behaviours such as smoking. In this paper, mortality is indicated by life expectancy (LE) and independent life expectancy (ILE) as those two measures calculate the average number of years a person can expect to live from the stated age, assuming specific mortality levels remain constant.

Life expectancy

Life expectancy at birth for the total population of New Zealand was 78.7 years at the beginning of the current decade. It was 76.3 years for males and 81.1 years for females based on deaths in the period 2000-2002 (Statistics New Zealand, 2004). Life expectancy at birth has improved at a generally increasing rate over the last two decades, during which time the life expectancy of males has improved
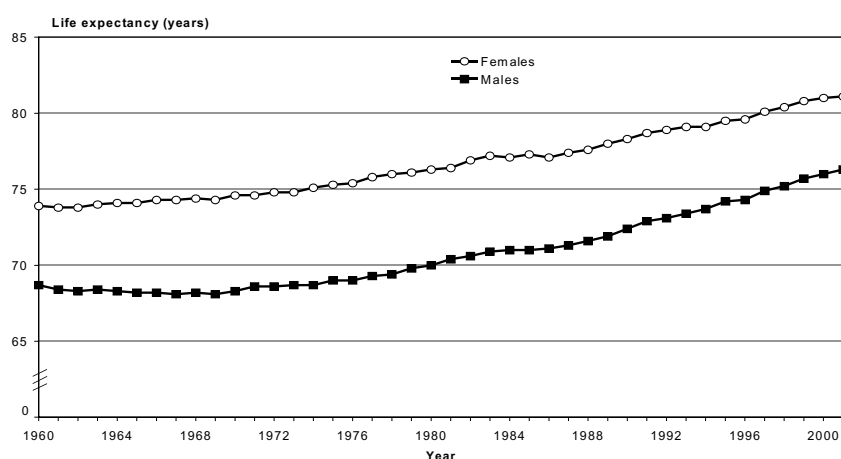
more than that of females (figure 3). Females could expect to outlive males by 4.8 years in the period 2000-2002, down from the peak of 6.4 years in the period 1975-1977.

Figure 3. Life expectancy at birth, by sex, 1960-2000

Source: Statistics New Zealand life tables. Life expectancy data for 1961, 1966, 1971, 1976, 1981, 1986, 1991 and 1996 are from complete life tables. Life expectancy data for all other years are from abridged life tables.

Life expectancy for Mâori and Pacific people is still lower than for the general population, owing to their higher mortality rates at younger ages. From the 1950s to the mid-1980s, life expectancy at birth for Mâori males increased by 13 years and for Mâori females by 16 years. Yet, Mâori life expectancy at birth is about 8.5 years lower than that of non-Mâori. The life expectancy for Mâori females and males was 73.2 years and 69.0 years, respectively, compared with 81.9 years for non-Mâori females and 77.2 years for non-Mâori males. Although the gap in life expectancy between Mâori and non-Mâori has closed slightly, a wide gap still remains (Statistics New Zealand, 2004). In a recent analysis of ethnic-specific mortality rates, only a small decline in the mortality rates for people of Mâori and Pacific ethnicity was observed over the two decades 1980-1999 (Ajwani and others, 2003). Life expectancy at birth for the Pacific people is slightly higher than for the Mâori people, being 70 years for males and 76 years for females, but those figures are still lower than the New Zealand average.

Independent life expectancy (ILE)

Life expectancy does not take account of the quality of life. Two indicators of the quality of life associated with increasing longevity are independent life expectancy and disability requiring assistance. Independent life expectancy combines fatal and non-fatal health outcomes. ILE at birth measures the number of years a newborn can be expected to live independently, i.e. have a life free of any disability requiring assistance (table 1) and Mâori have a lower ILE than non-Mâori. In particular, the difference in ILE between Mâori females and non-Mâori females is much greater than the difference between Mâori males and non-Mâori males. A shorter life expectancy for Mâori is reflected in the fewer years of independent life expectancy at age 65 years (an additional 7.4 years for Mâori men compared with 9.9 for all men and 7.5 years for Mâori women compared with 11.9 for all women) (Ministry of Health, 2002). Information on independent life expectancy is not available for people in the Pacific ethnic group.

Table 1. Independent life expectancy at birth, in years, 2001

	Mâori	Non-Mâori	Total
Male	57.5	65.0	64.6
Female	58.6	68.1	68.4

Source: Ministry of Health (2002). *Health of Older People in New Zealand: A Statistical Reference, 2002* (Wellington: Ministry of Health).

Disability

Limitation in functional activities in the context of health experiences affects the quality of life. Disability requiring assistance (DRA) is the term used to categorize those people who have a disability and require assistance either daily or intermittently. Approximately 9 per cent of all New Zealanders aged 85 years or younger have a DRA (table 2). A report on disability in New Zealand shows that DRA increased among males between 1996 and 2001 and decreased among females. However, the change is small in both sexes (Ministry of Health, 2002). The severity of disability also increases significantly[3] with age. About 36 per cent of all people aged 75 years and older had a moderate disability (requiring some assistance or special equipment, but less often than daily) and 18 per cent had a severe disability (requiring daily assistance).

Table 2. Percentage prevalence of disability requiring assistance (0-85 years), 2001

	Mâori	Non-Mâori	Total
Male	13.5	9.4	9.7
Female	14.2	8.6	8.9
Total	13.9	9.0	9.3

Source: Ministry of Health (2002). *Health of Older People in New Zealand: A Statistical Reference, 2002* (Wellington: Ministry of Health).

Morbidity

In broad terms, New Zealanders regard their health highly. More than 90 per cent of adults aged 15 and older reported their health was good, very good or excellent in the 2002/2003 New Zealand Health Survey. However, a high prevalence of chronic diseases was also reported. Almost one in two people reported that they had one or more chronic or long-term diseases.[3] Although the prevalence of chronic diseases increases with age, it appears that the prevalence of having at least one chronic disease is high even among young adults (table 3). The high prevalence rate of chronic diseases among young people is associated with high rates of asthma (25 per cent); and other chronic diseases are migraine, eczema and other skin disorders.

Table 3. Prevalence of chronic diseases, by age groups, 2003

Age group	Chronic conditions				Total (N)
	Non (Percentage)	One (Percentage)	Two (Percentage)	Three or more (Percentage)	

15-24	64.03	29.03	6.36	0.58	1,557
25-44	61.06	28.67	8.25	2.02	5,005
45-64	41.56	33.46	16.5	8.48	3,667
65 years and over	19.07	29.57	25.73	25.64	2,161
Total (N)	5,989	3,753	1,673	975	12,390

Source: 2002-2003 New Zealand Health Survey.

