



Asia-Pacific Population Journal

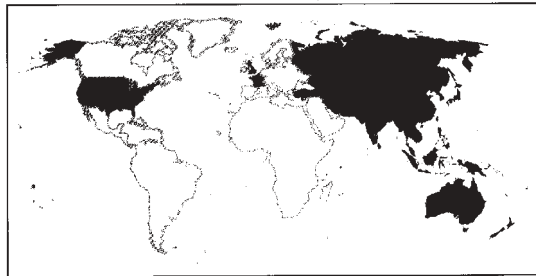
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COVER PHOTOGRAPH

An ethnic minority child in the mountainous Nghe An province of central Viet Nam enjoying a ride on his grandmother's back (*Photograph by Dr. Linh Cu Le*).

Unintended pregnancy in Viet Nam, where abortion rates are particularly high, is the focus of the third article published in this issue of the *Asia-Pacific Population Journal*.

The lead article by Alaka Malwade Basu offers an innovative perspective on gender equity and female empowerment, examining the demographic implications of leisure.

The second article provides a broad overview of population ageing in East and South-East Asia, looking into the numerous implications of the changing age structure for elderly care. Finally, the fourth paper presents an interesting insight into mortality trends in Thailand, discussing the crucial importance of such data to assess the mortality situation and its implications for the country.

CONTENTS



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Viewpoint

Tsunami vs. HIV/AIDS: Perception Dictates Response 3

In 2004, the same year as the Indian Ocean tsunami, an estimated 5 million people were newly infected with HIV, the equivalent of 25 tsunami events. If this had actually happened, HIV/AIDS striking with the fury and suddenness of a tsunami, chances are that our perception of the gravity of the problem would have been greatly altered.

By Joseph Roberts

Abstracts 6

Articles

Gender, Leisure and Empowerment 9

While leisure may be a strange thing to worry about for poor households given their intense preoccupation with day-to-day survival, there is no doubt that some access to leisure enhances the quality of life not only of the leisured individual but also of his or her associates. Therefore, a concern with the access to leisure is legitimate even from a larger developmental perspective.

By Alaka Malwade Basu

Population Ageing in East and South-East Asia, 1950-2050: Implications for Elderly Care 25

Since Governments in most developing countries are not in a position to bear the entire responsibility of the growing numbers of older persons, they should encourage and provide support for the maintenance/sustainability and strengthening of community-based care for the elderly, paying special attention to the needs of older women.

By Ghazy Mujahid

Unintended Live Birth versus Abortion: What Factors Affect the Choices of Vietnamese Women and Couples? 45

Rising unintended pregnancy and abortion rates are sometimes observed concurrently with rising levels of contraceptive use. However, in transitional societies, such as Viet Nam, where demand for children is falling faster than contraceptive prevalence and use-effectiveness is rising, the widespread use of MR/abortion as a primary means of achieving family size aspirations unnecessarily puts large numbers of women at risk of adverse health outcomes.

By Linh Cu Le

Demographers' Notebook

Mortality and Causes of Death in Thailand: Evidence from the Survey of Population Change and Death Registration 67

By Pungpond Rukumnuaykit

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Tsunami versus HIV/AIDS: Perception Dictates Response

In 2004, the same year as the Indian Ocean tsunami, an estimated 5 million people were newly infected with HIV, the equivalent of 25 tsunami events. If this had actually happened, HIV/AIDS striking with the fury and suddenness of a tsunami, chances are that our perception of the gravity of the problem would have been greatly altered.

By Joseph Roberts*

On 26 December 2004, a magnitude 9.0 earthquake struck off the coast of Indonesia, generating a widespread tsunami. The resulting waves, some up to 15 meters high, reached the heavily populated shores of Indonesia, Thailand, Sri Lanka, India and the east coast of Africa, leaving a path of death and destruction in their wake. The final death toll may never be known, but it is likely that at least

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200,000 people lost their lives on that fateful day, with some estimates running as high as 280,000. Along with lives lost, the tsunami destroyed countless livelihoods and made millions of people homeless. Soon after the event, in an interview with CNN, United Nations Emergency Relief coordinator Jan Egeland summarized the situation: “This may be the worst natural disaster in recent history because it is affecting so many heavily populated coastal areas... so many vulnerable communities”.

The magnitude of the devastation prompted a rapid and massive global response. Politicians toured devastated areas by helicopter. States of emergency were declared. United Nations emergency response teams and humanitarian relief agencies went into crisis mode. International organizations and Governments made pledges to donate millions of dollars of aid to help the victims. Representatives of the mainstream media rushed to disaster sites. Soon videos of tsunami waves striking beach resorts were shown on television along with haunting pictures of the dead.

During the same year that the Indian Ocean earthquake and tsunami made headlines, another type of “tsunami” was killing, not 200,000 people per year, but millions of people per year. The epicenter of this “biological tsunami” was in Africa. The initial “earthquake” took place in the early 1980s. Its destructive “waves” spread out slowly in all directions, taking nearly two decades before reaching the “shores” of virtually every country. Because it moved so slowly – largely hidden from view – there were no exciting pictures of it to show on the daily news. The mainstream mass media never rushed in to cover “the story”. And politicians were largely silent about the problem. What are we talking about here? The HIV/AIDS tsunami.

Since its beginning, 65 million plus people have been infected with HIV. Given that there is no cure, this number translates into the equivalent of 325 Indian Ocean-like tsunami events (assuming 200,000 tsunami deaths). In 2004, the same year as the Indian Ocean tsunami, an estimated 5 million people were newly infected with HIV, the equivalent of 25 tsunami events. If this had actually happened, HIV/AIDS striking with the fury and suddenness of a tsunami, wreaking havoc and unspeakable suffering 25 times in a row, killing about 5 million people (the number of people infected with HIV in 2004), chances are that our perception of the gravity of the problem would have been greatly altered.

How would the international community have reacted to such a series of disasters? Would the world, mass media and politicians have reacted? Would the global perception of the HIV/AIDS problem have changed? Of course it would have.

The HIV/AIDS problem would have become the world's number one problem requiring a massive response. But that is what "would have been." The actual response to the HIV/AIDS pandemic has never come close to the response to the 2004 tsunami.

The global response to the localized Indian Ocean tsunami tragedy was appropriate. My point is that the global response to the generalized HIV/AIDS tragedy needs to be equally appropriate. This is particularly true given that, in contrast to the Indian Ocean tsunami, the HIV/AIDS tragedy is totally preventable. In other words, we have "room to maneuver" and can actually do something to prevent it. Unfortunately, HIV/AIDS is still not being treated as a global disaster in need of a crisis-oriented response. One obvious reason is that the pandemic is influenced by cultural taboos related to sex that make it difficult to address. A less obvious reason is that slow-moving inconspicuous problems like global warming, acid rain, species loss, poverty and HIV/AIDS tend to capture less public attention than fast-moving obtrusive events like volcanic eruptions, famines, wars, acts of terrorism and tsunamis.

In a speech given at the London School of Economics on 8 February 2005, UNAIDS Executive Director, Dr. Peter Piot, described the HIV/AIDS pandemic as exceptional: "This pandemic is exceptional because there is no plateau in sight, exceptional because of the severity and longevity of its impact, and exceptional because of the special challenges it poses to effective public action". Without question the Asian tsunami was a tragic disaster requiring a massive response. But the HIV/AIDS disaster has been and continues to be far more destructive in terms of its impact on human lives. In terms of human casualties (65 million plus and still counting), we have seen nothing like it in the history of the human species. To quote Dr. Piot again:

This is an unprecedented crisis, in scale and nature, and we have no choice but to act in exceptional ways. This is also a crisis that will continue for some generations. So our basic choice is...whether we act exceptionally right now or later, when many more millions have died.

The HIV/AIDS pandemic is clearly an exceptional global disaster. Because of this, it demands no less than an exceptional tsunami-like response. And that response should begin now.

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The HIV/AIDS pandemic is clearly an exceptional global disaster. Because of this, it demands no less than an exceptional tsunami-like response. And that response should begin now.

Gender, Leisure and Empowerment 9

This paper looks at leisure, an aspect of life that is generally neglected in the demographic literature. It argues that not only are access to and use of leisure as gendered as other frequently discussed attributes like education and employment, they also have similar demographic implications. Of course, leisure reflects gender differences in empowerment, but also leads to gender differences in empowerment. When leisure increases empowerment, this in turn affects fertility and health outcomes for women and their families in Asia. However, not all the demographic effects of leisure are positive. In particular, there is much about modern leisure that increases the sedentariness of life and therefore adversely influences physical health. Simultaneously, the primary form of sedentary leisure, the mass media, usually increases the kinds of knowledge and attitudes that encourage low fertility.

**Population Ageing in East and South-East Asia, 1950-2050:
Implications for Elderly Care** 25

As consequence of sustained declines in fertility and improvements in life expectancy during the last three decades of the twentieth century, East and South-East Asia is now faced with a high rate of population ageing. Given very high rates of growth in the older population in the coming years, the region faces

the prospects of an increasing proportion of older persons (defined as those aged 60 years or more) of total population. Moreover, with continuing advancements in medical science, longevity continues to increase and the population of the oldest old (that is those aged 80 years or more) is projected to increase at even faster rates. Women constitute a majority of the older population and an even larger majority of the oldest old population. Older women are more vulnerable than older men, as a higher proportion of them are widowed and have a higher incidence of suffering from disabilities, this adds to the burden of care. This article describes these trends and the subsequent demands of care, mainly in terms of health care and living arrangements, but also the demands that will be placed on the shrinking proportions of the younger adult population. The paper highlights among other things, the need to strengthen both family-based and community-based care systems, which remain strong but are threatened by declining family size, migration and globalization. The article concludes by pointing to the need for mainstreaming ageing into all development programmes.

Unintended Live Birth versus Abortion: What Factors Affect the Choices of Vietnamese Women and Couples? 45

Unintended pregnancy and abortion rates in Viet Nam are very high, exceeding the levels found in most developing countries and approaching those found in the more developed countries. This study assessed the factors associated with the choice of induced abortion as opposed to carrying unintended pregnancies to term.

“Calendar” data from the 1997 Viet Nam Demographic and Health Survey II were used in the study. Bivariate and multivariate statistical methods were used to identify factors associated with decisions to terminate unintended pregnancies versus carry them to term as unintended live births.

A history of menstrual regulation/abortion was the strongest predictor of a woman’s decision to choose abortion. Family planning supply indicators were associated with the likelihood of unintended pregnancy, but not choice of abortion, nor were indicators of the availability of menstrual regulation/abortion services.

Menstrual regulation/abortion is widely used as a means of avoiding unintended births by women and couples in Viet Nam. The evidence indicates a need for expanded and higher quality family planning services, and in particular

post-abortion services, in order to reduce the prevalence of unintended pregnancy as well as repeated abortion in the country.

Mortality and Causes of Death in Thailand: Evidence from the Survey of Population Change and Death Registration 67

This paper examines the overall mortality trends and emerging problems in terms of causes of death in Thailand. It also estimates the survival probabilities at different ages of the Thai population. The paper argues that the overall mortality situation for both males and females in the country is improving significantly. However, while infectious diseases are still among the leading causes of deaths, other causes related to risky behaviours leading to hypertension, cerebrovascular diseases, accidents and suicides are increasingly becoming major causes of death in Thailand.

The results from survival estimates suggest that Thai males and females have similar survival probability up to early adulthood, after which adult females tend to have a significantly higher survival probability at every age than adult males. The reduction in the gap of the survivor probabilities between males and females is nevertheless due to a significant improvement in the survival probabilities of males, suggesting improvements in the health-care system for the overall population.

Realizing also that accurate mortality data is of crucial importance to assess the mortality situation, the paper discusses the quality of mortality data in Thailand. The findings suggest a great improvement in the completeness of death registration and the quality of data on causes of death in Thailand.

Gender, Leisure and Empowerment

While leisure may be a strange thing to worry about for poor households given their intense preoccupation with day-to-day survival, there is no doubt that some access to leisure enhances the quality of life not only of the leisured individual but also of his or her associates. Therefore, a concern with the access to leisure is legitimate even from a larger developmental perspective...

By Alaka Malwade Basu*

In this paper, the author looks at one important but usually sidelined aspect of gender equity and female empowerment: the access that women have to leisure. Much of the research on empowerment is about women having the resources, technical, material and physical, to take decisions, to be physically mobile and to manipulate their larger environment. In turn, this empowerment is valorized

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because of all the good uses to which it is typically put according to the large and growing literature on female empowerment. The autonomous or empowered women¹ is supposed to be good for society and for the family because her autonomy results in lower fertility, lower infant and child mortality, better household welfare, higher contributions to economic development, and other benefits. But there is much less concern with what autonomy and empowerment can do for women themselves, with the exception of the demographic outcomes like better health.

However, a case can be made for thinking of access to leisure as an outcome of empowerment for women as well as a determinant of such empowerment. That is to say, that first of all, women deserve to get more out of equality and empowerment than better housekeeping and childrearing skills. In any case, as argued in another paper (Basu and Koolwal, 2004), becoming better wives and mothers may often reflect a greater sense of responsibility rather than a greater sense of authority or power. Empowerment that allows a woman to decide what to cook for dinner or whether to take a sick child to a hospital is desirable empowerment of course, but those activities are on the whole non-contested household activities because they lead to greater household welfare, so it is not clear that they require all that much freedom being exercised by the woman. In this sense, women's access to leisure may be better able to capture their autonomy.

Access to leisure may also more accurately reflect gender equality than factors like employment. Not only are men and women in most Asian societies, or anywhere in the world for that matter, differentially able to access material resources, men are much more likely to be granted rights to the time and money to spend on themselves, often in harmless ways, sometimes in more invidious ways, as for example, in the right to frequent commercial sex workers, a "privilege" that women rarely can lay claim to. Indeed, one of the reasons that women's employment is touted in the development literature is that women are less likely than men to spend their income on tea and cigarettes and more likely to spend it on things like child nutrition and education.

But tea and gossip are good for women too (even if cigarettes are not). They make life a little more interesting and fun. Fun and leisure may be strange things to worry about for poor households given their intense preoccupation with day-to-day survival. But, there is no doubt that some access to leisure enhances the quality of life not only of the leasured individual but also of his or her associates. Leisure is also very important as a determinant of empowerment. That is, participation in leisure may empower women in direct and indirect ways, that in

turn, also have important demographic implications. In the last section of this paper, the author outlines some of these leisure-empowerment relationships.

Leisure is of course not a clearly defined activity; it can very often be combined with work (gossiping with neighbours while peeling potatoes for instance). To the extent that this is so, it is true that statistics may understate women's access to leisure. At the same time, some attempt to separate out the "leisure" component of a day's activities becomes important as the nature of women's lives changes, precisely in response to calls for greater empowerment. That is, while it may be relatively easy to combine gossip with the peeling of potatoes, it may be less easy to do so with the formal assembly line type of work that constitutes many forms of employment in developing countries and that policy is encouraging as one way to increase women's autonomy.

As for what constitutes leisure, it is a somewhat ambiguous concept – lawn mowing may be a leisure activity for the energetic homeowner, while it is a day's work for the professional gardener. Very broadly one can think of leisure as made up of activities that are undertaken because they afford pleasure or happiness in themselves, not because they lead to some other kind of good; that is, not for their instrumental value. For example, child care does not count, even if it is inherently pleasurable, because it does achieve a greater purpose, that of child welfare. By contrast, more creative forms of leisure (art or music, for example) may have instrumental value in addition to being intrinsically pleasure giving, yet if they are done with this larger instrumental purpose they would not count as leisure.

In any case, women have traditionally not had the kind of access to leisure that produces good artists and musicians, so this may be a moot point. For the bulk of women in poor countries, leisure as an indicator of empowerment and welfare is probably best described in terms of very simple things such as a chance to rest, to socialize, to be entertained by the mass media and may be defined broadly as: the ability to be somewhat "unproductively free".

In the rest of this paper, the author examines the notion of leisure, especially with relation to women in Asia, also examined are some of the influences on women's access to and use of leisure and the role of leisure in increasing female empowerment. To begin with the notion of leisure, two concepts are considered: the idea of an "entitlement to leisure" and the concept of "opportunities for different kinds of leisure". In both cases, the focus is specifically on women in South Asia. Next, two influences on such entitlement and opportunity are outlined – socio-economic status and life cycle stage. Finally, a case is made for leisure as an empowering activity in the same way as education and employment are

empowering activities. Leisure is described as important in itself, but also as instrumental in ways that should interest population scientists.

Entitlement to leisure

Whatever the objective opportunities for leisure in a community, women cannot get very far if they do not have some kind of “right” or “entitlement” to leisure (see, Henderson and Bialeschki, 1991). This right may be conferred on women by others, at the very least, it must be recognized by others, it must also be perceived as an entitlement by women themselves. The two aspects may often be in conflict, women may perceive greater or fewer rights to leisure than society expects them to. On the whole, rights to leisure tend to reflect larger power structures in the home and in society. But these entitlements, or lack thereof, are not necessarily validated by force; they are usually complied with through norms about what is appropriate for female behaviour and by ideologies that rationalize norms, though they might appear unjust or inefficient to the outside observer.

Against this background, it is understandable that even the notion of leisure is alien to many poor women. Thus, it is not surprising that many of the women in a survey in Kerala in India (Saradamoni, 1977) mentioned washing clothes and cleaning the house when asked what they did in their free time.

In any case, it is not true anywhere, certainly not in South Asia, that the right to leisure is absolute or in perpetuity. Furthermore, there is much fine-tuning about who can claim how much leisure, when and of what kind. In addition, norms are usually not directly about leisure, but about other matters, which in turn, have an impact on leisure. For example, norms about femininity can severely restrict the access of young girls to competitive sports. In conservative societies such as in South Asia, those norms also often severely constrain leisure activities that require movement outside the home or otherwise involve necessary or inadvertent proximity to strangers, especially male strangers.

Opportunities for leisure

Opportunities for leisure cannot be exploited without the right to do so, nor can rights be exercised without opportunities to exercise them. Also called “containers” for leisure, these opportunities refer to the presence of different types of activities, social settings and physical locations that facilitate leisure, for all individuals in general but for women in particular (Henderson, 1994).

What are some of these opportunities, “containers” or platforms for women’s leisure? In general, one can classify leisure activities in many ways – one can think of leisure activities as social/communal or solitary (like gossiping versus reading), active or passive (playing badminton versus watching television), organized or casual (playing badminton versus gossiping), family-centred or extra-domestic (going out for a movie with family versus going out with friends), creative or unproductive (painting versus sitting in the sun on a winter afternoon). In general, while all these things are legitimate or disallowed at different times and for different people, for women in South Asia, leisure is more likely to be social, passive, casual and unproductive.

In addition, for women, leisure is more likely to be “fragmented” and to be what Robinson (1977) called a “secondary” activity. Fragmented leisure refers to leisure enjoyed in small units of time rather than in blocks – an impediment that makes it difficult for the individual to develop any sustained leisure interests. Leisure as a secondary activity refers also to activity that is combined with a non-leisure activity (peeling vegetables while listening to the radio) – once again, this is relaxing and fun, but cannot be regarded as something that gets the kind of undivided attention that creative leisure would entail.

Objective opportunities for leisure cannot be exploited if entitlement to leisure does not exist. Also they cannot be fully exploited if there are additional material constraints on their use. Contrary to expectation, for women, it is not so much money that is the primary constraint given the inexpensive nature of most leisure activities; it is time and it is space. Both of these constraints are difficult for women to negotiate and it is not surprising that there are fewer socio-economic differences in women’s leisure activities than in men’s – rich men play golf while poor men drink tea in the neighbourhood stall, but both rich and poor women seem to experience social, fragmented and secondary leisure activities, suggesting that time is in actual fact the major constraint.

The importance of time and women’s keen interest in getting free time was brought out well in the field work conducted in rural areas of West Bengal by the author and colleagues. When asking about what was deemed the most important positive change that women had experienced in the last 15 years, they expected to be told by respondents (who are now well indoctrinated by the official mass media, as well as by messages from NGOs following the International Conference on Population and Development and the Beijing Conferences) that the greatest freedom in women’s lives came, or could come from, the ability to have smaller families, more jobs, more education, or even, more daringly, more equality with

their husbands. Instead, what the researchers heard was a chorus of praise for, of all things, the pressure cooker!

When asked to explain this particular ordering of life's priorities, the women were unanimous in declaring that nothing gave a woman as much freedom as the ability to cook, in 15 minutes, what usually took a couple of hours. In addition, the pressure cooker can be used to cook two or three items at the same time. Needless to say, none of the women interviewed actually owned a pressure cooker, but this kitchen utensil clearly came at the very top of their wish-list.

As to what they would do with the free time the hypothetical pressure cooker could give them, many of the women were bold enough to dispense with platitudes about how the extra time would make them even better mothers or earners. Indeed, interviews in both West Bengal and Bangladesh, among both Hindu and Muslim women, brought out responses embracing the idea that life can be and should be fun.

In addition to time constraints, traditional cultures in South Asia (as well as in the Middle East) also severely limit the physical spaces women can use for leisure – a restriction that is pragmatic (for reasons of personal security) as well as cultural. This is best illustrated by what has been called the inside-outside dichotomy. This term refers to the usually symbolic but often real demarcation of the private space from the public space. The latter is available to a restricted class of persons, usually males but also females of certain categories, the very young, the old and, most importantly, the poor. This feature is important because in many ways, it turns the socio-economic disadvantage around – it is now relatively better off women (by income, caste or other markers) who are the more severely constrained. That is, such a cultural demarcation confines many better-off women to their immediate surroundings and restricts sharply their interaction with the wider world. Much of their interaction with the real world is through what has been called “mediated access” (World Bank, 1991). In turn, this affects women's access to many important kinds of leisure: including the kind of physical activity that has important health and well-being consequences. Also affected are access to other kinds of welfare – for example employment, public services, the ability to migrate for a better life, or manage in times of crisis such as when male providers are missing for whatever reason, be it death, desertion or incapacitation (Basu, 2000).

Thus, female leisure requires time and it benefits from legitimate access to space. But it also benefits from money, even if most female leisure is inexpensive.

The anthropological and demographical literature has much to say today on how money in the hands of women is much more likely to be used to improve child nutrition or education, whereas male control over money usually increases household expenditure on tea and cigarettes. This may be true, but the author's conclusion from the field interviews was that more money should be put in the hands of women, so that they too may buy tea and gossip.

Perhaps one ought to mention here some specific forms of leisure that women, especially in South Asia, have over time found for themselves and that policy must somehow make an effort to protect.

Leisure and obligatory work: The first of these is the leisure that women in South Asian societies manage to extract secondarily from what have been called obligatory activities – the economically non-productive (in the narrow sense of the word) but nevertheless necessary tasks, such as, housework, shopping and personal hygiene (Wilson, 1980). Many of these activities are the responsibility of women, many are onerous, but there are also ways in which women have managed to use them as an opportunity for leisure and relaxation. The time-intensive tasks of water and fuel collection in developing countries represent one such activity. Because they are so time-intensive, policy is constantly harangued to find substitutes in the form of piped water and cheap, market-bought cooking fuel. While this is certainly a desirable policy objective, it must be mentioned that these activities are often some of the only legitimate ways for women to leave the home and engage in some non-domestic group interactions. It is not surprising therefore that Vlassoff (1992) found, in her study of a village in Maharashtra, that changes in water availability in the village had had a mixed effect upon women. In 1975, most families obtained water for drinking and general household use from a central community well and used the river for bathing and washing clothes. In 1987, water taps were constructed in or near people's compounds, and women no longer had to leave their homes to obtain water. While this made their work easier, they became more secluded and lost previous opportunities for social interaction. Similar considerations may explain the finding that in many parts of India, even when hand-pumps are installed, women continue to go to more distant sources to collect water for a variety of needs (Singh, Bhattacharya, Jacks and Gustaffson 1994). The authors speculate on the reasoning, of real or perceived, that water-quality causes this behaviour. Vlassoff's work suggests that at least partly these complaints about piped water may be an excuse to keep up the social and cultural interactions that define collective treks to get water.

Work as leisure: The second unexpected source of leisure for women traditionally is probably employment outside the home. There is no data from Asia on work as leisure and it would certainly be difficult to do this kind of research by survey. Therefore, it is not surprising that most of the literature on women's employment focuses on the effective "double shift" that working women do and the greater convenience of home-based economic activity. In the past, when demographers commended work outside of the home, it was often because such work is incompatible with child rearing and therefore reduces fertility (see the much cited paper by Jaffe and Azumi, 1960). More recent analyses of employment and fertility have discussed the opportunity costs of childbearing, the autonomy afforded by employment and information on effective birth control available through employment. However, there is little in the literature regarding employment as a substitute for fertility.

Work outside the home is also a form of social interaction. When it is not too demanding, it is also a means of relaxation and escape from the routine and control endured at home for the young married woman. It is not surprising that otherwise traditional women have taken to low-level-office work in droves in all the urban areas of South Asia – the income they get is empowering, but my suspicion is that well-designed surveys would find women willing to take on such employment for much less than the market wage (which they often already do). This desire to find leisure outside the home seems, at least partly to explain the curious sight of crowds of young women spending entire days outside the gates of the schools their children go to in Kolkata, India. The status of motherhood also legitimizes spending several hours outside the home; thus, women who look extremely relaxed and cheerful even in the blazing sun.

Indeed, the pleasure of work, when it is not too demanding physically or emotionally, seems to be universal, as is suggested by recent writing regarding the changing workplace as the site of traditionally home-based activities, especially social interaction, and the home increasingly becoming the place where discipline is enforced, routines are followed and life is busy and organized.

Religion and leisure: Studies of time-use find a universally significant amount of free time being spent on religion-related activities. While some leisure is directly religious – involving prayers and worship – much of it is also social. That is, religious affiliations and religious traditions continue to have a strong hold on what people do for fun and relaxation. This hold is probably stronger for women, especially in Asia and probably even stronger for rural women. The last is not surprising – historically much leisure has been tied to agricultural cycles, which in

turn have important religious connotations especially in the more pantheistic religious traditions of South Asia. Thus a fair proportion of women's time is spent organizing and participating in the rituals and celebrations connected with the large number of festivals that mark the calendar in these regions.

From the view point of their greater significance for women, these celebrations are important because of their communal nature and because of the frequent use of public space. Both communal activity and public visibility are otherwise often limited while religious activity is an important, legitimate way for women to socialize openly and to conduct all kinds of extended social business in the course of these interactions: arrange marriages, discuss new ideas and technology and watch public performances (see, among others, Verma and Sharma, 2003; Modi, 1985). As development is increasing the tendency of individualism in leisure, this important communitarian role of leisure needs to be highlighted because it has many implications for societal welfare as well as for women's empowerment, as discussed later in this paper.

Religion is also important in the specific context of women's leisure in South Asia (especially India) because it affords one of the few avenues for women to travel and indulge in tourism, alone or with other women. There is an enormous amount of literature on travel and tourism as forms of leisure in the developed world. However, in poorer countries, especially for women, travel to new places needs justification on more than just leisure grounds. Religion often provides such justification and religious pilgrimages provide one of the ways in which women can give up the duties and pressures of domestic life for brief periods. This freedom gives them more than religious enlightenment; often it gives them access to crucial leisure time as well as exposure to the outside world in ways that have long-term empowering consequences.

Self-care as leisure: "Personal hygiene" was mentioned earlier as one of the "obligatory" activities that people do, something that is neither work, nor leisure, but something that has to be done for day-to-day maintenance of one's self and one's household. But replace the term "personal hygiene" with "self-care" and it can be seen that with sufficient time, opportunity and resources, indulgent investments in the physical self can become acts of leisure rather than mere acts of obligation. And once again, while the amount of time spent on personal care – grooming, proper nutrition, exercise – is related to the autonomy, opportunities and resources one has for such care (Amin and Suran, 2005), it also has important demographic outcomes related to health in general and in particular reproductive health, child health and child survival (Basu and Koolwal, 2004).