The prevalence of those chronic diseases is related to the broader picture of the common causes of death or hospitalization in New Zealand. Those are ischaemic heart disease, circulatory disorders, stroke, respiratory diseases and
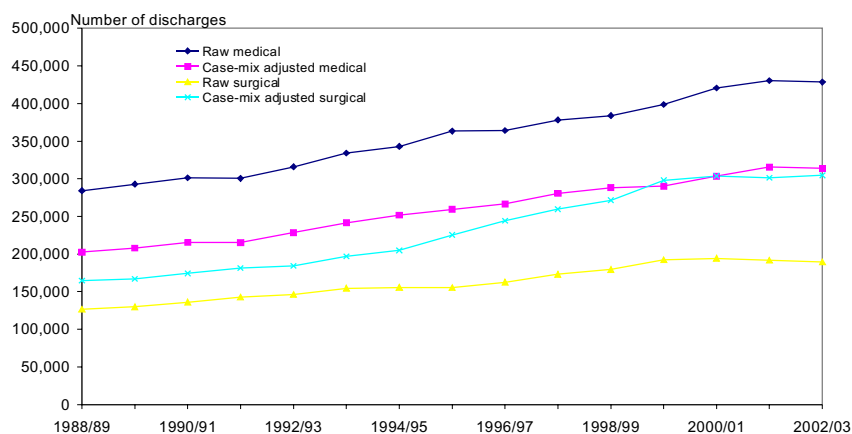
cancer. Morbidity analyses are carried out by using hospital discharge data. The number of people being treated in New Zealand's public hospitals has been increasing steadily. Between 1988/1989 and 2002/2003, both the raw and case-mix adjusted[4] number of medical and surgical discharges rose consistently, although the number of surgical discharges did not increase during the mid-1990s (figure 4).

Figure 4. Total medical and surgical hospital discharges, 1988/1989-2002/2003

Source: Data extracted from *National Minimum Data Set, 2004*, New Zealand Health Information Service, Ministry of Health.

Several factors may explain the increase in hospitalization, including changes in admission practices, increases in day treatment and reductions in length of stay in the hospital, technological changes and funding initiatives from the late

1990s intended to reduce waiting times (Ministry of Health, 2003). Since the early 1990s, there has also been an increase in the complexity and cost of hospital treatment, with the introduction of more sophisticated surgical techniques and increases in both cardiac and orthopaedic surgery (ibid.).

All hospitalizations can be categorized as either potentially avoidable or unavoidable (Ministry of Health, 1999). However, the distinction between avoidable and unavoidable hospitalization is a theoretical one based on the patient's main diagnosis and does not necessarily reflect individual circumstances. Beyond the age of 75, the classification becomes increasingly problematic owing to the increasing prevalence of co-morbidities; thus, the calculations used in this section are restricted to people under the age of 75.

The two indicators of avoidable hospitalization are population-preventable hospitalizations that could be prevented through population health strategies[5] and ambulatory-sensitive hospitalizations (ASH) that could be prevented through interventions delivered through primary health care. Evidence from international studies suggests that there is a strong relationship between ASH and the utilization of primary health care.
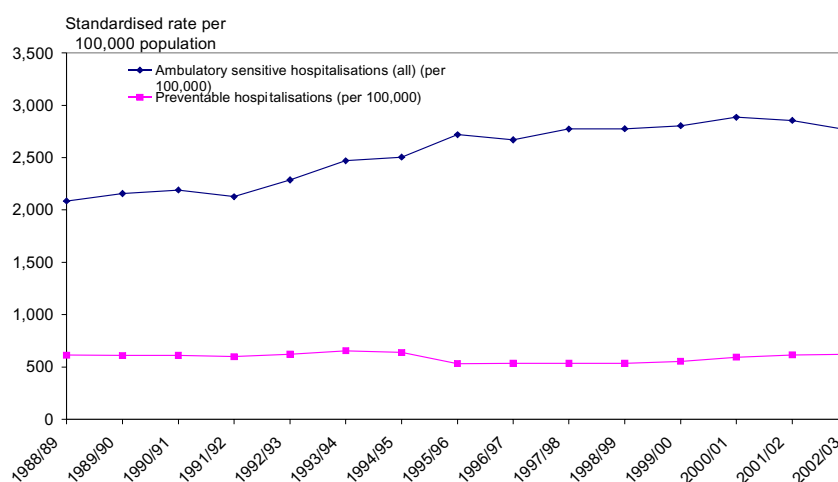
Figure 5 shows the standardized discharge rates for both of those indicators. Some examples of population-preventable diseases are smoking-related diseases, gastroenteritis, respiratory infections, asthma, and heart diseases.[7] Those population-preventable hospitalisations have increased steadily since 1995/1996 at the rate of 2.4 per cent per year.

Figure 5. Standardized discharge rates for ambulatory-sensitive and population preventable hospitalizations, 1988/1989-2002/2003

The general increase in ambulatory-sensitive hospitalizations indicates that more people are being hospitalized for conditions that could be treated through primary health care. However, in recent years the rates of ASH have been decreasing. This suggests that primary health-care strategies are moving in the right direction in treating more people through primary care. Some researchers also have associated differential rates of ASH with health reforms (Dharmalingam and others, 2004). However, the true effects of the Primary Health Care Strategy will
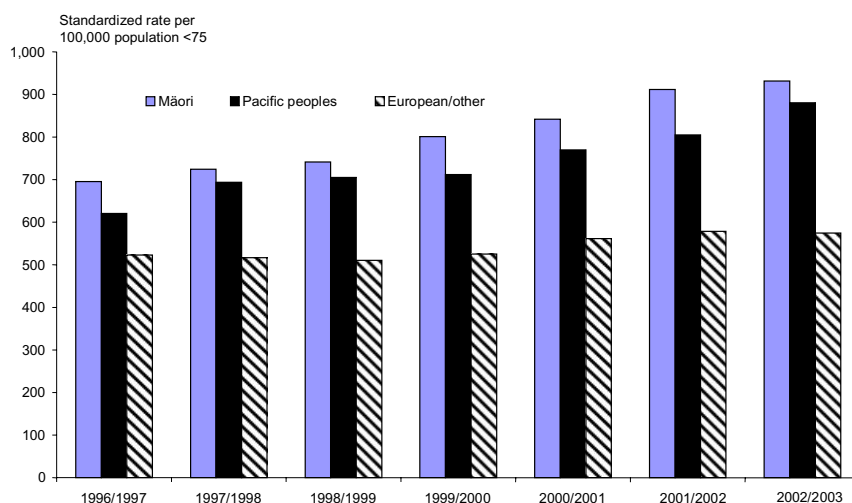
be understood when the results evaluating the Strategy become available.

Figure 6 shows that the rates of population-preventable hospitalizations increased for all ethnic groups between 1996/1997 and 2002/2003. However, the rate of increase has been three times higher among people of Mâori and Pacific ethnicity than for Europeans and others. Part of the increase for the Mâori and Pacific peoples may be a result of changes in the coding of ethnicity. Given the increase over time across all ethnic groups, the trends reflected in those figures are likely to be broadly correct.

Figure 6. Standardized discharge rates for population-preventable hospitalizations, by ethnicity, 1996/1997–2002/2003

Source: Data extracted from *National Minimum Data Set, 2004*, New Zealand Health Information
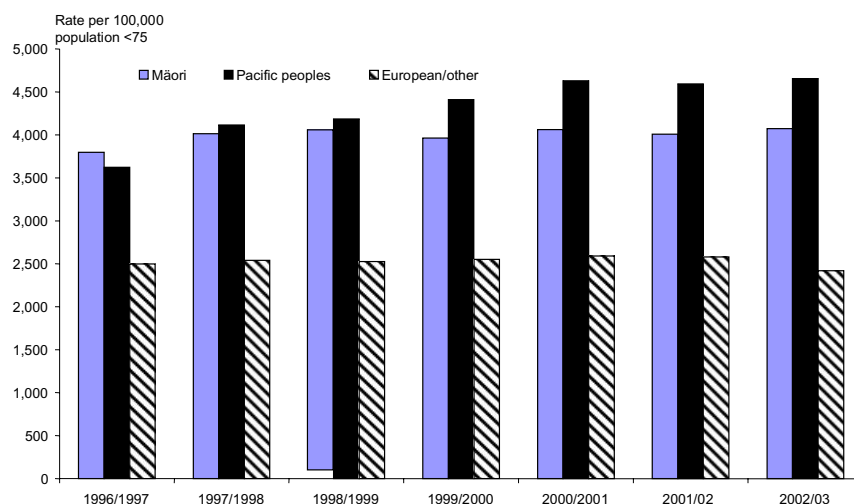
Service, Ministry of Health.