Some determinants of women's access to leisure

Leisure requires a sense of entitlement, the availability of leisure activities and the time, space and material resources to utilize such opportunities. With regard to all these matters, it is true that women are more constrained than men. But there are also important comparisons among women to be made. Women are not a monolithic category and there are important differences between women in the ease and frequency with which they can enjoy leisure. Some of these differences are considered below.

Socio-economic influences: To begin with, the typical poor woman in Asia has a very long day with very little time to herself and usually no space to herself either (see, for example, some of the descriptions in Jacobson, 1993). Moreover, much household work in poor families is labour-intensive and repetitive. All the investment in labour-saving worldwide seems to be concentrated on labour-saving outside the home (especially in industry) and for the benefit of rich households. This means that poor women have much less time for leisure compared with their richer sisters. However, the subject is not completely straightforward. Poor women also have a little more access to social and communal leisure of a kind that slightly better off women are more restricted from partaking in. Two examples cited earlier elaborate on this point. The first one is related to the essential extra-domestic obligatory activities that poor women, especially in rural areas, have to perform; the collection of fuel and water in particular. My second example (above) has to do with the greater ability of poor women to occupy public space, once again a factor facilitating social interaction.

Thus the economic influences on leisure are mixed. So are the urban-rural influences. As Verma and Sharma (2003) described, with respect to Indian adolescents, females in rural areas have very different time use patterns compared to their urban counterparts. This difference is largely caused by differences in the opportunities for leisure in the two settings, with towns and cities offering many more kinds of leisure activities than villages. While girls spend much more time than boys in home-based and family-oriented activities in both urban and rural areas, urban girls and women tend to have much more access to mass media entertainment, both within and outside their home. They are also more "modern" in the way they can use public space and in their small but significantly greater ability to interact with unrelated males.

Age and life cycle influences: Just as all women are not the same, a specific individual woman is not the same person throughout life. As several studies

document, both the amount and kinds of leisure a person seeks and gets can be drastically different at different points in life. As reported by Rapoport and Rapoport (1975) adolescents tend to seek stimulation and variety in their leisure, while young adults need activities that accommodate their busier home and family lives. Ideology and socialization are important here, not only do adolescents and young adults have less time, they are also constrained by rules about appropriate uses of “free” time. Gender is especially relevant here – in virtually all societies, men’s freedom to take time off family and work is much less controversial than women’s. Besides, adolescent leisure is often severely constrained by norms about physical attractiveness (a negative body image for example might inhibit swimming) as well as by norms about appropriate femininity.

With further age and the decline of family responsibilities, time is no longer a constraint in many parts of the world. Old age also relaxes norms and ideologies about leisure; the nature of older people’s activity then becomes more dependent on material resources – golf costs money, television is cheap.

In South Asia, girls experience a diminution in leisure as they enter adolescence and early adulthood; but they do better as they get older and especially as they pass through specified stages of the life cycle. This cycle of events is probably more deeply influenced by ideology in South Asia than it is in the developed world. For example, a newly married young woman is at the lowest point of control over her time; this situation eases as she becomes a mother – somewhat paradoxically because childcare is typically very time-intensive. However, her right to leisure, even if she does not exercise this right, increases with the birth of a child and especially with the birth of son(s) to carry the family name. The situation eases even further as the woman becomes a mother-in-law and has under her command, the wife of her son, to whom she can pass on some or many of the burdens of running a household, But it is once again, not the housework itself that is important; it is the life-cycle stage entitlement to free time that is. Yet, even in relatively well-off homes, there are strict norms about how much free time young married women can lay claim to.

In the context of demographic behaviour, the nature of acceptable leisure during the life cycle stage of early marriage is particularly important. We already know that in many parts of the world, a married women’s leisure tends to be rather family-centred. But what does one mean by “family”? In South Asia, such family-centred activities almost always include children as well as possibly members of the larger extended family. There is much less leisure activity by couples on their own. Shared leisure between spouses is difficult to organize for

practical as well as cultural reasons (the practical reasons often becoming insurmountable in overcrowded urban homes – see, for example, the very realistic Bollywood film *Piya Ka Ghar*); a factor that may also contribute to relatively low levels of “husband-wife communication”. This factor was central to the family planning policy of the 1970s and 1980s considered so essential to contraceptive acceptance.

Leisure and empowerment

Not only does female empowerment increase the possibilities for leisure, leisure in turn increases female empowerment in several ways. As Shaw (2001) explained, leisure, especially collective leisure, can become a site of resistance to traditional power relations, both deliberately as well as unintentionally (Green, 1998). Women can both acquire as well as exercise power and resistance as individuals by undertaking leisure activities that are not socially or culturally legitimate (sports, for example). Alternatively they can do so as a group – group activity usually being easier to organize when traditional structures of authority are being challenged. In addition, whether operating as individuals or as groups, women practising leisure can exert a ripple effect – their behaviour can cause others to rethink and energize other individuals or groups to follow their example. In turn, the sense of control that such “political” forms of leisure give can increase the overall sense of control women feel with other aspects of life; again an empowering effect.

Another important aspect of women’s leisure in Asia is its frequently communal nature. In this respect, leisure functions as an empowering pursuit using the networks of implicit and explicit support and the influence it fosters. In so doing, challenging traditional norms is less likely to be seen by women with such networks as a hopelessly solitary activity with no fallback position if the challenge is opposed. Indeed, fear of the greater courage (and perhaps impudence) that women acquire when they expand their networks of social interaction is an important reason for such outdoor forms of socializing and leisure to be frowned upon by families in the first place.

However, there are also more direct and less overtly political ways in which access to leisure empowers women and/or promotes beneficial demographic outcomes. To look at fertility, we now know from a wealth of data that exposure to the wider world greatly increases the knowledge of and positive attitudes towards birth control and this is reflected in lower fertility. In addition, outdoor and indoor leisure involve some kind of exposure to a wider world – in the latter case, directly

through meeting or interacting with outsiders, in the former by entering the worlds and lives of others through the mass media. Indeed, exposure to the mass media has an impact on fertility that is almost as strong as that of education (Basu, 2002) and given what we know about the kinds of programmes that women typically watch (largely entertainment and music) it seems that the cues for lower fertility are coming from ideological change derived from learning about the modern world rather than from basic information on contraception. This ideological change includes notions of “modernization” in which women have a life and interests of their own and are more than uncomplaining breeders of numerous children.

Leisure is also good for women’s health, for the health of their children and for household health in general. Partly this is due to the same factors that promote lower fertility – greater understanding of health and nutritional behaviour, greater confidence in approaching public services (Basu and Koolwal, 2004). Some leisure activities, especially those that are physical, are directly good for an individual’s health. Now there is a wide body of literature (Anderson, Schnohr, Schroll and Hein, 2000) on the health benefits for women of any form of physical leisure – benefits related to cardiovascular disease, stress, osteoporosis, cognitive functioning, Alzheimer’s disease, asthma, many kinds of cancer. Unfortunately, much leisure by women in Asia is not physical; indeed, leisure increases greatly the sedentariness of the lives of women who historically have been very active. And so, the benefits of greater knowledge and ideological change brought about by the mass media have to be weighed against the health disadvantages of more and more time spent passively absorbing messages from the television or radio.

Concluding remarks: While leisure may be a strange thing to worry about for poor households given their intense preoccupation with day-to-day survival, there is no doubt that some access to leisure enhances the quality of life not only of the leisured individual but also of his or her associates. Therefore, a concern with the access to leisure is legitimate even from a larger developmental perspective, quite apart from the fact that one of the goals of development is surely to reduce the amount of time spent on production for the sake of it.

Given that women seem to be worse off in their access to leisure than men in most situations (but not necessarily in all situations – the rich South Asian housewife certainly has more free time than the poor male labouring in the fields), and often more for ideological and cultural rather than practical reasons, it makes sense to think about the problems of ensuring more leisure for them. There are important methodological issues involved in this kind of academic endeavour but the present paper has not gone in that direction, beyond noting, that the

conventional method of measuring leisure – by netting out the time spent on “economically productive” activities and allocating the rest to leisure – is unsatisfactory. Instead the author has tried to reflect in a modest way on some of the concepts and empirical findings relevant to a study of gender and leisure in Asia. This has been done from the perspective of population studies and to thereby highlight the importance of the study of leisure, even for population scientists.

Endnote

1. Keeping in view the enormous volume of literature on the meaning and potential operative use of these two terms, they are used here interchangeably to refer broadly to the freedoms and agency that women should have in a truly egalitarian or gender-neutral society.

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Population Ageing in East and South-East Asia, 1950-2050: Implications for Elderly Care

Since Governments in most developing countries are not in a position to bear the entire responsibility of the growing numbers of older persons, they should encourage and provide support for the maintenance/sustainability and strengthening of community-based care for the elderly, paying special attention to the needs of older women.

By Ghazy Mujahid*

Following rapid fertility declines and sustained improvements in life expectancy during the second half of the twentieth century, most countries in East and South-East Asia entered the twenty-first century faced with the problem of

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population ageing. Population ageing, defined as the increasing proportion of older persons¹ in the total population, is projected to progress in East and South-East Asia² at rates higher than the average for the world and the less developed regions (LDRs). Among the various challenges arising as a result of the increasing proportion and absolute numbers of the elderly population, ensuring that older persons are provided adequate care is of paramount concern. A rising proportion of the older population relative to that of the active adult and working age population means that each worker will have to contribute towards supporting an increasing number of older persons. Also, given the declining family size, the number of caregivers available per older person will continuously decline. The implications of the growing imbalance in the demographic equation are further aggravated by increasing globalization, migration, the increasing preference for the nuclear family and, in some countries, the HIV/AIDS epidemic.

This paper presents an overview of how the ageing situation is expected to evolve in East and South-East Asia during the first half of this century, focusing on its implications in terms of the provision of care³ for the growing elderly population. The paper is divided into five sections. The first section provides a regional perspective of population ageing in view of the global situation. The second section discusses the demographic impact of population ageing that underlies the erosion in the support base for the elderly. The third section highlights two characteristic features of the emerging profile of the older population – its ageing and its feminization – that add to the complexity of care provision for the elderly. A comparison of the projected changes compared with past trends brings out the relative enormity and novelty of the emerging challenges. The fourth section examines the implications of the changes outlined in the second and third sections in terms of care for the elderly. Finally, the fifth section summarizes the main findings and policy recommendations.

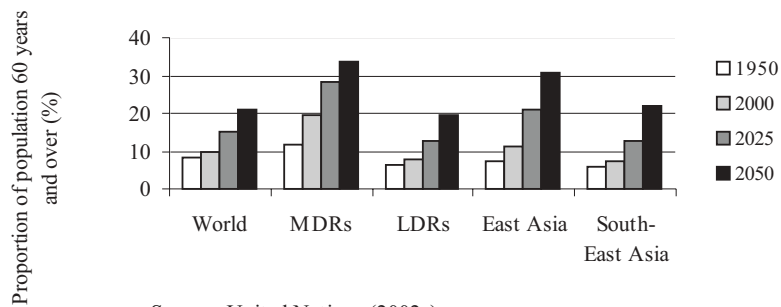
Regional perspective of population ageing: 1950-2050

Population ageing is a global phenomenon: the proportion of older persons in the World's population increased from 8.2 per cent in 1950 to 10 per cent in 2000. It is projected to increase to 15 per cent in 2025 and to 21 per cent by 2050 (figure 1). By the middle of this century one in every five persons will be "old". All countries are either experiencing population ageing or can be expected to do so over the next two decades.

Population of the more developed regions (MDRs) is more aged than of the less developed regions (LDRs) and will remain so through 2050.⁴ East Asia which is currently far less aged than the MDRs will "catch up" and by 2050 reach almost

the same level as the MDRs. South-East Asia is more akin to the LDRs but is also ageing at high rates and by 2050 the proportion of older persons in its population will exceed the average of the other LDRs.

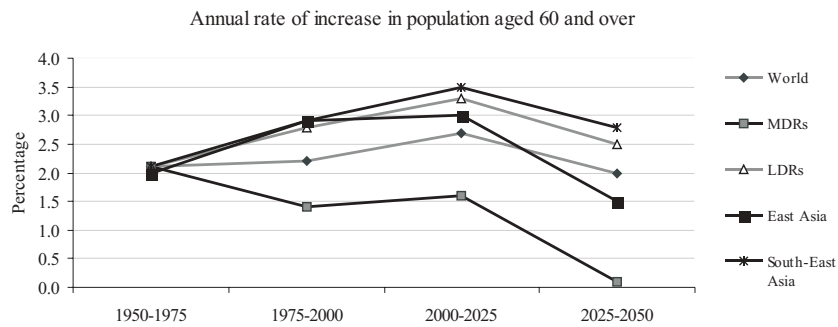
Figure 1. Trends in population ageing: 1950-2050



Source: United Nations (2002a).

While all regions experienced similar growth rates in older population numbers during 1950-1975, the rate of increase in the LDRs was double that of the MDRs during 1975-2000. The differentials are projected to widen during the first half of this century with South-East Asia experiencing the highest rates of growth in older population (figure 2).

Figure 2. The pace of population ageing: 1950-2050



Source: United Nations (2002a)

The percentage of the world's population of older persons living in the LDRs, which increased from 53 per cent in 1950 to 69 per cent in 2000 will increase further to 85 per cent in 2050. In the same year, East and South-East Asia will account for 35 per cent of the world's older population.

The increasing proportions of older persons in the population assume staggering dimensions when translated into absolute numbers. The world's population of older persons tripled during 1950-2000 from about 200 to 600 million, an increase of 400 million. During the next 50 years it is expected to more than triple, reaching almost two billion by 2050. The incremental increase in the older population during the first half of this century will be five times that during the second half of the last century. Most of the increases will be in the LDRs. These regions accounted for 66 per cent of the increases during 1950-2000 and this share will rise continuously during the next 50 years. LDRs will account for 81 per cent of the total increase in older population during 2000-2025 and 93 per cent during 2025-2050. East and South-East Asia will account for about a third of the increase in the world's elderly population during 2000-2050.

It is evident that during the first half of the twenty-first century, population ageing will be a much bigger issue for the LDRs both with respect to quantitative dimensions and the issue's novelty. It can be seen emerging as a very significant issue in the East and South-East Asia. In particular, with the challenge being both larger and newer, South-East Asia will be faced with a steeper uphill task in dealing with the consequences of population ageing during the next 50 years.

Demographic impact of population ageing

Population ageing, by definition, has a profound effect on the age structure of the population. As the population ages, the size of the older cohorts relative to that of the younger cohorts changes. This section examines two indicators of the changing age structure most relevant to the purpose at hand: (a) Potential support ratio; (b) Parent support ratio.⁵

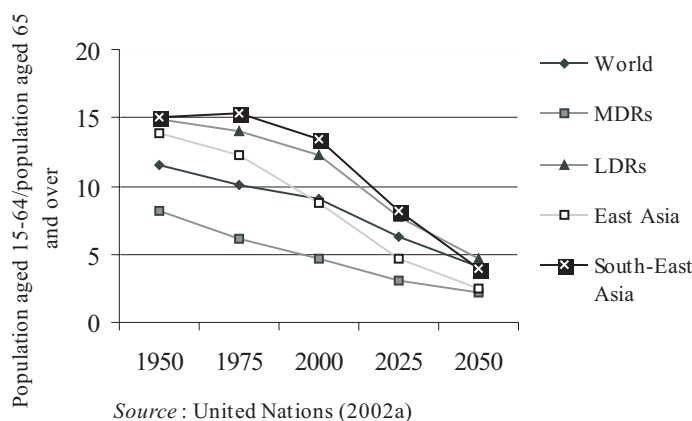
Potential support ratio

The potential support ratio is defined as the ratio of population aged 15-64 years to that aged 65 years and over. It is used to indicate the support base available to carry the "burden" of the older population. The ratio is the inverse of the old-age-dependency ratio and is more commonly used in the context of population ageing as it directly provides an index of the changing support base for the elderly as their proportion in total population changes. The ratio is based on the assumption that people aged 15-64 are working, whereas, those below 15 or those

65 and over are not. The working population provides direct or indirect support to the non-working dependant population.

A falling potential support ratio indicates a shrinking support base: a decline in the number of younger adult members, who are potential providers of both financial support and care, available per older person. The ratio is projected to decline across the world during the first half of this century by more than it did during the previous 50 years (figure 3). The decline in the potential support ratio will be most pronounced in both East Asia and South-East Asia, with the support base shrinking to less than one third of current levels by 2050.

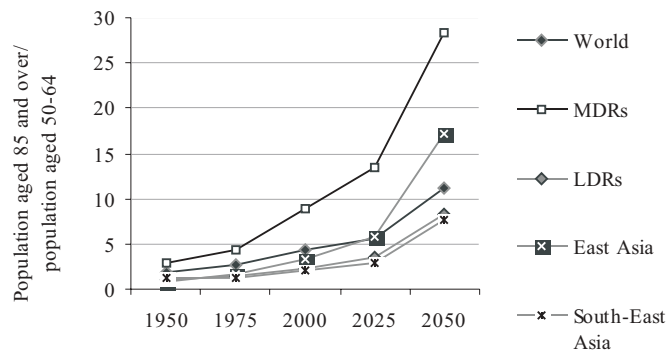
Figure 3. Potential support ratio: 1950-2050



Parent support ratio

The parent support ratio is defined as the ratio of population aged 85 years and over to the population aged 50-64 years. The parent support ratio relates those aged 85 and over to their presumed offspring assumed to have been born to them during their twenties and thirties. As such the ratio reflects the burden placed by those aged 85 years and over on their offspring. Though people in the numerator and those in the denominator are not necessarily related, the parent support ratio does provide a reasonable approximation of the family support available. The ratio is projected to increase more rapidly during the first half of the century than it did during the preceding 50 years (figure 4). In the MDRs the parent support ratio will increase to more than three times its current level by 2050. The increase will be more pronounced in the LDRs. The ratio is expected to go up most in South-East Asia and East Asia: to 3 and 5 times (respectively) its current level by 2050.

Figure 4. Parent support ratio: 1950-2050



Source: United Nations (2002a).

Demographic profile of the older population

Two distinct features of the changing age and sex structure of the older population have implications for the provision of elderly care and support. These are: (a) Ageing of the older population; (b) Feminization.

Ageing of the older population

The older population in the MDRs is “more aged”, that is, the proportion of the “oldest old”⁶ (those aged 80 years and over) in total population is higher in these countries. The older population will remain “less aged” in the LDRs, but the oldest population has been increasing and will continue to increase at higher rates in the LDRs:

Table 1. Trends in the oldest old population, 1950-2050

Region	Oldest old as percentage of older population				Annual percentage rate of increase in oldest old population			
	1950	2000	2025	2050	1950-1975	1975-2000	2000-2025	2025-2050
World	6.7	11.4	12.9	19.3	3.4	3.2	3.2	3.7
MDRs	8.9	16.0	19.2	28.6	3.2	2.8	2.4	2.2
LDRs	4.8	8.6	10.4	16.9	3.7	3.7	4.1	4.6
East Asia	4.0	10.2	15.8	24.1	4.8	3.9	4.1	4.0
South-East Asia	5.8	8.1	9.3	15.8	2.3	4.1	4.1	5.0

Source: United Nations (2002a).

Both East Asia and South-East Asia will experience the same rate of increase in the oldest old population from 2000 to 2025. From 2025 to 2050, the rate is expected to increase significantly in South-East Asia while it will stabilize in East Asia. The LDRs currently account for almost 50 per cent of the world's oldest old population and by 2050, this proportion will have increased to 70 per cent. The proportion of the world's oldest old population living in East and South-East Asia will increase from 29 per cent in 2000 to nearly 40 per cent in 2050.

These increasing proportions of the oldest old population signal very large increments in absolute terms. The world's population of the oldest old increased from 14 million in 1950 to nearly 70 million in 2000. During the next 50 years it is expected to increase to almost 340 million. This means that additions to the number of the oldest old during the next 50 years will be almost five times the number added during the preceding 50 years. Most of the increase in the oldest population will be in the LDRs which accounted for 49 per cent of the increase from 1950 to 2000 and will account for 72 per cent of the increase from 2000 to 2050. Moreover, while the number of the oldest old added in the MDRs from 2000 to 2050 will be about three times the numbers added during the preceding 50 years, the additions in the LDRs will be seven times as many. By 2050, East Asia's population will be among the most aged. China (99 million) and Japan (17 million) are projected to be two out of the six countries where the number of persons aged 80 years and older will exceed 10 million; the others being India, the United States of America, Brazil and Indonesia.

Feminization of ageing

Women constitute a majority of the older population (table 2). At the global level, women comprised 55 per cent of the population of older persons in 2000. While this share is projected to decline during the next 50 years, women will continue to comprise a majority of the older population.

Table 2. Percentage of females in the older population

Region	1950	1975	2000	2025	2050
World	55.5	56.1	55.2	54.2	54.1
MDRs	57.5	60.0	58.5	56.5	56.1
LDRs	53.8	52.9	53.1	53.3	53.5
East Asia	55.5	55.1	53.2	53.7	54.2
South-East Asia	53.8	53.5	54.2	54.1	54.6

Source: United Nations (2002a).

In the MDRs, women comprise a larger proportion of the older population than in the LDRs. However, the proportion of females in the older population in the MDRs is expected to decline gradually until 2050. In the LDRs there will be a marginal increase in the proportion of women in the older population during the next 50 years. The trends will be similar in both East and South-East Asia from 2000 to 2050. In both MDRs and LDRs, women will also continue to constitute a majority of the oldest old population:

Table 3. Percentage of females in the oldest old population

Region	1950	1975	2000	2025	2050
World	62.0	63.3	65.4	63.4	62.2
MDRs	63.5	68.1	69.3	66.1	64.2
LDRs	59.5	56.4	60.6	61.3	61.3
East Asia	68.9	59.0	66.0	64.5	63.3
South-East Asia	57.7	59.6	58.9	61.2	63.4

Source: United Nations (2002a).

The proportion of women in the oldest old population is considerably higher than that of women in the older population. This is explained by the higher survival rate among females and their higher life expectancy at age 80 (United Nations, 2002a). A larger proportion of females enter the oldest population and on average live longer than their male counterparts.

Gender differences in marital status

A higher proportion of older women than older men are unmarried, divorced and widowed. This pattern of gender differentials in marital status, with a higher proportion of older females than older males being “single”, is similar across all regions.

Table 4. Percentage of “singles” in the older population

Region	Males	Females
World	22	56
MDRs	21	56
LDRs	23	56
East Asia	27	53
South-East Asia	18	58

Source: United Nations (2002b).

The differences in the marital status of older men and older women result from several factors. First is relative female longevity: women usually live longer than men. Second, the husband is usually older, which further increases the chances that husband dies before his wife. Third, widowed men have higher remarriage rates than widowed women. This could be explained partly by cultural norms and partly by the surplus of older women to older men. The majority of the single “older” and “oldest old” females are widowed (United Nations, 2002b). Widowhood adds to the psychological strain, particularly on women and more so in certain male-dominated cultures. Older persons who are single are likely to be less financially secure and are not likely to enjoy as much care in illness and disability as those having a spouse. The hardships attached to being single in old age indicate the greater vulnerability of older women compared with older men.

Lower female labour force participation

Labour force participation rates are significantly lower for older women than for older men. The interpretation of economic activity of older persons has always been ambiguous. Should a higher labour force participation rate in old age be interpreted as positive or negative? An economically active person is productive, feels more confident and is financially independent and therefore able to afford better care. Hence, it could be presumed that an employed older person earning an income would be better off than one not employed. It could also be argued that those who are not economically activity do not need to work as they may be able to rely on accumulated wealth, pensions or other means of support and care. The lower proportions of economically active persons among the 65 years and over population⁷ in the MDRs may be explained by the wider coverage of pension and old-age security schemes. However, in the LDRs, where pensions and security schemes are virtually non-existent or, at best, have limited coverage, economic activity could be the only means to achieve financial security and independence. In both East and South-East Asia, labour force participation rates for the 65 years and over group are much lower for women than for men:

Table 5. Labour force participation of 65 years old and over

Region	Percentage economically active	
	Males	Females
World	30.2	10.1
MDRs	12.6	5.7
LDRs	40.5	13.5
East Asia	28.6	9.3
South-East Asia	47.8	24.1

Source: United Nations (2002a).

Some of this disparity could be due to the underreporting of women's economic activity, particularly in the LDRs where much of women's work is either not captured in censuses and surveys or is not considered "economic activity". The lower rates in East Asia can also be explained by the relatively more developed pension and social security systems in China and Japan compared to those in most countries of South-East Asia. Overall, however, the gender differences in labour force participation rates in South-East Asia (alike in most LDRs) can be interpreted as indicating that more older women than older men are dependant and vulnerable to financial insecurity and economic dependence thereby having greater difficulty in accessing the required care.

Implications for elderly care

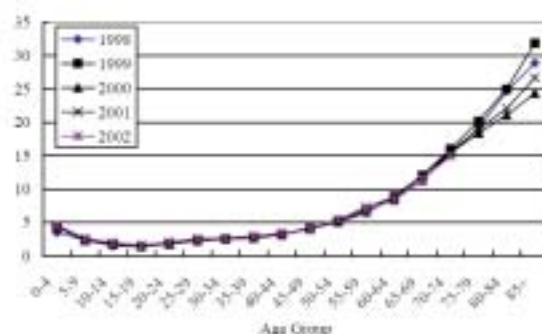
It is evident that the number of those entering the older and the oldest old age groups have been growing and will continue to grow at an increasing pace throughout the first half of this century, more so in South-East Asia. The higher increase in the oldest old population combined with the feminization of ageing will add to the burden on the relatively declining active population of working ages, who will be called upon to provide support to the elderly. This includes the provision of health care and special care facilities as well as ensuring appropriate living arrangements for the older population.

Health care

Older people are prone to a higher incidence of morbidity.⁸ Population ageing is also accompanied by what has been termed the "epidemiological transition" – a shift in the patterns of morbidity and the causes of mortality (ESCAP, 2002). With the share of older people increasing relative to that of the younger people, infectious and nutritional disorders yield place to chronic, degenerative and mental illnesses as the leading causes of morbidity and mortality. Many disabling diseases and impairments such as heart ailments, stroke, hearing and visual impairments as well as the effects of trauma among older people are incurable and require long-term medical attention and care. So do terminal diseases such as cancer and Alzheimer's disease. The higher incidence of morbidity coupled with the epidemiological transition calls for the provision of more health services as well as altering the package of services to better treat and manage the diseases of old age.

Per capita health expenditures of older persons are estimated to be 3-5 times higher than of the not old; while within the older population, the oldest old spend 2-3 times more than the "younger elderly" (Mahal and Berman, 2001; Iwamoto, 2001). Evidence from Japan (figure 5) shows how health expenditure per capita increases with age:

Figure 5. Per capita health expenditure as percentage of per capita GDP by age group: Japan, 1998-2002



Source: Fukawa and Izumida (2004)

The impact of population ageing on budgetary allocations for health has been widely discussed in the literature. A World Bank study documented a strong positive relationship between the percentage of public spending allocated to health and the percentage of population aged over 60.⁹ Another more recent study attempts a breakdown in the projected increase in health expenditures over the period 2005-2025 into two components: the increase owing to population increase and the increase owing to change in age-sex structure:

Table 6. Impact of population ageing on health expenditures

Region	Percentage increase in health expenditures: 2005-2025		
	Total	Percentage increase owing to	
		Population increase	Change in age structure
Europe and Central Asia	37	15	22
East Asia and the Pacific	14	1	13
Latin America and Caribbean	47	25	22
Middle East and North Africa	62	37	25
South Asia	45	27	18
Sub-Saharan Africa	52	43	9

Source: Gottret and Schieber (2006).

East Asia, the Pacific,¹⁰ Europe and Central Asia are faced with a similar problem: namely that a higher share of health expenditure will change due to the age-sex structure rather than population increase.

To meet the health-care requirements of the fast growing older and oldest old populations will necessitate diverting resources from investment and other areas of current expenditure. Policymakers will be faced with making hard choices in allocating health-care resources. Unless other expenditures are scaled down, they will have to choose between raising taxes or shifting part of the burden to older persons by either raising insurance premiums or passing at least part of the costs to the users through service charges.¹¹ Whatever path a Government chooses to take, some sections of the population are bound to be adversely affected.