The rise in ambulatory-sensitive hospitalizations has differed across ethnic groups (figure 7). Between 1996/1997 and 2002/2003, ambulatory-sensitive hospitalizations for people of Mâori and Pacific ethnicity increased annually by 1.6 and 4.3 per cent, respectively, compared with a 0.5 per cent decrease for Europeans and others. Mâori and Pacific peoples have greater rates of ambulatory-sensitive hospitalization compared with European and other people. Apart from Mâori (among whom rates are similar between the

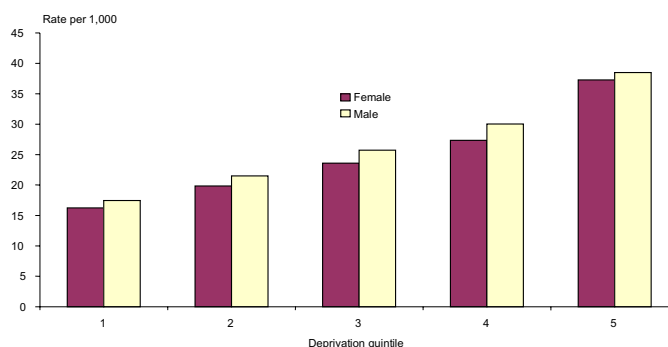sexes), males have slightly higher ambulatory-sensitive hospitalization rates than females.

Rate per 1,000

Figure 7. Standardized discharge rates for ambulatory-sensitive hospitalizations, by ethnicity, 1996/1997-2001/2002

Source: Data extracted from *National Minimum Data Set, 2004*, New Zealand Health Information Service, Ministry of Health.

Those data suggest that people of Mâori and Pacific ethnicity may not be receiving adequate access to primary health care. Ambulatory-sensitive hospitalizations increase with high levels of area deprivation (figure 8). People living in the most deprived quintile have ambulatory-sensitive hospitalization rates twice that of those living in the least deprived quintile. Ambulatory-sensitive hospitalizations increase steadily with increasing deprivation.

Figure 8. Ambulatory-sensitive hospitalizations, by deprivation area of residence and sex, rate per 1,000, 2001-2003

Source: Data extracted from *National Minimum Data Set, 2003*, New Zealand Health Information Service, Ministry of Health.

Note: Rates are age-standardized using the 1996 census population.

Emerging issues

In recent years significant achievements have been made in the New Zealand health sector, as can be seen from the improvement in life expectancy. However, the relative increase in avoidable hospitalizations indicates that a greater proportion of people are being hospitalized for conditions that could theoretically be treated through primary health care, possibly in combination with support services. While the Government continues to foster innovation and quality improvement, there remain some issues for which continuous effort is required in order to achieve the desired outcomes. Some of those issues are discussed below.

Issues related to population characteristics

New Zealand has an ageing population. Considerable concern has been expressed about the ageing of the population and the impact that this might have on the demand for health services. One possibility is that a larger number of older people will result in increased morbidity and therefore an increased demand for services. Another possibility is that, although the population is ageing, the experience of ill health will continue to be compressed into the last few years of life rather than extended across a larger number of years in old age. International studies provide some support for the second hypothesis in the Australian population (Giles, Cameron and Crotty, 2003). In addition to changes in the level of demand, ageing of the population also has the potential to affect the mix of service types provided.

Despite considerable attention at the national policy level, there has been relatively little systematic analysis of data relating to demographics and the use of health services, with the exception that some analysis has been done with regard to likely future costs for hospital care and overall health costs (Johnston and Teasdale, 1999). It is also important to examine the effects of ageing on the use of general practice services. Given that 80 per cent of New Zealanders aged 70 and older live independently rather than in residential care facilities (Ministry of Health, 2002), monitoring the use of general practice services by different age groups becomes an important part of planning for the ageing of the population.

Issues related to access to health-care services

The strength of New Zealand's health system is that it provides access to hospital care services free of cost to patients, as well as other subsidized health-care services such as immunization, screening and reduced-cost general practice services. In the 2002/2003 New Zealand Health Survey, respondents reported greater satisfaction with general practitioner services. The majority of New Zealanders were very satisfied (48 per cent) or satisfied (45 per cent) with their general practitioners at their last visit (Ministry of Health, 2004). While no

question was asked in this survey regarding satisfaction with the overall health-care system, high levels of dissatisfaction with the health-care system were noted in a survey of "sicker adults" commissioned by the Commonwealth Fund in 2002 (Blendon and others, 2003). However, no conclusive reasons were provided for this finding (Ministry of Health, 2003). This leads to the necessity of examining critical issues in access to health-care services.

There are well-documented disparities in the accessibility and availability of health care in New Zealand. Health accessibility is a multidimensional concept. From an economic point of view, barriers to access are associated with both supply- and demand-side factors. Supply-side factors are broadly related to service availability, the level and allocation of financial and human resources for health care, the existence of waiting times for treatment, especially in allied health services, outpatient medical specialist services and elective procedures.

With regard to service availability, analyses of data from the Organisation for Economic Cooperation and Development (OECD) in 2001 indicate that New Zealand has a relatively high number of general practitioners (0.8 per 1,000 population) and practising certified nurses (9.6 per 1,000). However, they are not equally distributed. The Government recognizes the fact that most of the health services are located in urban or suburban areas. Difficulties in attracting general practitioners and other health professionals to rural areas and the problems of high doctor turnover and continuity of care are often experienced. Therefore, access to hospital and primary health-care services in rural communities is perceived to be a problem in New Zealand (Ministry of Health, 2003). Problems with access to hospital services may be understandable because specialist services need to be concentrated in order to achieve economies of scale and this expertise is available in only a limited number of tertiary hospitals. However, as in Australia, small rural communities value their local hospital highly, largely because of the hospital's perceived role as a source of emergency care; thus, the closure of any rural hospitals is contested politically (Duckett, 2004). In addition, there are issues concerning major inequities between district health boards with regard to health services such as referred services, and this situation poses a critical challenge for the Government (Malcolm, 2002).

A recent OECD report showed that New Zealand had relatively lower rates of measles immunization compared with the OECD average (85 per cent vs. 90 per cent) in 2001. Childhood immunization is often used as an indicator of the effectiveness of health-service delivery. Besides service availability issues, long waiting time is another critical issue facing the New Zealand health system. Waiting time for elective surgery is also an indicator of the effectiveness of the

health system. Among those needing elective surgery, one in four respondents reported waiting over four months for elective surgery (OECD, 2003).