Special care

The incidence of disability is known to increase with old age. The first most likely casualty of disability is mobility. Impaired mobility increases dependence on caregivers. In a number of cases the disability may be permanent which makes the elderly person dependent until death. As such, the intensity of care an older person requires increases with disability.

Several studies have shown that with age the chances of moving from active to disabled status increase, while the chances of recovery to active status decrease (Waidmann and Manton, 1998; Danan and Zeng, 2004). Evidence from surveys conducted in China, Cambodia and Thailand indicates the progression of disability with age among the older population and its higher incidence among older women (table 7).

Table 7. Incidence of disability by age and sex

Age (years)	China 1992		Cambodia 2004	Thailand 1999	
	(reporting at least one functional limitation)				
	Males	Females	Total	Males	Females
60-69	4.8	8.6	16.2	14.6	14.9
70-79	14.5	25.8	30.4	19.4	23.4
80+	37.4	58.7	44.2	27.6	36.0

Sources: China: Kaneda, Zimmer and Tang (2004); Cambodia: Zimmer (2005); and Thailand: Jitapunkul and others (1999).

Given the increasing incidence of disability with age, the ageing of the older population contributes towards increasing the proportion of the older population suffering from disability. Moreover, a higher incidence of disability among older women implies that feminization of ageing would contribute towards increasing the proportion of the disabled among the older and oldest old populations. A number of studies have also shown that women have a lower probability of recovering from disability than men (Danan and Zeng, 2004).¹² People with a disability, particularly those who are bed-ridden, need special care. Trends in population ageing in East and South-East Asia imply that there will be a growing need for providing such special care facilities for an increasing proportion of the older population, particularly the oldest old women.¹³

Living arrangements

In most Asian countries the norm has been for older persons to co-reside with and be taken care of by family members. Though not the only form of family support, co-residence is the main component of family support and has been considered its best proxy indicator. Traditionally, in most cases, it is the male offspring who bears the responsibility of taking care of parents in their old age. Depending on circumstances, a common alternative is co-residing with daughters, younger siblings or their families as well as with nephews, nieces and other relatives. Table 8 summarizes data on gender differences in the proportion of elderly persons living alone:

Table 8. Percentage of older persons living alone

Country (Age group)	Year	Total	Males	Females
China (65+)	1990	9.5	8.4	10.8
	2000	9.5	8.4	10.7
Indonesia (60+)	1991	7.3	2.3	12.0
	1997	7.3	2.3	11.9
Japan (60+)	1985	8.7	n.a	n.a
	2000	12.7	n.a	n.a
Philippines (60+)	1993	3.6	2.7	4.4
	1998	5.3	4.0	6.4
Republic of Korea (60+)	1981	4.3	n.a	n.a
	1988	7.7	n.a	n.a
Singapore (60+)	1986	2.3	1.7	2.8
	1995	2.3	1.6	2.7
Thailand (60+)	1990	3.7	1.8	5.7
	1995	4.3	2.9	5.5

Source: United Nations (2005).

What the data highlight is that over the years, there has not been any significant change in the proportion of older persons living alone except in Japan and the Republic of Korea. However, in all cases where gender disaggregated data are available, more older women than older men live alone.¹⁴ This also reflects the higher proportion of married older men than older women. Though there has been no significant decline in most countries in the proportion of older persons living alone due to the continued stability of the family structure, there could be changes in the future (as in Japan and the Republic of Korea) owing to a number of socio-economic changes and value shifts. Globalization has led to an increase in the pace at which the divide between the attitudes of the older and younger generations is widening. Hence, the younger may prefer to live independently. Owing to the widening inter-generational divide in attitudes, older persons may not find it easy to adapt themselves to the rapidly changing life styles of their offspring.¹⁵ Increasing economic activity among women adds to the difficulties surrounding co-residence. Traditionally, it has been the daughter-in-law or the daughter who has had to provide or supervise the day-to-day care of the older relatives, yet a working woman is neither available nor can be expected to provide the required care and support. With falling fertility levels, the probability of older persons having grandchildren to keep themselves busy with will decline. The inclination for co-residence may therefore be declining not only among the new generations but among the older generations as well.¹⁶ All these factors contribute to a growing need to ensure that the increasing number of older persons, more women than men, are provided with appropriate living arrangements and adequate care.

Conclusion and recommendations

Conclusion

During the next 50 years, East and South-East Asia will be faced with an unprecedented rapid increase in the population of older persons. The population of the oldest old will increase even more rapidly. Older women, who are more prone to morbidity, disability and economic hardship, will constitute the majority of both the older and oldest old cohorts. There will be an increasing demand for health care as well as specialized care for the disabled. At the same time, the traditional support base through family and kinship can be expected to shrink owing to reduced family size, nuclearization of families, as well as migration both within and outside the country. The changes taking place in living arrangements indicate that the chances of older persons receiving care and support through co-residence may decline. The gap between the demand for care and the traditional supply of

care will continue to widen, as indicated by the higher proportion of older women who are single and those who are living alone. The decline in traditional family support is expected to affect older women more adversely than older men.

The emerging ageing situation has received attention at all levels, notably at the Second World Assembly on Ageing, held in Madrid in April 2002. The Assembly adopted the Madrid International Plan of Action on Ageing a comprehensive plan to deal with the challenges emerging from the rapid ageing of populations. Later in the same year, the countries of the Asian and Pacific region drew up the Shanghai Implementation Strategy for the implementation of the Madrid Plan and the 1999 Macao Plan of Action on Ageing for Asia and the Pacific. In the light of the Shanghai Implementation Strategy, Governments in a number of East and South-East Asian countries have strengthened or initiated measures to deal with the various challenges of population ageing.

Recommendations

On the basis of the findings of this paper, the following recommendations can be put forward for continued and effective action to ensure that older persons have adequate care and support and are provided with an enabling environment to lead a healthy, productive and dignified life:

1. The family remains the main provider of care for the elderly in most Asian countries. There is a tacit traditional inter-generational agreement that parents raise children and when children attain adulthood they, in turn, “repay” their parents by providing them with care and support in their old age. As such the family remains not only the most preferred but also the most suitable provider of care and support to the older population. However, the resources and capacity of an average family are on the decline and Governments should provide support and incentives to maintain the strength of the family structure. Some countries have introduced tax rebates and allowances for families that include older members.
2. Traditional community-based support systems for elderly care are also likely to weaken. Since Governments in most developing countries are not in a position to bear the entire responsibility of the growing numbers of older persons, they should encourage and provide support for the maintenance/sustainability and strengthening of community-based care for the elderly, paying special attention to the needs of older women.

3. Specialized health services and medical care should be made available to the older population. Hospitals in some countries have started setting-up geriatric units specializing in the treatment and management of diseases connected with old age. In addition to ensuring that medical establishments are appropriately equipped to provide geriatric services, the provision of community-based geriatric care at both the family and community levels should also be developed and strengthened.
4. Opportunities for the employment of older persons capable of and willing to work should be fully explored and employers willing to employ older persons provided with necessary incentives such as tax rebates and subsidies.
5. There should be public education and health promotion not only for older persons but for all age groups so that they enter old age in good health, remain independent and postpone the need for special care for as long as possible by adopting healthy life styles and behaviours.
6. Adequate arrangements of institutional care should be available for those older persons who have no other option owing to their physical or mental condition or for those who do not have access to family- or community-based support.

In addition to the above measures, it is necessary to educate both the younger and older populations to view ageing in a positive light and not to consider the elderly population as a burden or a problem. Advocacy too is required to build political commitment to addressing the emerging ageing situation and ensure that the concern for older persons is mainstreamed into all development programmes.

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Endnotes

1. The International Plan of Action on Ageing adopted at the first World Assembly on Ageing (Vienna, 1982) used “aged 60 years and older” for defining “older persons”. This was endorsed by the Second World Assembly on Ageing (Madrid, 2002). In this paper, this United Nations definition of “60 and over” for “older” persons is therefore used. The terms “older”, “old” and “elderly” are used interchangeably.
2. East Asia comprises: China; Democratic People’s Republic of Korea; Hong Kong, China; Japan; Macao, China; Mongolia; and Republic of Korea. South-East Asia comprises: Brunei Darussalam; Cambodia; Indonesia; Lao People’s Democratic Republic; Malaysia; Myanmar; Philippines; Singapore; Thailand; Timor-Leste; and Viet Nam.
3. The term “care” as used in this paper is defined to cover the needs of care in terms of health care and living arrangements. It does not refer to the older persons’ requirements in terms of financial and social security although these are of great significance too. The subject has received extensive treatment in the literature. See for example, Devasahayam (2004) and Gubhaju (2006).
4. More Developed Regions (MDRs) comprise all countries in Europe, North America and also Australia, New Zealand and Japan. Less Developed Regions (LDRs) comprise all countries in Africa, Asia (excluding Japan), Latin America, the Caribbean, Melanesia, Micronesia and Polynesia. Figures for Japan are included in the totals of both the MDRs and East Asia.
5. Given the constraints of space and time, it has been decided to leave out the discussion of the other two indicators – the Ageing Index and the Median Age. It would not add much to the evidence provided by the trends in the Potential Support Ratio and the Parental Support Ratio pertaining to widening gap between the human resource base available and the need for elderly care.
6. The term “oldest old” is used for population aged 80 years and over. The terms “oldest old”, “oldest” and “older old” are used here interchangeably.
7. Normally working age population is defined as 15-64 years, as a large proportion of 60-64 are economically active. For comparing gender differences among the old in economic activity we therefore use rates for 65+.
8. Evidence available from Singapore, for example, shows that in 1995, while people aged 65 and over comprised seven per cent of the population, they accounted for 17 per cent of all hospital admissions and 19 per cent of outpatient polyclinic visits, Phua Kai Hong (2000).
9. For the evidence based on data for 66 countries, see World Bank (1994).
10. The World Bank’s demarcation of regions varies from that of the United Nations.
11. In view of rapid population ageing, the Government of Japan has been introducing reforms in its universal health insurance system for the elderly. Measures to safeguard the financial viability of the system have included raising the minimum age of coverage, increasing premiums and reintroducing partial payments for treatment costs depending on income criteria (Fukawa and Izumida, 2004).

12. Data for 1985-1989 for Indonesia, Japan, Myanmar and Thailand shows a higher percentage of male than female life expectancy at age 65 as free of disability (Waidmann and Manton, 1998).

13. In a study on the impact of ageing on health and elderly care, Leslie Mayhew concludes: "The association between ageing and disability will lead to potentially large increases in the numbers of people requiring personal care in both MDCs (more developed countries) and LDCs (less developed countries), although the estimates for LDCs are much less certain than those for MDCs. Whereas in the earlier number of people with disabilities is projected to plateau around 2050, the number of individuals with disabilities in the latter LDCs will continue to grow" (Mayhew, 2000).

14. In most countries, including the few of the East and South-East Asian Region for which data are available, the proportion of population living in an institution increases sharply for those aged 75 and over. Also, a higher proportion of women than men live under institutional care (United Nations, 2005).

15. This is typical in the case of marriages outside the family and even more so of cross-cultural marriages as the older people may find it particularly difficult to adjust to an offspring's "strange" spouse.

16. The attitudinal changes have been the most marked and the best documented in Japan. In 1963, a survey of Japanese women of childbearing age showed that about 80 per cent thought it was either "a good custom" or "a natural duty" to care for ageing parents. By 1992, this figure had dropped to 49 per cent. Two thirds of the Japanese women surveyed in 1950 had expressed an expectation of depending on their children for support in old age. This proportion had dropped to 16 per cent by 1992 (Ogawa, 1994).

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Unintended Live Birth versus Abortion: What Factors Affect the Choices of Vietnamese Women and Couples?

Rising unintended pregnancy and abortion rates are sometimes observed concurrently with rising levels of contraceptive use. However, in transitional societies, such as Viet Nam, where demand for children is falling faster than contraceptive prevalence and use-effectiveness is rising, the widespread use of MR/abortion as a primary means of achieving family size aspirations unnecessarily puts large numbers of women at risk of adverse health outcomes.

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As the result of a rapid decline recently in fertility levels, Viet Nam has largely completed the transition to low fertility. The total fertility rate (TFR) estimated in the 1999 Census was 2.3 children per woman. Previous demographic

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surveys indicated TFRs of 4.0 in 1987 (Viet Nam Demographic and Health Survey – VNDHS-I), 3.3 for the period 1989-1993 Intercensal Demographic Survey (ICDS 1994), and 2.5 for 1996-1997 Viet Nam Demographic and Health Survey (VNDHS-II). As might be expected, the rapid fertility decline in Viet Nam reflects the significant growth of contraceptive use. VNDHS II data indicate that the all method contraceptive prevalence rate (CPR) had reached 75 per cent by 1997 and the modern method rate 56 per cent.

Despite this, rates of unintended pregnancy and abortion in Viet Nam remain high. A recent analysis of VNDHS II calendar data indicated that 40 per cent of the pregnancies reported by survey respondents during the three years prior to the survey unintended i.e., unwanted or mistimed (Le and others, 2004). When allowance is made for the fact that some pregnancies ending in induced abortion were not likely to be reported by survey respondents, the actual proportion occurring during this period may well approach 50 per cent, a level usually found only in developed countries.

Abortion is legal in Viet Nam, although as in most countries accurate data are unavailable, the evidence indicates that it is widely practiced. It was estimated that the total abortion rate in 1997 was twice that of 1994, e.g. 1.4 abortions during a woman's reproductive life in 1997 compared to only 0.6 abortion in 1994 (National Committee for Population and Family Planning of Vietnam (NCPFP), 1999).

The research reported in this article addressed the question of what factors differentiate Vietnamese women/couples interviewed in the VNDHS II who chose abortion during the 1994-1997 period versus those who chose to carry unintended pregnancies to term. Little is known about the decision-making process of Vietnamese women as to whether or not to terminate unintended pregnancies. The empirical data differs amongst sources. Some authors estimated the total abortion rate in Viet Nam to be 2.5 per 1,000 women of reproductive age (Goodkind, 1994), while other analysis showed the abortion rate was much lower (NCPFP, 1999). It is important for policy and family planning programme purposes to understand the factors behind such decisions in order to develop responsive reproductive health services and programmes.

This paper takes advantage of "calendar" data gathered in the VNDHS II undertaken in 1997 in which female survey respondents were asked to report all pregnancies in the three years prior to the survey, the outcome of each pregnancy and, if terminated, whether the termination was spontaneous or induced. Experience shows that survey respondents, especially in countries where abortion is illegal and/or highly stigmatized, tend to grossly under-report abortions. It is

estimated that only about one third of abortions were reported in the World Fertility Surveys (WFS) undertaken in 40 developing countries (Casterline, 1989). Jones and Forrest (1992) estimated that only 35 per cent of the actual abortions in the four-year period prior to the 1988 United States National Survey of Family Growth (NSFG) were reported in the survey (Jones and Forrest, 1992). However, abortion is legal in Viet Nam and thus, although some abortions undoubtedly went unreported in the VNDHS II, the survey provides one of the better opportunities available to understand the factors underlying decisions by women in a developing country setting to terminate unintended pregnancies or carry them to term as unintended live births.

Data and methods

Data

The VNDHS II used a two-stage cluster sample design. In the first stage of the sample selection a total of 7,150 households, stratified by their urban or rural setting, were selected via systematic-random sampling with probability-proportional-to-estimated-size (PPES). Of those, 7,001 (98 per cent) were successfully interviewed. A total of 5,704 eligible female respondents (i.e., ever-married women) were identified in the household interviews, of which 5,664 (99 per cent) were successfully interviewed. Survey fieldwork took place from July to October 1997. The survey included a household questionnaire, a woman's questionnaire and a community health facility questionnaire. Many questions on current pregnancy status and contraceptive practice were skipped when interviewing formerly married women, who numbered 324 among survey respondents. Thus, the survey was restricted to 5,340 currently married women.

The VNDHS II study takes advantage of "calendar" data gathered in conjunction with the individual questionnaire in which female survey respondents were asked to report retrospectively on a month-by-month basis their pregnancy status, pregnancy outcomes, and contraceptive use (as well as reasons for discontinuation) over a period covering 67-69 months from January 1992 (depending on the month a given interview took place) to 1997. However, information on pregnancy intentions, which is essential to the present paper, was only available for pregnancies that occurred in or after January 1994. Thus, the events analysed in the study were reported to have occurred during the 43-45 month period prior to the survey interview in 1997.

The "intendedness" of pregnancies was measured in the VNDHS II by asking respondents to, for each reported pregnancy, recall their feelings at the time they became pregnant. If a woman reported one or more births since January 1994, the

interviewer asked: “At the time you became pregnant with [child’s name], did you want to become pregnant then, did you want to wait until later, or did you want no (more) children at all?” If a woman was pregnant at the time of the survey, she was asked: “At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to become pregnant at all?” Similarly, if any of her past pregnancies had ended in an induced abortion or menstrual regulation, the interviewer asked: “At the time you became pregnant with the pregnancy which ended in your (last/next-to-last induced abortion/menstrual regulation), did you want to become pregnant then, did you want to wait until later, or did you want no (more) children at all?”. The responses to these questions clarified whether the pregnancy was intended (those answering that “they wanted to become pregnant then”), mistimed (those answering that they “wanted to wait until later”), or unwanted (those who said that “they wanted no more children at all”).

In order to take maximum advantage of the calendar data, the unit of analysis for the study was not the woman, but rather pregnancy and contraceptive use “segments.” A “segment” was defined as a month or a continuous set of months in the reproductive calendar of a woman that satisfied one and only one of the following conditions: (a) one or more months coded as “pregnancy” followed by a “terminated pregnancy” month (the month in which the terminated pregnancy is considered the last month of the pregnancy segment), (b) multiple months coded as “pregnancy” followed by a “live birth” month (the live birth month was considered to be the last month of the pregnancy segment), or (c) a segment with the same code (except the codes for “live births” and “pregnancy”) regardless of length. The latter segment consisted primarily of intervals of successful contraceptive use (defined as those ending either in method discontinuation or in switching to another method while non-pregnant) and intervals of non-use of contraception not resulting in a pregnancy. In short, the authors categorized the events in the reproductive health calendar of the women into three groups: pregnancy events (which did not result in a live birth) which satisfied condition (a) above, live birth events, condition (b), and all other events condition (c). Segments that were truncated or “censored” by the survey interview were classified as censored pregnancy, contraceptive use or non-use segments, respectively. The algorithm used to classify segments is discussed elsewhere such as in Le and others, 2004.

A separate record was created for each of the segments identified in a new data set in which the characteristics of the segment were variables. Characteristics of survey respondents measured in other sections of the VNDHS II questionnaire were attached to those records as additional variables so that possible statistical

associations could be assessed. This restructured data set permitted survey respondents to contribute more than one event to the analysis, reflecting the fact that Vietnamese women contributed differing numbers of events to the countries' demographic history during the period 1994-1997 .

Analytic procedures

Because respondents for the VNDHS II were chosen with differing probabilities of selection, it was necessary to weight the data in order to obtain unbiased estimates for the parameters of interest of the study. Accordingly, all data were weighted by normalized sampling weights, which were calculated as the inverse of the overall probability of selection. Standard errors of population estimates and regression parameters were corrected for the use of cluster sampling in the VNDHS II using the "survey" command in the STATA software package.

Table 1 provides an operational definition of the factors considered in the analysis of correlation of abortion (given that the pregnancy was unintended). Statistical associations were assessed using standard bivariate and multivariate statistical methods. In the multivariate analyses, sequential binary logistic regression models were used to predict the odds that pregnancy segments being terminated (versus resulting in live births), taking into account those independent variables for confounding factor control.

Using segments as the unit of analysis introduces statistical dependency into the analysis as women can and do contribute more than one "segment" of events, and the observations for a given woman may be correlated. Unfortunately, no commercially available computer software that the authors are aware of permits simultaneous adjustment for unequal probabilities of selection, the use of cluster sampling and potentially correlated observations. STATA was used to analyse the segment-based data and no adjustment for dependency was made.

Several other limitations of the study should be noted. Several of these concern the concept of the "intendedness" of pregnancies. One issue concerns recall bias in retrospective survey questions about intention status of pregnancies. A pregnancy might well be classified in the past as unintended, but, at the time of the interview, the woman may have reconsidered and changed her mind and thus responded that it had been an intended pregnancy. Recall bias might also be an issue with regard to other measurements in the survey (e.g., misreporting of timing or sequencing of events).

Table 1. Operational definitions of the correlates considered in the analysis

Variable label and explanation	Coding value
A. Socio-economic status index: household characteristics and amenities	
Socio-economic status (low: asset less than 4; middle: asset from 4 to 8; high: more than 8 assets). The 12 assets are: piped water, flush toilet, electricity, radio, TV, refrigerator, bicycle, motorcycle, car, clean floor, concrete proof, telephone.	0= low 1= middle 2= high
B. Demographic characteristics of women	
Region	1= Northern Uplands 2= Red River Delta 3= North Central 4= Central Coast 5= Central Highlands 6= Southeast 7= Mekong River Delta
Age at start of first marriage	0= less than 20 (years) 1= 20 or higher
Woman's occupation	0= agriculture/ not working 1= non-agriculture
C. Husband's background characteristics and influence	
Partner's education level	0= primary or no education 1= secondary and higher
Spousal age difference (husband's age minus wife's age)	0= husband is younger 1= 0 to 3 2= 4 or more
Who decides how to spend money in household	0= wife & husband 1= wife 2= husband 3= other/jointly
D. Past pregnancy issues	
Number of son at the beginning of segment	
Past unintended birth	0= no 1= yes
Past unintended pregnancy termination	0= no 1= yes

.../

Table 1. (Continued)

E. Special variables on the segments of the calendar	
Age of woman at the beginning of segment	0= less than 20 1= 20 – 29 2= 30 – 39 3= 40 +
Pregnancy outcome	0= live birth 1= abortion
Using CM in previous segment	0= no use 1= traditional method 2= modern method
F. Abortion service availability	
Abortion/Menstrual regulation available at Commune Health Station	0= no ; 1= yes
Abortion/Menstrual regulation available at District Health Center	0= no ; 1= yes

Another limitation of the study concerns the cross-sectional nature of the data. Cross-sectional data limits the ability to establish causality, although the retrospective calendar data available in the VNDHS II improves the ability to establish temporal sequencing to some degree. Nevertheless, the available data permit the establishment of statistical associations, but not necessarily of causal relationships.

Results

Level of induced abortion

There were a total of 925 pregnancy events classified as “unintended” during the period from January 1994 to the survey interview date in 1997. Virtually all pregnancies ending in abortion were reported as having been unintended. Among 925 unintended pregnancies observed in this study, 475 (51 per cent) were reported as having resulted in live births and 450 (49 per cent) as having been terminated (miscarriage/stillbirths were excluded as intention status was not identified). Of those 450 cases, 63 per cent were reported as having been performed within the first four weeks of pregnancy as “menstrual regulation,” and 37 per cent as having been induced abortions, performed on average 1.7 months after conception. Hereafter, all will be simply referred to as “MR/abortion”. The majority of unwanted pregnancies (65 per cent) reported by respondents during this period were reported to have ended in MR/abortion as compared with only 21 per cent of mistimed pregnancies. The proportion of MR/abortion among women reporting unintended pregnancies was slightly lower than Alan Guttmacher

Institute (AGI) estimate that 56 per cent of unintended pregnancies in developing countries were aborted, versus 73 per cent in developed countries (AGI, 1999). Another recent study has suggested, however, that the proportion of unintended pregnancies that ended in induced abortion in the United States was only 54 per cent (Henshaw, 1998).

Moreover, owing to possible under-reporting of pregnancies ended via induced abortion, it is likely that those figures understate the true prevalence of induced abortion in Viet Nam. Quantifying the level of under-reporting is difficult, but the NCPFP estimated that the actual volume of MR/abortion was probably 2.3 times higher than indicated by a post-enumeration survey conducted in connection with the VNDHS II data (NCPFP, 1999). If this adjustment is accepted, it would suggest that about 68 per cent of unintended pregnancies and 33 per cent of all pregnancies during the 1994-1997 period ended in MR/abortion.

Correlations of unintended pregnancy

To provide a context for the present analysis of how Vietnamese women respond to unintended pregnancies, findings from an analysis of the correlations of unintended pregnancy undertaken using the VNDHS II calendar data that have been reported elsewhere are briefly summarized here (Le and others, 2004). Table 2 presents logistic regression results of the correlations of unintended pregnancy. Unintended pregnancy was found to be associated with a number of factors. Factors associated with a higher likelihood of unintended pregnancies included older age of the respondent, young age at marriage, husbands who were of the same age or older, having one or more living sons, residence in the north and central regions of the country, history of unintended pregnancy, contraceptive use before the pregnancy and less favourable supply environment of contraceptive methods at the district level.

Several of these (older age, young age at marriage, one or more living sons and contraceptive use prior to pregnancy) are likely reflective of, or, associated with preferences not to have additional children. The higher rates of unintended pregnancy in the north and central regions reflect the more limited family planning supply environment found in those parts of the country. The respondents' history of association with unintended pregnancy is noteworthy in that it indicates that Vietnamese women experiencing unintended pregnancies are unable to avert future unintended pregnancies in sizeable numbers. Finally, the association with the husband's age might be indicative of gender power differences within marriage in which older men have greater say over pregnancy than men who are younger than their wife.

Table 2. Odds ratio for predictors in Logistic Regression Model of pregnancy intendedness

(Comparing unintended pregnancies to intended pregnancies)

Variable name	Odds Ratio	Standard error	t	P	95 per cent Conf. Interval	
Geographic region						
Mekong River Delta (r)						
Northern Uplands	3.101065	0.889840	3.94	0.000	1.758135	5.469776
Red River Delta	2.538786	0.748443	3.16	0.002	1.417161	4.548131
North Central	2.362912	0.768249	2.64	0.009	1.242210	4.494694
Central Coast	3.443489	1.205852	3.53	0.001	1.722766	6.882898
South-East	1.304270	0.489921	0.71	0.481	0.620497	2.741544
Age at start of first marriage						
Less than 20 (r)						
20 or higher	0.659752	0.100740	-2.72	0.007	0.487789	0.892337
Age of the woman						
Less than 20 (r)						
20 - 29	2.748069	0.791524	3.51	0.001	1.554673	4.857538
30 - 39	4.303272	1.306831	4.81	0.000	2.360288	7.845715
40 +	5.677523	3.364874	2.93	0.004	1.758400	18.331590
Spousal age difference						
Less than 0 (r)						
0 to 3	1.687194	0.357122	2.47	0.015	1.110107	2.564278
4 or more	1.718964	0.392347	2.37	0.019	1.094526	2.699651
Had previous unintended birth	6.084181	4.015926	2.74	0.007	1.649209	22.445460
Had previous abortion following unintended pregnancy	7.998987	3.985811	4.17	0.000	2.985752	21.429710
Using CM in previous segment						
No use (r)						
Traditional method	4.657571	1.496571	4.79	0.000	2.467047	8.793090
Modern method	4.800198	1.607249	4.68	0.000	2.475561	9.307748
Number of son alive	2.750352	0.342116	8.13	0.000	2.150550	3.517442
Supply environment at DHC	0.709840	0.088951	-2.73	0.007	0.554027	0.909473

r: reference category

N=1,557

Model fit: F statistic = 11.32 , p<0.001.