Demand-side factors can also restrict access to health care. For example, an individual's ability to pay for health services and other personal characteristics (knowledge, beliefs, information, preferences and opportunity costs) are likely to influence the use of health services. The cost of health care generally is incurred in two ways. The first way is when costs are incurred for treatment, for example, prescribed drugs including co-payments for seeing a general practitioner. Second, costs are incurred when patients are referred from primary care to services such as allied health, medical specialists, or private health care. Cost may be a barrier to access and this problem may be aggravated by poor access to public transport and isolated populations in rural settings (Barnett and Coyle, 1998). Such problems are evident in the recent New Zealand Health Survey 2002/2003. One in eight adults said that they needed to see a general practitioner in the previous 12 months, but did not see one and reported a financial constraint as one of the main reasons for not seeing a general practitioner (Ministry of Health, 2004). As such, financial barriers limit the utilization of needed services.

The existence of a barrier to access often depends on the complex interaction of both supply- and demand-side factors, and they in turn determine the extent to which access to health care is equitable. Thus, the concern about how to get the best out of the health system persists in New Zealand as in many other countries in the world.

Issues related to population health outcomes

The Government recognizes that good health and well-being rely not only on access to health care but also on a range of other factors. As such, the picture in terms of equity of outcomes is less clear in part because outcomes are affected not only by service availability or quality of care but also by other individual or environmental factors. Therefore, the challenges in improving population health and reducing disparities are ongoing concerns for the Government.

Analyses of life expectancy, disability and morbidity rates show disparities by ethnicity. It is important to understand what is contributing to those disparities. Numerous studies have pointed out various determinants of health status to explain health disparities. Those factors range from definition of ethnicity, particularly changes in the definition of the Mâori ethnic group in various censuses, to the prevalence of chronic diseases and lower socio-economic status (Ajwani

and others, 2003). Other researchers have linked disparities to health-system reforms (Dharmalingam and others, 2004; Laugesen and Salmond, 1994).

Although there was no formal evaluation of the impact of the reforms on the utilization of health services, it has been argued that the reforms were likely to have had the deleterious effect of severely limiting access to primary care (Dharmalingam and others, 2004). This was not only due to the increases in fees for general practitioner services but also owing to policies to cut welfare services, which affected people's ability to access health services (Barnett and Coyle, 1998). Those research findings suggest that, in order to reduce observed disparities in health, broader socio-economic factors need to be taken into consideration as a part of any strategy to improve health status.

Government initiatives and recommendations

To address some emerging issues, the Government has implemented a number of strategies under the framework of the New Zealand Health Strategy to improve the health of all New Zealanders. In this section, a few selected examples of steps taken by the Government are provided.

Initiatives

The Government has launched the Health of Older People Strategy. This strategy provides national direction for an integrated approach to planning, funding and delivering services to older people. This strategy is consistent with the policy framework launched by the World Health Organization at the Second World Assembly on Ageing held in Madrid in April 2002.

The Government is committed to reducing the health disparities that exist between the Mâori and the non-Mâori populations by developing an effective partnership with Mâoris and seeking active Mâori involvement in the sector. One of the main initiatives to reduce those disparities includes implementation of *He Korowai Oranga* (Mâori Health Strategy) and its accompanying action plan, *Whakatataka* (the implementation plan for the Strategy) (Minister of Health and Associate Minister of Health, 2002a and 2002b). Other initiatives include the implementation of the Primary Health Care Strategy in 2001 and Intersectoral Community Action for Health. It is evident from international studies that improvement in population health is possible through a well-performing primary health-care system (Veugelers, Alexandra and Elliott, 2004). The Primary Health Care Strategy takes a population health approach and

gives more emphasis to health education and health promotion. It is designed to reduce barriers to primary health services and improve their quality. Most of all, it encourages multidisciplinary approaches and coordination (Ministry of Health, 2001) to improve the health of the New Zealanders by dealing with risk factors at the point of first contact. Primary health organizations are the main structures to achieve the success of the Strategy. Progress in establishing those organizations has been rapid since the first two were formed in July 2002.

Unlike previous health reforms, the Health Reforms 2001 Research Project was undertaken to evaluate the progress of health reform under the New Zealand Public Health and Disability Act 2000 (Health Reforms 2001 Research Team, 2003). The research project involves a three-year evaluation with interim findings being fed to the sector as the evaluation progresses. In addition, the Health Research Council, the Ministry of Health and the Accident Compensation Corporation are funding a number of evaluations and related research focused on the implementation and impact of the Primary Health Care Strategy over three years from 2003. Findings of the evaluation programme will be used to inform further developments in primary care.

It is the Government's expectation that all patients seeking publicly funded services will be clearly advised about whether they will receive treatment and when that treatment will occur. The Government is committed to improve the health of all New Zealanders by emphasizing key priorities such as reducing waiting times for elective surgery, improving the quality of health care and addressing rural workforce issues. In addition, the Government has launched a number of population risk-specific strategies, such as the New Zealand Cancer Control Strategy; Healthy Eating Healthy Action: *Oranga Kari, Oranga Pumau:* A Strategic Framework; and Improving Quality: A Systems Approach for the New Zealand Health and Disability Sector.

Recommendations

As described above, the New Zealand Health Strategy and the New Zealand Disability Strategy provide the framework for the overall direction of the health and disability sector. To meet the goals of those strategies, the Government has implemented a number of population, service and disease-based strategies and action plans. Based on the analysis contained in this paper, a number of recommendations are listed below.

There are disparities in health status among different groups of New Zealanders and disparities between people living in the most deprived areas and

people living in affluent areas. Health disparities persist despite ongoing efforts of the Government to reduce them. In order to address the disparity issue, it is necessary to address the determinants of health. As health is influenced not only by the health sector but also by other sectors, continuation of intersectoral collaboration is highly recommended. Intersectoral collaboration is an approach that seeks to influence the many determinants that have an impact on health from outside the health sector by working collaboratively with sectors such as education, housing, transport, employment and justice.

Access to health-care services in New Zealand varies geographically. One way to deal with this disparity is to target disadvantaged communities and populations with specific health programmes and services such as travel assistance. In order to ensure fair access to services, the Government should continue targeting such populations.

It is important to address the financial, structural and attitudinal barriers to good quality health care in order to improve the health of New Zealanders. For this to be possible, along with service provision, socio-economic data should be routinely recorded and analysed.

As there is increasing evidence that effective primary health-care services have an influence on secondary care outcome, it is recommended that efforts be geared towards more integrated and influential primary health-care services. Along with the efforts to promote innovative and good quality health care, efforts to reduce the waiting list for elective services should be continued in order to improve the health of people in New Zealand.

In conclusion, the New Zealand Health and Disability Support System is moving in the right direction to achieve the health goals specified in the New Zealand Health Strategy.

Acknowledgements

Endnotes

1. There have been several changes in the classification and coding of ethnicity on birth and death registrations over the last 30 years. A major change occurred in 1995 when classification changed from a "biological" classification to one based on the concept of self-identification. This paper uses ethnicity data that have been prioritized; for details, refer to the methodology set out in appendix 1b of *Health of Older People in New Zealand: A Statistical Reference, 2002* (Ministry of Health, 2002).