Unwanted versus wanted pregnancy

Logistic regression analysis was also performed on desirable pregnancy status as an outcome and the previously mentioned sets of variables as predictors. As described above, desirable pregnancies included all situations in which the woman said she wanted the pregnancy then, or wanted it at a later time (mistimed). Seven independent variables regarding demographic background of the women and their partners and one variable related to the supply of family planning services predicted unwanted pregnancy outcome with significant proximity. Having had an unwanted pregnancy in the past, respondents' geographic region, and use of contraceptive method prior to the current pregnancy were the strongest predictors of an unwanted pregnancy. After establishing controls for other variables in the model, having a previous unwanted pregnancy still increases the risk of a latter unwanted pregnancy by 18 times (95 per cent CI: 6.35 – 51.96, $p < 0.001$). Women of the Northern Uplands and the Red River Delta both show risks of unwanted pregnancy about six times higher than segments from the reference region (Mekong River Delta, $p < 0.01$). The Central Coast Region also has a risk approximately four times higher than the reference region ($p = 0.033$). Compared to the reference age group of women under 20, the risk for women aged 30-39 is 10.3 times higher ($p < 0.05$), and for women over 40 it is 11.4 times higher. The risk of an unwanted pregnancy is not associated with age at first marriage, as is the case in unintended pregnancy. Spousal age difference is still a significant predictor of unwanted pregnancy, however. Women whose husbands are at the same age or older are about two times more likely to have pregnancies declared as unwanted ($p < 0.05$).

The number of living sons and daughters is also highly significant in predicting the outcome of an unwanted pregnancy. Having one living son at the time the segment occurred increases the risk of unwanted pregnancy by about 5.4 times ($p < 0.001$), while having one living daughter only increases the risk by 2.4 times ($p < 0.001$). Concerning the availability of family planning methods, analysis shows no increase in availability of contraceptive methods significantly reduce the risk of unwanted pregnancy outcomes. However, the availability of intrauterine devices (IUDs) at the "commune health stations", at the level of $p = 0.03$, turned out to be a significant factor in guarding against unwanted pregnancy. The risk of an unwanted pregnancy for those who lived in the cluster in which the IUD service was available at the local health station was approximately 50 per cent lower than for those who lived in a commune without IUD service.

Correlations of choice for an induced abortion

In the event that Vietnamese women experience an unintended pregnancy, what factors distinguish women who seek abortion services from those who go on to deliver an unintended live birth? Table 3 presents summary findings from bivariate analyses focusing on this question.

Table 3. Summary of bivariate results

(Comparing percentage of abortion versus live births among predicting variables)

Variable	Live birth	Abortion
Geographic region (N=924)*		
Northern Uplands (N=303)	34.0	66.0
Red River Delta (N=220)	35.0	65.0
North Central (N=119)	76.5	23.5
Central Coast (N=93)	98.9	1.1
Central highlands (N=21)	90.5	9.5
Southeast (N=68)	55.9	44.1
Mekong River Delta (N=100)	55.0	45.0
Socio-economic status (N=924)*		
Low (N=354)	58.5	41.5
Middle (N=524)	48.5	51.5
High (N=46)	30.4	69.6
Age of the woman (N=924)*		
less than 20 (N=53)	86.8	13.2
20 - 29 (N=436)	61.2	38.8
30 - 39 (N=374)	38.5	61.5
40 + (N=62)	29.0	71.0
Religion of woman (N=925)*		
No religion (N=763)	46.7	53.3
Buddhist (N=92)	69.6	30.4
Other (N=70)	78.6	21.4
Husband's educational level (N=925)*		
Primary or less (N=232)	61.6	38.4
Secondary and higher (N=693)	47.9	52.1

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Table 3. (Continued)

Variable	Live birth	Abortion
Had previous abortion following unintended pregnancy (N=924)*		
No (N=796)	57.3	42.7
Yes (N=128)	14.8	85.2
Parity (N=904)*	2.8	2.1
Mean number of son alive (N=904)*	1.5	1.0
Using CM in previous segment (N=925)*		
No (N=604)	61.5	38.5
Yes (N=321)	32.4	67.6

* p<0.001.

Women/couples living in the Northern Uplands Region, the region that previous analyses indicated had extremely high levels of unintended pregnancy, low contraception prevalence and high levels of ineffective contraceptive use (Le and others, 2004), were the most likely to choose induced abortion (66 per cent versus 34 per cent choosing to carry unintended pregnancies to term). Comparable rates of abortion are observed for the Red River Delta region (65 per cent choosing abortion versus 35 per cent carrying to term). These two regions alone accounted for more than 76 per cent of all MR/abortion cases reported in the survey, although they represent just over 40 per cent of the study sample. In all other regions, abortion was chosen by less than 50 per cent of women experiencing unintended pregnancies. Extremely low proportions of abortions are observed in several regions in the central part of the country. No differences by urban/rural setting were observed.

A number of background characteristics are associated with the likelihood of having resorted to MR/abortion. One such factor is age. Women under 20 and between 20-29 years of age were much more likely to have unintended live births (87 and 61 per cent) than to have opted for MR/abortion (13 and 39 per cent, respectively). In contrast, among women aged 30-39, 62 per cent opted for MR/abortion versus only 39 per cent unintended live births; the comparable proportions for women aged 40 and above were 71 per cent choosing MR/abortion and 29 per cent unintended live births. This likely reflects the fact that many older women had already achieved, or exceeded, their family size preferences and were thus more motivated than younger women to avoid additional children. Women reporting "no-religion" were much more likely (53 per cent) than Buddhist women

or women of other religions to have chosen MR/abortion (30 and 21 per cent, respectively).

Recourse to abortion also varied systematically by the socio-economic status of respondents. Women of lower socio-economic background were significantly less likely to have chosen abortion (42 per cent) than either middle- or upper socio-economic status (52 and 70 per cent, respectively).

Only one of three husband characteristics considered showed an association with decisions concerning how to deal with unintended pregnancies. Neither difference in spousal ages, which was associated with the likelihood of unintended pregnancy (women with older husbands were more likely to have experienced an unintended pregnancy) nor husband's occupation were significantly associated with MR/abortion. However, the educational level of the husband did show an association with MR/abortion. Women whose husbands had secondary or higher educations were more likely to have undergone MR/abortion (52 per cent) than women with husbands with lower levels of educational attainment (38 per cent).

The data indicate a clear "son preference" tendency among Vietnamese women and couples. Women who underwent MR/abortion had, on average, 1.5 living sons versus 1.0 living sons among women who decided to have a live birth ($p < 0.001$, table 3). The parity were also linked to the MR/abortion decision – women who opted for MR/abortion had an average of 2.8 previous live births versus an average of 2.1 previous births among women deciding to have an unintended live birth ($p < 0.001$). However, the number of living daughters was not linked to the MR/abortion decision, women who opted for MR/abortion had an average of 1.2 living daughters versus an average of 1.1 among women deciding to have an unintended live birth.

Having had a past unintended pregnancy followed by abortion was strongly associated with the decision to undergo MR/abortion in response to unintended pregnancies during the 1994-1997 period. Among the segments with previous history of abortion, in 85 per cent of the cases, the women decided to have an abortion for their current pregnancy during this period, versus only 43 per cent of the segments with no previous pregnancy aborted in the past.

The findings indicate a strong motivation on the part of the women who practice contraceptive methods. Having used contraception was strongly associated with the decision to undergo MR/abortion in response to unintended pregnancies during the 1994-1997 period. Women who did not use any contraception were much more likely to have unintended live births (61.5 per cent) than to have opted for MR/abortion (38.5 per cent). By contrast, among those who

practiced contraceptive methods, 67.6 per cent opted for MR/abortion versus only 32.4 per cent unintended live births.

A number of family planning supply environment indicators were considered in the bivariate analyses, including the overall availability of family planning methods and services, and MR/abortion services specifically, at the community, commune health station and district health center levels. However, none of these indicators showed any association with the likelihood of survey respondents having opted for MR/abortion over unintended live birth.

To assess the net association of the above factors after the effects of the other factors are controlled for statistically, logistic regression was undertaken. The results are displayed in table 4. As can be seen, most of the significant associations observed in the bivariate analyses remained significant after the introduction of statistical controls.

Table 4. Odds ratios for predictors in logistic regression model of pregnancy outcome comparing abortion to live birth

Variable name	Odds ratio	Standard error	t	P	95 per cent conf. interval	
Geographic region						
Mekong River Delta (r)						
Northern Uplands	3.286037	2.021174	1.93	0.055	0.973101	11.096520
Red River Delta	1.781520	0.973233	1.06	0.292	0.604479	5.250493
North Central	0.349617	0.250299	-1.47	0.145	0.084806	1.441314
Central Coast	0.011580	0.014090	-3.66	0.000	0.001043	0.128577
Southeast	1.081872	0.647702	0.13	0.896	0.330939	3.536749
Socio-economic status						
Low (r)						
Middle	1.039237	0.322236	0.12	0.901	0.562708	1.919315
High	7.396811	6.793001	2.18	0.031	1.202056	45.516020
Age of the woman						
less than 20 (r)						
20 - 29	1.673852	1.280171	0.67	0.502	0.368594	7.601262
30 - 39	3.411297	2.878548	1.45	0.148	0.642465	18.112950
40 +	7.204601	6.404376	2.22	0.028	1.241044	41.824690
Spousal age difference						
less than 0 (r)						
0 to 3	1.743475	0.587526	1.65	0.101	0.895069	3.396056
4 or more	2.043881	0.745235	1.96	0.052	0.993467	4.204921

.../

Table 4. (Continued)

Variable name	Odds ratio	Standard error	t	P	95 per cent conf. interval	
Partner's educational level						
Primary or no education (r)						
Secondary and higher	2.492579	0.783477	2.91	0.004	1.338326	4.642326
Number of living son	1.460813	0.182781	3.03	0.003	1.140464	1.871146
Had previous unintended pregnancy	6.035786	2.217584	4.89	0.000	2.917666	12.486250
Using CM prior to pregnancy	2.717374	0.598883	4.54	0.000	1.757018	4.202643
r: reference category	N=677				Model fit: F statistic = 6.82 , p<0.001	

The findings confirm the strong association between geographic region and likelihood of pregnancy segments having ended in MR/abortion. Pregnancy segments from women residing in the Northern Uplands were more than three times more likely (odds ratio (OR) = 3.3) to have been terminated than to have resulted in a live birth. Central Coast region women, by contrast, almost always chose to carry unintended pregnancies to term (OR = 0.01).

With regard to the background characteristics of women, age remained strongly related to the MR/abortion decision. Women aged 40 years and above were 7 times more likely than those under age 20 to choose MR/abortion versus an unintended live birth. Religion did not, however, remain significant. Women of high socio-economic status were 7.4 times more likely than women of low socio-economic status to choose to terminate their pregnancies. As in the bivariate analyses, the education and occupation of female respondents was unrelated to the decision as to whether to seek MR/abortion services.

In regard to the husband's characteristics, women whose husband had a secondary or higher level of education were 2.5 times more likely to opt for MR/abortion than women whose husband had no or primary-level education. Spousal age difference, as the bivariate analyses, did not emerge as a significant predictor of MR/abortion in the multivariate analyses. Women whose husbands were four or more years older were two times more likely to choose MR/abortion than women whose husbands were the same age or younger, but this effect was just at the borderline statistically significant level ($p=0.052$).

A history of termination of pregnancies was the strongest predictor of decisions to seek MR/abortion services for subsequent pregnancies (OR=6.0),

indicating a tendency of repeated use of MR/abortion. Women who had one or more sons alive at the time of a given unintended pregnancy were 50 per cent more likely to choose MR/abortion as the solution for the unintended pregnancy.

Interestingly, using any contraceptive method prior to the current pregnancy was strongly associated with the likelihood of seeking an abortion (OR=2.7). This finding corroborates the finding of bivariate analysis. None of the service availability indicators, including those pertaining specifically to MR/abortion services, was associated with the choice of MR/abortion or a live birth, nor was “project/non-project” province status.

Discussion

Several interesting findings on the determinants of unintended pregnancy were found when comparing this study to previous studies conducted in developed as well as developing countries. The most frequently found contributing factors of unintended pregnancy in studies of developed countries were age, age at marriage, marital status, race, income and/or socio-economic status, educational level of the woman and parity. Woelfel, for instance (1991), indicated that unintended pregnancy is more likely to occur among young, never married women who are from the lowest socio-economic group.¹³ Young women aged 15-24 were almost twice as likely to report an unintended pregnancy as older women. These authors also revealed that unintended pregnancy varied inversely with a woman’s educational level and income. Studies in the United States of America, United Kingdom of Great Britain and Northern Ireland and other European countries, however, revealed a different direction of association between independent variables and unintended pregnancy (see Woelfel, Walsh and Morse, 1991; Grady, Hayward and Yagi, 1986; Fleissig, 1991; Denton and Scott, 1994). Denton and Scott reported that high parity was a significant determinant of unintended pregnancy, but education, housing, income and maternal age were not significant in the logistic regression model. In Japan, Goto (2002) also found no significant association between the experience of unintended pregnancy and woman’s education, employment and income (Goto and others, 2002). However, according to this author, significant factors associated with unintended pregnancy were the age of the husband being four or more years older (OR = 1.83) than his wife, the age at initiation of sexual intercourse (OR = 1.86) and marriage during teens (OR = 11.14).

The question of age at the initiation of sexual intercourse was not available in the VNDHS survey and the single women were not included in the sample. Therefore, those factors were not analysed in this study. To compensate for lacking

data on the age at first intercourse, this study also elaborated on the age at first marriage or union of the women. The findings of this study showed a highly significant association between unintended pregnancy and age of the woman at the time of conception (which is more similar to Denton's findings) as well as her age at the time she got married (similar to Goto's findings). The risk of unintended pregnancy in Viet Nam is clearly associated with a woman's increasing age. When the women were in the 20-29 age group, they were 2.8 times more likely to declare a pregnancy as unintended than when they were younger than 20. Pregnancies of women aged 30-39 were 4.3 times, and of women over 40 5.7 times more likely to be unintended. Consistent with the findings by Goto, this study also suggested that pregnancy events of those who married during their teens were at least 30 per cent more likely to be unintended. Compared to studies in developing countries, the opposite effect of age was only observed in another study by Eggleston (1999) where giving birth at a relatively older age significantly lowered the probability of unintended pregnancy (Eggleston, 1999).