2. The New Zealand Deprivation Index (NZDEP) was developed in 1996 and revised in 2001. It is an area-based measure of socio-economic deprivation that uses nine variables (access to a telephone or a car; unemployment; government income subsidies (support), proportion of people living in a low-income or single-parent family, no educational qualifications, live in non-tenured homes, and live in crowded households) obtained from census data to provide a summary deprivation score for each meshblock in New Zealand (a meshblock is a census collection area of 50-60 households, i.e., the smallest geographical unit for which statistical data are collected). The meshblocks are ranked into deciles, with 1 being the least deprived and 10 being the most deprived. Studies that used the NZDEP index as sole indicator of socio-economic status have shown a strong relationship between NZDEP score and health outcomes (Blakely and Pearce, 2002). However, the results need to be interpreted with caution since the majority of Mâori ethnic groups tend to live in the most deprived areas (Reid, Robson and Jones, 2000). For instance, a study in the United Kingdom of Great Britain and Northern Ireland found that uptake of income support offers a better explanation of health disparities among older people than standard indicators of deprivation (O'Reilly, 2002).

3. A significance level of 95 per cent has been used for comparisons of disability survey data.

4. Chronic diseases included are heart disease, stroke, diabetes, asthma, chronic bronchitis, arthritis, back or neck problem, osteoporosis, cancer, or other long-term mental or physical conditions.

5. Case weights for this section are based on Victorian (Australian) cost weights (WIES8) modified by the Ministry of Health for deriving 2001/2002 contracted prices with district health boards. Case weights exclude the costs of adjustments paid to district health boards for: complexity (tertiary), rurality, diseconomies of scale, Mâori health, capital adjustment, acute demand and blood.

6. Excludes hospitalizations preventable by strategies for injury prevention.

7. Ischamic heart disease subdivided into myocardial infarction, angina and heart failure to distinguish first episodes of IHD (which are preventable) from subsequent management of chronic IHD (which is ambulatory sensitive).

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Changes in Age-Sex Mortality Patterns and Causes of Death in the Republic of Korea

A characteristic of the mortality pattern of males
in the Republic of Korea is that the mortality rate
of those over 40 years of age is quite high compared with
males of other ages and females of that age.

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The high population growth in many developing countries is caused by relatively low mortality and continuing high fertility. Under those circumstances, it is difficult to deny that reducing fertility is crucial for curbing rapid population

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growth. Nonetheless, because the health status of a population has an obvious bearing on mortality, its importance as a variable affecting the quality of the population has also been recognized (United Nations, 1973, p. 107). Therefore, while fertility reduction is an important factor for curbing population growth rates, mortality (or health) control is required for improving the quality of the population.

This study analyses the patterns of and changes in mortality in the Republic of Korea in order to enhance understanding of the mortality transition in that country. Also, it examines mortality differentials by the demographic and socio-economic characteristics of the population. Finally, it traces the characteristics of a healthy life based on an analysis of the causes of death.

Vital statistics since 1970 were used for the calculation of death rates by sex and age; the completeness of death registration data in the Republic of Korea since 1970 has enabled their use for the calculation of mortality indicators (Kim, 1990; Park, 1995). Population projections prepared in 2001 covered the period up to 2050 (Korea National Statistical Office (KNSO), 2001a). For the analysis of the reasons for the changes in the age-sex mortality pattern, the cause of death statistics that had been collected with death registration were used. Life tables have also been available since 1971 (KNSO, 2003).

For the analysis of mortality differentials, two demographic variables were included, sex and age, and two socio-economic ones, educational level and marital status, to determine the reasons for mortality changes.

Mortality trends and patterns

Age-sex pattern of mortality

The expectation of life at birth in 1971 for the Republic of Korea was 59.0 years for males and 66.1 years for females. People in the young age groups (up to around 30 years of age) have experienced very significant mortality declines compared with those in the older age groups throughout the whole reference period (see table 1). However, the mortality declines for the older age groups have increased recently and the differences in the mortality changes between the two groups have become smaller for both sexes in recent years. Although the decline in mortality was faster for females than for males, the death rates for males in all age groups declined faster in recent years, and the differences in the mortality changes between the sexes became smaller.

Although the mortality patterns by sex are different from each other because of the relatively high mortality rates after the age of 40 for males (see Kim, 1990),

changes in the mortality pattern of males can be expected when the differences in mortality decline between the sexes become smaller.

Table 1. Proportional decreases in age-specifi nortality rates, by sex, 1971-2001

Age group	Males (percentage)		Females (percentage)	
	1971-1985	1985-2001	1971-1985	1985-2001
Life expectancy at birth in each period (years)	59.0-64.5	64.5-73.3	66.1-72.8	72.8-80.2
0	50.8	70.0	52.7	70.8
1-4	50.7	70.9	52.7	74.2
5-9	57.4	72.5	59.1	77.0
10-14	58.7	68.7	64.7	69.2
15-19	44.9	65.0	59.1	68.1
20-24	49.3	59.9	69.2	63.9
25-29	31.5	59.2	66.4	61.8
30-34	27.5	55.5	57.2	58.7
35-39	7.8	50.5	48.4	54.5
40-44	11.6	51.8	39.5	58.6
45-49	17.0	47.5	36.7	56.3
50-54	25.5	44.1	33.2	54.6
55-59	28.5	43.0	30.4	51.6
60-64	23.0	42.1	26.3	48.1
65-69	19.0	40.8	13.2	44.9
70-74	8.8	34.4	5.0	36.7
75-79	11.0	29.2	9.7	26.0

Source: Korea National Statistical Office (2003). *2001 Life Tables for Korea* (Seoul, KNSO).

Although the increase in life expectancy at birth for females, i.e. 6.7 years, during the 14-year period between 1971 and 1985 exceeds that of males (5.5 years), the increase in life expectancy for males (8.8 years) for the 15 years after 1985 exceeded that of females (7.4 years) in that time period. The difference between the life expectancy of both sexes, i.e. 8.3 years, reached its peak in 1985 and then decreased slowly to 6.9 years in 2001 (Kim, 2004; KNSO, 2003), a pattern that is similar to that of most developed countries (OECD, 2004).

Mortality patterns and model life tables

A low sex ratio of mortality rates for the age group 5-9 years is generally found in societies traditionally having a strong son preference. Further, the low sex ratios of death rates for the age group 20-39 (a 10-year cohort) reflect high maternity mortality in societies with high fertility and poor medical services. However, those low sex ratios disappear when the fertility level becomes low and the standard of living improves.

The low sex ratios at ages 5-9 and 25-29 that existed in the Republic of Korea in 1971 disappeared over time with the decline in fertility and improvements in the quality of life (see figure 1). Subsequently, the low sex ratio of those two particular age groups has not been observed again since 1981. In the meantime, the sex ratio of the death rates of those in the age group 40-59 has increased, exceeding 3 in 2001. The death rates for males in those age groups were three times higher than those for females of corresponding ages. This is why the mortality pattern of males in the Republic of Korea belongs to the Far Eastern Pattern of mortality (United Nations, 1982).

The high death rates for males aged 40 and above in the Republic of Korea distinguished the life table of Korean males from the West Model of Coale and
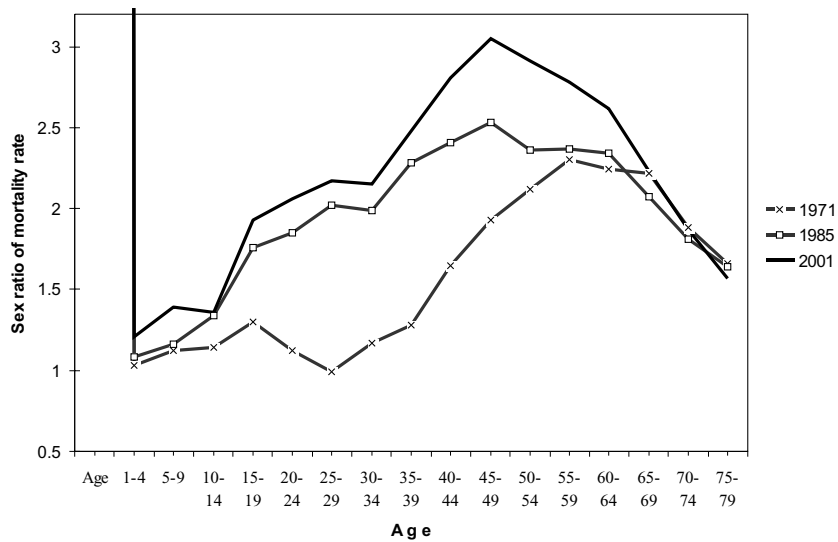
Demeny (1983) that is generally regarded as the standard for the world. A study in

the early 1980s termed this type of pattern the "Far Eastern Pattern" of mortality (United Nations, 1982).
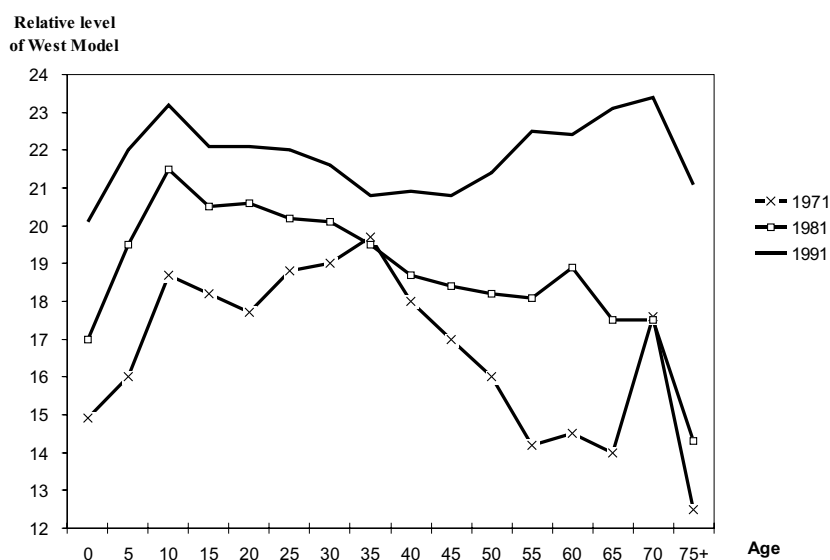

Figure 1. Sex ratios of age-specific mortality rates, 1971-2001

Source: Korea National Statistical Office (2003). *2001 Life Tables for Korea* (Seoul, KNSO).

Figure 2. Comparison of mortality pattern for Korean males and West Model of Coale and Demeny, 1971-1991

Source: Korea National Statistical Office (2003). *2001 Life Tables for Korea* (Seoul, KNSO); and Coale and Demeny (1983). *Regional Model Life Tables and Stable Populations* (New York, Academic Press).

Figure 2 summarizes the relative levels of West Model life tables compared with the death rates of Korean males by five-year age groups. The relative levels of West Model life tables in 1971 declined rapidly for those in age groups higher than 35-39 years, that is, although the mortality levels for those in the age groups from 10-14 years to 35-39 years were similar to those at 18-19 years of age, the levels for

those older than 40 years declined rapidly and reached the life table level of only 14.2 for those in their 50s. This pattern changed when overall mortality declined. The relative levels in 1991 at 50 years and older became higher and could be matched with the levels found in younger age groups. This means that the mortality pattern of Korean males is approaching the average patterns of developed societies experiencing mortality decline, although until around 1980 the Korean pattern belonged to the Far Eastern Pattern.

Mortality differentials

Mortality differentials by educational level and marital status

Mortality differentials are noticeable among various socio-economic subgroups: death rates appear to be higher within subgroups with a low level of education or in lower-grade occupations. Also, rural residents or unmarried people showed higher death rates than average (Benjamin, 1965; Antonovsky, 1967; Ruzicka, 1982; Kobayashi, 1984; United Nations, 1984; Yamamoto, 1985). Such mortality differentials are also found in the Republic of Korea (Kim, 1990).

The inverse relationships between mortality level and educational level among adults (aged 25-64 years) in the Republic of Korea are strong in all age groups (see Kim, 2004, p. 105, table 4-4), which is known as a general pattern (see Mathis, 1969; Kitagawa and Houser, 1973). For the 30 years from the period 1970-1972 to 2000, the difference in death risks by educational level showed a great change. The relative difference in the risks has increased over time, and the rate of increase is clear, especially in the younger age groups (25-34 and 35-44 years). This phenomenon shows that the gap narrows with age, but the mortality differentials increase with rises in education level.

The pattern of mortality differentials by marital status in the Republic of Korea shows a general picture (see Kim, 2004, p. 107, table 4-5). The mortality level of those married was definitely lower than that of the single population for both sexes and all age groups. The pattern of mortality differentials by marital status in the Republic of Korea has changed over the last 30 years. The difference in mortality level between those married and those never married is becoming smaller in all age groups and for both sexes. The difference in death rates of those married and those never married is lower in the age group 25-34 years for both sexes. Since the never-married rate for females is rising faster than that of males, the difference for females has become relatively smaller.

Educational level affects occupation, income and personal health. As the level of education increases, the level of mortality in all cases declines. Considering that the educational level of the single population, including those beyond marriageable age, is relatively low, it is assumed that the mortality differentials by marital status are related to a difference in educational level. The standardized death rates by marital status were estimated based on the proportion of deaths by sex and educational level in order to analyse mortality differentials by marital status, after the effects of the difference in educational level are controlled (see table 2).

Table 2. Mortality ratios of death rates and standardized death rates, by marital status and age, 2000

Sex and marital status	Ratio of death rates[a]	Ratio of standardized death rates[b]
Males (45-54 years)	**1.00**	**1.00**
Never married	4.10	3.31
Married	0.83	0.85
Others[c]	2.62	2.38
Females (45-54 years)	**1.00**	**1.00**
Never married	3.46	4.39
Married	0.92	0.86
Others[c]	1.85	1.50

Source: Korea National Statistical Office (2002). *2001 Vital Statistics* (Seoul, KNSO).

[a] Calculated directly from registration data.
[b] Calculated after standardizing death rates by marital status for the age group 45-54 years based on the population composition by educational level and sex.
[c] Including persons widowed, divorced or separated.

Standardized mortality ratios decreased for those who never married, other males and other females, while that of never-married females increased. Also, the educational level of never-married females in the age group 45-54 years appears to be relatively higher and that of others lower than those who were married. However, even though the effects of educational level are controlled, the death rates of those who never married and others (both sexes) are approximately two (other females) to four times (never-married males) higher than that of those who were married. Therefore, marital status, along with educational level, is a key factor that affects the mortality level directly in the Republic of Korea.

Effects of changes in composition by population characteristics on mortality

As mortality differentials change with educational level and marital status over time and since proportions of the population by educational level and marital status change with socio-economic development, the relationships between the changes in mortality levels and subpopulation proportions were analysed.

Using mortality ratios and population proportions by educational level and marital status, the mortality changes resulting from the changes in population composition between 1980 and 2000 were estimated from equations (1) and (2) below.

If the proportion of subpopulation i in 1980 is constant and the death rate of age group j in 2000, $R_{j(2000)}^{2000}$ is 1.0, the relative mortality ratio of age group j in 2000, $R_{j(80)}^{2000}$, may be estimated from equation (1).

$$R_{j(80)}^{2000} = \sum_i (W_{ij}^{80} \cdot r_{ij}^{2000}) \text{ .... (1)}$$

Where W_{ij}^{80} is the population proportion of characteristic i and age group j in 1980, r_{ij}^{2000} is the mortality ratio of characteristic i and age group j in 2000.

Since $R_{j(2000)}^{2000} = 1.0$ the percentage change in mortality level P_j of age group j resulting from the change in population propor on by characteristics from 1980 to 2000 is:

$$P_j = (1.0/ R_{j(80)}^{2000} - 1) . 100 \text{ .... (2)}$$

Therefore, the results of P_j reveal how much the change in population proportion by characteristics affects the mortality level and how different the effects are by age and sex.

Table 3. Relative mortality ratios and changes in mortality levels in 2000 as a result of the changing population composition since 1980, by age group

Age group (years)	Educational level[a]				Marital status[b]			
	Males		Females		Males		Females	
	Rj[c]	Pj[d](%)	Rj[c]	Pj[d](%)	Rj[c]	Pj[d](%)	Rj[c]	Pj[d](%)
25-34	2.521	-60.3	4.083	-75.5	0.879	13.8	0.910	9.9

35-44	2.203	-54.6	2.363	-57.7	0.781	28.0	0.952	5.0
45-54	1.550	-35.5	1.531	-34.7	0.897	11.5	1.019	-1.9
55-64	1.220	-18.0	1.082	-7.6	0.986	1.4	1.049	-4.7

Source: Korea National Statistical Office (2002). *2001 Vital Statistics* (Seoul, KNSO).

[a] Four classifications: never, elementary, middle and high school, and college and higher.

[b] Three classifications: never married, currently married and others.

[c] Relative mortality ratios by age in 2000, if the population composition by age in 2000 is the same as that in 1980 and the age-specific death rates in 2000 are 1.0.

[d] Proportional changes (percentage) of relative mortality ratio (1.0) of age-specific death rates in 2000 from the relative mortality ratio for age group j (R_j) resulting from the changing population composition since 1980.

The relative mortality ratios of the age group 25-34 years, based on population proportion by educational level, are 2.5 times higher for males and 4.1 times for females (see table 3). With age, the ratios plunge and reach approximately 1.1 to 1.2 times higher for both sexes. Therefore, the decreases in mortality levels (the difference between observed and estimated rates) for the age group 25-34 years, owing to improved educational levels from 1980 to 2000, were as significant as 60.3 per cent for males and 75.5 per cent for females. These decreasing percentages drop with age; those in the age group 45-54 years were as small as 35.5 per cent and 34.7 per cent for males and females, respectively. The considerable decline in the level of mortality in young age groups for both sexes (see table 1) means that the recent improvement in educational levels has strongly affected the decrease in mortality levels.

As opposed to the effects of educational change, the relative mortality ratios based on population proportions by marital status were less than 1.0 in all age groups for males and for the age group 25-44 years for females. The ratios increase slowly with age and reach about 1.0 at the highest age group for both sexes. Since the mortality level for those married is relatively lower than those in other subpopulations, the increase inthe never-married population proportions for both sexes tends to increase overall mortality rates.

Mortality by cause of death

Trends and patterns in causes of death

Early in the twentieth century, the leading causes of death in Korea were diseases related to the respiratory and digestive systems and communicable

diseases, including smallpox, pneumonia and tuberculosis (Lee, 1980, pp. 174-176). Kwon and Kim (1968) pointed out that infectious diseases such as cholera, smallpox and tuberculosis were the leading causes of death in Korea around 1920. The leading causes of death in the period 1938-1942 were those related to the digestive, respiratory and nervous systems and infectious and parasitic diseases (Kwon, 1968).

In 1966, the above-mentioned leading causes of death diminished, while deaths caused by neoplasms, diseases of the circulatory system, and injury and poisoning increased markedly. Those three newly emerging major groups of causes of death explained 50 per cent of the total deaths in the period 1980-1981, and more than 60 per cent of total deaths in 1990 and 2000 (Kim, 2004, pp. 113-114).

The changes in causes of death can be observed in the proportions of death caused by five leading factors. Table 4 lists the five leading causes of death between 1966 and 2000. It reveals that, of the leading causes of death in 1966, three of them were diseases of the respiratory and digestive systems and infectious diseases. In the period 1980-1981, all of the five most important causes of death were diseases of the circulatory system, neoplasms and injuries.

From 1990, the four most important causes of death were malignant neoplasms, cerebrovascular and heart diseases and traffic accidents. Such changes in the pattern of causes of death indicate that the dramatic decline in mortality levels since 1966 was mainly due to reductions in mortality from diseases of the respiratory system and infectious diseases such as pneumonia and tuberculosis.

Table 4. Changes in the five leading causes of death, 1966-2000

Rank	1966[a]	1980-1981[b]	1990[c]	2000[c]
1	Pneumonia	Malignant neoplasms	Malignant neoplasms	Malignant neoplasms
2	All forms of tuberculosis	Hypertensive diseases	Cerebrovascular diseases	Cerebrovascular diseases
3	Vascular lesions affecting central nervous system	Cerebrovascular disease	Heart disease (all forms)	Heart disease (all forms)
4	Malignant neoplasms	All accidents	Traffic accidents	Traffic accidents

| 5 | Gastritis, duodenitis, enteristis and colitis | Heart disease (all forms) | Hypertensive diseases | Chronic liver diseases and cirrhosis |

Sources: 1966: Economic Planning Board (1968). *1966 Vital Statistics* (Seoul, National Bureau of Statistics, Republic of Korea); 1980-1981: Economic Planning Board (1982). *1981 Cause of Death Statistics* (Seoul, National Bureau of Statistics, Republic of Korea); and 1990 and 2000: Korea National Statistical Office (2001b). *2000 Causes of Death* (Seoul, KNSO).

[a] Based on an abbreviated list of 50 causes of death in the *International Statistical Classification of Diseases, Injuries and Causes of Death,* seventh revision (Geneva, World Health Organization, 1957).

[b] Based on a special list of 55 causes of death in the *International Statistical Classification of Diseases, Injuries and Causes of Death,* ninth revision (Geneva, World Health Organization, 1977).

[c] Based on a special list of 56 causes of death in the 1995 Korean Standard Classification of Diseases, Korean National Statistical Office (2001). *2000 Causes of Death* (Seoul, KNSO).

Causes of adult deaths by age and sex

For the five-year age groups from age 35 years and older, mortality rates are high and the causes of death are substantially different between males and females (see Kim, 2004, p. 114, table 4-10). The first among the leading causes of death in 1981 was diseases of the circulatory system for both sexes and in all age groups. However, from 1990, the first such cause was neoplasms for those in younger age groups (35-64 years); diseases of the circulatory system became the leading cause of death for those at older ages. In 2000, the share of injury and poisoning in the causes of death was the greatest for males aged 35-54 years.

Although the general pattern of causes of death is similar for males and females, the sex differentials in the proportions of death caused by diseases of the digestive system are quite noticeable, particularly for those under 65 years of age (see Kim, 2004, pp. 114-115). Such differentials continued until 2000 owing to the persistence of a high rate of death caused by chronic liver disease for males, despite the reduction in death caused by diseases of the digestive system. The proportion of deaths caused by neoplasms for both sexes increased with the decline in overall mortality. However, it increased more rapidly for males than for females: neoplasms became a leading cause of death for people in the older age groups.

If the changes in death patterns continue, the leading causes of death for males and females aged 35-54 years will be injury and poisoning; for those in the older age groups, it will be neoplasms. Also, the proportions of death caused by diseases of the respiratory system will increase rapidly for those in the older age groups (especially 75 years and above). Together with neoplasms and diseases of

Table 5. Sex mortality ratios of cause-specific death rates by leading causes of higher mortality among males, by age group, 2000

Causes of death by age[a]	Cause-specific death rates[b]		Sex ratio of death rates (females:100)	Relative sex ratio (average sex ratio:1.00)
	Males	Females		
Ages 30-39 (total)	179.0	77.2	231.8	1.00
1. Malignant neoplasms	25.3	23.8	106.3	0.46
2. Chronic liver diseases and cirrhosis	16.4	2.1	780.9	3.37
3. Traffic accidents	32.7	8.2	398.8	1.72
4. Heart diseases (all forms)	10.7	3.4	314.7	1.36
5. Cerebrovascular diseases	7.8	3.8	205.2	0.88
Ages 40-49 (total)	441.0	148.7	296.6	1.00
1. Malignant neoplasms	98.2	57.1	171.9	0.58
2. Chronic liver diseases and cirrhosis	68.4	7.8	876.9	2.95
3. Traffic accidents	43.9	11.1	395.5	1.33
4. Heart diseases (all forms)	33.2	8.5	390.6	1.31
5. Cerebrovascular diseases	31.0	14.6	212.3	0.71
Ages 50-59 (total)	1,007.3	355.6	283.2	1.00
1. Malignant neoplasms	341.8	136.7	250.0	0.88
2. Chronic liver diseases and cirrhosis	117.3	19.1	614.1	2.17
3. Traffic accidents	61.1	19.2	318.2	1.12
4. Heart diseases (all forms)	76.8	23.9	321.3	1.13
5. Cerebrovascular diseases	99.7	53.1	187.7	0.66

Sources: Korea National Statistical Office (2001). *Population Projections for Korea: 2000-2050* (Seoul, KNSO); and KNSO (2001). *2000 Causes of Death* (Seoul, KNSO).

[a] Comparing the changes in the sex ratio of death rates by age group based on the five leading causes of death in males in the age group 40-49 years.

[b] Number of deaths per 100,000 persons, calculated from death registration data and the estimated population in 2000.

the circulatory system, diseases of the respiratory system will constitute the three leading causes of death for older persons (Kim, 2004, pp. 116-117).

The characteristic of the mortality pattern for males in the Republic of Korea is that the death rates for males over 40 years of age are relatively higher than those for younger males and for females. Table 5 shows the reasons for the sudden increase in the death rates of males over 40 years of age by comparing them with that of females. The five leading causes of death for males in the age group 40-49

years were selected and the death rates compared with those of males in the age group 30-59 and females in all age groups.

The death rate of males in the age group 40-49 years in 2000 was 441.1 per 100,000, which is approximately three times higher than that of females (148.7 per 100,000); and the mortality sex ratio is the highest among all age groups. In the age groups mentioned above, the five leading causes of death for males were malignant neoplasms, chronic liver diseases and cirrhosis, traffic accidents, heart diseases (all forms) and cerebrovascular diseases. Among them, the highest sex ratio was found in those who died of chronic liver diseases and cirrhosis (876.9 per 100,000). The ratios for those who died in traffic accidents (395.5 per 100,000) and heart diseases (all forms) (390.6 per 100,000) were also higher than the average (296.6 per 100,000). Similar patterns were found for those in the age group 30-59 years. However, because the death rates for both sexes were low in the age group 30-39 and the rate for females in the age group 50-59 also grew rapidly, the sex ratios of those who died in the age groups 30-39 years and 50-59 years were lower than that for those in the age group 40-49 years. Thus, it may be stated that the high sex ratios of those who died in the age group 40-49 were caused by the three above-mentioned causes of death.

If the sex ratio of death rates in the age group 40-49 is indexed as 1.0, the ratios of the above-mentioned causes of death were higher than 1.3; in particular, the ratio of chronic liver diseases was three times higher than the average ratio. However, these relative sex ratios became smaller than those of chronic liver diseases (4.17) and all accidents (2.81) for those in the age group 35-44 years in 1980-1981 (Kim, 1990, p. 80). This is one reason why the mortality pattern of males in the Republic of Korea has changed from the Far Eastern Pattern to the West Model, the average pattern globally, since the 1980s.

Summary and conclusion

The death rates of females aged 5-14 years and females aged 20-29 years were relatively higher than those of males in the Republic of Korea until the 1970s. However, this pattern has changed along with the decrease in overall mortality. That change is attributable to lowered fertility, which reduces the risk of death related to pregnancy. It is also related to a weakened preference for sons (Kong and others, 2000, p. 311).

The mortality patterns of males used to match the Far Eastern Pattern until the 1980s; it has been approaching the Western standard since then. Changes in mortality patterns in the Republic of Korea suggest that the Far Eastern Pattern is a

phenomenon of incomplete mortality transition that may be expected to disappear with further declines in mortality.

The mortality differentials by educational level have changed over the 30-year period from 1970 to 2000. The gap in mortality between persons with different levels of education has increased for both sexes. Mortality differentials by marital status are also quite significant, and the pattern has changed greatly over the aforementioned 30-year period. Mortality differentials between married and single people are becoming smaller in all age groups and for both sexes. When the educational effects were controlled, the death rates of those unmarried appeared to be approximately two to four times higher than the death rates of those married. Thus, mortality differentials by marital status, along with differentials by educational level, are the primary factors affecting mortality levels in the Republic of Korea. The analysis of the relationships between mortality levels and population composition revealed that mortality decreases with improvements in the educational levels of the population. By contrast, changes in the marital status composition of the population have resulted in increasing death rates because of the increase in the proportion of single people.

The specific causes of death have also changed in the process of the mortality transition. In 1966, pneumonia and tuberculosis were the most important causes of death. However, in 1980-1981, the major causes of death were malignant neoplasms and hypertensive diseases. In the 1990s, malignant neoplasms, cerebrovascular and heart diseases, and traffic accidents emerged as the major causes of death. Chronic liver diseases and cirrhosis ranked as one of the top five causes of death in 2000.

A characteristic of the mortality pattern of males in the Republic of Korea is that the mortality rate of those over 40 years of age is quite high compared with males of other ages and females of that age. Analysis of the causes of death for males aged 40-49 years reveals that the rates of death from chronic liver diseases, heart diseases and traffic accidents are particularly high. However, in recent years, the mortality pattern of males in the Republic of Korea has been changing to that of the West Model.

The main causes of mortality differentials by sex are the diseases related to behaviours such as smoking and drinking among males (Kim, 1990). Those include chronic liver disease, hypertensive disease and malignant neoplasms. In addition, while the overall death rates have declined rapidly along with the improvement in the educational levels of the population, there are still substantial differences in mortality by marital status. That situation calls for more research on

the mechanisms of mortality differentials as well as action programmes aimed at lowering the mortality level of the more vulnerable subpopulations.

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