Spousal age difference was only analysed in one previous study (Goto, 2002). VNDHS 1997 data also suggests such a significant effect on unintended pregnancy among women whose husbands were four or more years older (OR=1.72 versus 1.83 in Japan). However, unlike the findings in Japan, not only those whose husbands were four or more year older, but those whose husbands were at the same age or from one to three years older, also experienced a higher risk of unintended pregnancy compared to those women who were older than their husbands (OR=1.69). These findings might be explained by the fact that men in Viet Nam are less likely to use family planning practices than Japanese men, and that this occurs across all age groups. Additionally, the proportion of condom use and periodic abstinence/ rhythm was higher among the couples in which the husbands were older, while the proportion of using IUDs was slightly lower. Furthermore, 50 per cent of the ineffective use segments (which ended as unintended pregnancies) occurred as the result of using condoms and practicing withdrawal, the methods that required more cooperation from husbands. Thus, it is assumed that in Viet Nam the women whose husbands were younger may have less difficulty in persuading their husbands to use condoms and withdrawal properly than those whose husbands were older.

Menstrual regulation/abortion appears to be commonly used by Vietnamese women and couples in response to unwanted and, to a lesser extent, mistimed pregnancies. As a contraceptive method was reported as having been used prior to only 33 per cent of the unintended pregnancies reported by VNDHS II respondents during the 1994-1997 period and the modern method in only 17 per cent, it would

appear that MR/abortion is being used to avoid unintended births in lieu of contraception by large numbers of Vietnamese women and couples. Further evidence for this conclusion is provided by the relatively high rate of repeat abortions observed in the VNDHS II data – 24 per cent of the pregnancy segments ending in MR/abortion had been preceded by an earlier MR/abortion. Those findings indicate a need for expanded and higher quality family planning services, and in particular post-abortion services, in order to reduce the prevalence of unintended pregnancy in the country. This result fits well with a qualitative study by Truong Thi Xinh (2004) conducted in Ho Chi Minh City, Viet Nam, where half of women were not counseled during the previous abortions, and contraceptives were given without explanation. Women pointed out that the current service was not enough or in-depth and was not meeting their needs (Truong and others, 2004).

A number of factors were found in the present study to be associated with decisions to pursue MR/abortion instead of carrying unintended pregnancies to term. These included geographic region, socio-economic status, age of the pregnant woman, spousal age difference, husband's education, history of induced abortion, and the number of living sons. Some of these factors (e.g., age, number of living sons) reflect life cycle stage factors associated with reduced demand for additional children, and their association with decisions to resort to MR/abortion is not at all unexpected. Others, however, are of interest in that they document the role of cultural factors in decisions as to whether or not terminate pregnancies and/or have clear family planning programme implications.

First, the significance of the husband's characteristics in explaining decisions to seek MR/abortion services suggests a key role of husbands in the decision-making process. More specifically, those women whose spouses were four or more years older and/or had a secondary or higher level of education were significantly more likely to choose MR/abortion than an unintended live birth. This suggests that the social/economic power of the husband may play an important, and perhaps even dominant, role in decisions to terminate unintended pregnancies. Further research is needed in this area to better understand the dynamics of the decision-making process concerning how to deal with unintended pregnancies in Viet Nam. Nevertheless, the findings suggest that such decisions are appropriately labeled as "women/couple" decisions. These findings also indicate that men need to receive greater attention in family planning programme efforts in Viet Nam in order to increase the use of modern contraceptive methods and reduce the incidence of unintended pregnancies that lead to abortions.

Interestingly, the socio-economic status of women was not found in earlier analyses to be a significant predictor of the likelihood of unintended pregnancy

(Marston and Cleland, 2003). However, when faced with an unintended pregnancy, women of high socio-economic status were 8.5 times more likely to opt for MR/abortion than those of low socio-economic status (no difference between low and middle socio-economic status women was observed). One possible reason for this is that there was a greater motivation to avoid unintended pregnancy and live births among women at high socio-economic status compared to those at lower status.

Third, the analyses did not find any significant geographic differences in the availability of MR/abortion services at either the commune or district level, likely reflecting the wide availability of such services in Viet Nam. Despite this, women/couples in different regions of the country characterized by high levels of unintended pregnancy demonstrated quite different propensities to choose MR/induced abortion in response to unintended pregnancies. Other measured characteristics being equal, women/couples from the Northern Uplands region were four times more likely to choose MR/abortion than those in the Mekong River Delta (the reference or comparison category in the logistic regressions), while women/couples in the Central Coast region were almost twice as likely to carry unintended pregnancies to term. This indicates quite different regional perspectives on the merits and perhaps safety of MR/abortion as a response to unintended pregnancy. However, it is also possible that the desire for large family size is also a hidden contributing factor to the intendedness of pregnancy. The analysis based on the segments did not allow for the link between intendedness of pregnancy and the variable of desired family size. However, the descriptive investigation based on women as a unit of analysis indicated that the ideal number of children expressed by the women differs among geographic regions (data not shown). The average ideal number of children is lowest in the regions with higher risk of unintended pregnancy and a higher risk of abortion. Specifically, the mean ideal number of children was 2.2 in the Northern Uplands, 2.1 in the Red River Delta, 2.6 in the North Central, 2.9 in the Central Coast, 4.4 in the Central Highlands, 3.3 in the South-East and 3.7 in the Mekong River Delta. This is a real message to the family planning programme officers for consideration and action, as women in some regions of Viet Nam had still expressed a desire for high level of fertility compared to the national average level (e.g. in the Central Highlands and the Mekong River Delta). Further research is needed to better understand the factors underlying these markedly different responses, as the desired number of children and ideal family size is not the focus of this paper.

The findings of the factors related to the decision of aborting the unintended pregnancies have never been mentioned in previous studies. However, some of the

relevant factors had been reported by other authors. Gorbach and others (1998) studied two communes in Viet Nam and showed that intrauterine devices (IUDs) use in the preceding year significantly lowered the likelihood of MR/abortion in the subsequent year, by 82 per cent for urban women, and 70 per cent for rural women. Use of traditional methods increased the likelihood only for rural women. Each additional year of schooling for rural women and each additional child increased the probability of menstrual regulation/abortion by 17 and 18 per cent, respectively. Ethnicity, age, and assets had no effect. In the urban communes, the probability decreased with age and was unaffected by parity, assets, or education (Gorbach and others, 1998). Do Trong Hieu and others who conducted a study in Hanoi city and Thai Binh province suggested that 50 per cent of all women (52.8 per cent in Hanoi and 47.4 in Thai Binh) had had at least one prior pregnancy termination (1.6 pregnancy terminations/woman). They also suggested that induced abortion is being used as a substitute for family planning methods. The leading reasons for not using oral contraceptives were personal health problems, unavailability, and the perception that contraceptives were bad for one's health. For IUDs, those reasons were bleeding, lumbago, headache, loss of energy and dizziness. For condoms, reasons for non-use were that they were disliked by the spouse and unavailability. Women's fear and her husband's disapproval were key reasons for not choosing sterilization (Do, Stockel and Nguyen, 1993). It is, however, important to point out that no previous study in Viet Nam compared the factors associated with the likelihood of getting on abortion or alternatively carrying to term, given that the pregnancy was unintended.

In overview, rising unintended pregnancy and abortion rates are sometimes observed concurrently with rising levels of contraceptive use. However, in transitional societies, such as Viet Nam, where demand for children is falling faster than contraceptive prevalence and use-effectiveness is rising, the widespread use of MR/abortion as a primary means of achieving family size aspirations unnecessarily puts large numbers of women at risk of adverse health outcomes. The results of this study draw some highlights for policy implications and recommendations for future family planning programmes and strategy in Viet Nam.

First of all, better supply of contraceptive methods and family planning services, which have been proven as a protective factor against unintended pregnancy and addressing the non-use/ineffective use of contraception, is still an urgent need. In combination with a better supply of methods, communication programmes geared towards different choices of modern contraceptive methods integrated with more advanced post-abortion counseling to provide more

knowledge and understanding for couples to practice modern methods, would probably reduce the risk of repeated unintended pregnancies and abortions. Male involvement in contraceptive practices should also be given high priority in the family planning programme agenda of Viet Nam. Finally, for the long-term strategy of stabilizing fertility decline and reducing the rate of abortion, it is also recommended that the Government should promote communication programmes on modern contraceptive practice at different levels: in public announcements, at health-care and family planning facilities, as well as providing sex education in schools.

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Mortality and Causes of Death in Thailand: Evidence from the Survey of Population Change and Death Registration

The findings from the paper suggest a great improvement in the completeness of death registration and the quality of cause-of-death data in Thailand. Nevertheless, there still exists a 60-70 per cent incompleteness rate in infant death registration, while 40 per cent of adult deaths remain attributed to ill-defined causes.

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Death is a major factor affecting a country's population structure. Evidence shows that death rates tend to decrease continuously and rapidly as a consequence of continued improvements in medical care and the public health system along with

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socio-economic development. Infant, child and maternal mortality are, therefore, often used as indicators, reflecting the effectiveness of the public health system and improvements in the quality of life. In Thailand, such improvements have been evident. From 1964-1965 to 1995-1996, male and female life expectancy at birth increased from 59.9 to 69.9 years and 62 to 74.9 years, respectively.

In terms of Millennium Development Goal 4 (reducing child mortality by two thirds between 1990 and 2015), it is clear that this still represents a great challenge for Thailand. In view of the already low base line of 12.8 child deaths per 1,000 live births in 1990, it was argued that the targeted 4.3 per 1,000 live births by 2015 would be difficult to achieve. According to the official Thailand Report on Millennium Development Goals 2004 (National Economic and Social Development Board, United Nations and World Bank, 2004), this MDG target may not be applicable to Thailand. Instead, the Government has defined more specific goals in order for the country to reduce child mortality by half between 2005-2015 in highland areas, selected northern provinces and the southernmost provinces, and to reduce the infant mortality rate to 15 per 1,000 live births by 2006.

The aim of this paper is to assess overall mortality trends in Thailand and emerging problems in terms of causes of death from different data sources. Realizing also that mortality data is of crucial importance in assessing the mortality situation, another objective of this paper is to discuss the quality of the mortality data and its related implications for Thailand.

Data

The data used in this paper are from two main sources:¹

(a) *The Survey of Population Change* (SPC): This survey has already been conducted six times by the National Statistical Office.² The first three surveys were undertaken during 1964-1967, 1974-1975 and 1984-1986 in order to measure the changes in population growth and its components for the intercensal period, as well as to estimate the completeness of the birth and death registration. The fourth and the fifth SPC were conducted in 1989 and 1991 to obtain the estimates of population growth rate and other population characteristics. These particular surveys were used to evaluate the target of population growth rate in the middle and the end of the Sixth National Economic and Social Development Plan (1987-1991). The sixth Survey of Population Change was conducted in 1995-1996. This survey covered 600 enumerated districts/villages in all provinces of Thailand and approximately 87,600 private and collective households. In all of those surveys, ages were calculated in full years of the individual's last birthday before the survey date.

(b) Death Certificates: Data from death certificates in Thailand are provided by the Ministry of Health in collaboration with the Ministry of Interior as part of the Vital Registration System. This database provides information on registered deaths from 1996 to 2003 with approximately 300,000 to 400,000 deaths a year and a total of almost three million observations. This rich data set provides information on age, gender, date of death, cause of death and place (province) of occurrence.

Mortality trends in Thailand

Crude death rates and adult mortality

Table 1 presents the death rates per 1,000 population from 1964-1965 to 1991 by age and sex from the *Report of the Survey of Population Change*. Table 2 presents age-specific death rates from 1998 to 2002 using data from the Public Health Statistics. The data show that males tend to have a higher crude death rate than females in all periods surveyed. However, it is apparent that the overall mortality situation for both males and females improved between 1964-1965 and 1991. During this period, the male crude death rate dropped from 11.8 to 6.5, while the female crude death rate dropped at a faster rate, from 9.6 to 5.3. During this period, much improvement was shown in adult mortality, especially for those aged 65 and over.

Table 1. Death rates per 1,000 population by age group and sex

	1964-1965		1974-1976		1985-1986		1989		1991	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Crude death rate	11.8	9.6	9.5	7.9	7.1	5.8	6.6	5.3	6.5	5.3
Under 1 year	100.2	78.3	87.1	57.3	54.3	44.4	47.8	43.6	45.4	44.9
1-4	10.9	10.6	7.8	7.8	2.2	1.3	1.4	1.1	1.4	1.1
5-9	3.8	3.0	2.4	3.6	1.3	1.3	1.2	0.9	1.2	0.9
10-14	2.4	2.7	1.8	1.2	0.7	1.1	1.1	0.5	1.1	0.6
15-19	2.5	2.7	2.2	2.7	1.5	1.5	1.5	1.1	1.4	1.0
20-24	3.5	4.0	2.9	2.2	1.9	1.6	1.7	1.6	1.7	1.5
25-29	4.1	3.6	3.0	2.3	3.4	1.7	2.3	1.3	2.2	1.3
30-34	4.7	4.4	5.5	3.2	3.5	1.9	3.2	1.7	3.0	1.7
35-39	6.3	3.5	7.5	4.3	3.9	2.3	3.4	2.6	3.4	2.5
40-44	9.9	5.8	9.2	6.2	5	3.4	4.7	3.1	4.6	3.1
45-49	9.8	6.6	9.8	9.7	7.4	4.3	6.6	3.9	6.5	3.8
										.../

Table 1. (Continued)

50-54	13.4	6.3	16.6	7.8	10.4	7.4	9.3	8.5	9.1	8.4
55-59	15.6	12.0	18.4	13.0	16.5	14.2	18.3	9.0	16.9	8.9
60-64	22.8	16.3	30.4	18.9	28.7	18.8	22.1	13.7	21.2	13.4
65 and over	74.9	54.8	65.5	55.5	63.0	48.8	57.1	40.9	53.0	42.8

Source: Report of the Survey of Population Change, 1991, National Statistical Office, Bangkok, 1991.

Table 2. Death rates per 1,000 population by age group and sex

	1998		1999		2000		2001		2002	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All ages	6.0	4.2	7.0	4.8	7.0	4.9	6.9	5.0	7.1	5.1
0-4	2.8	2.8	2.2	1.9	2.0	1.5	2.1	1.7	2.3	2.0
5-9	0.6	0.4	0.7	0.5	0.7	0.5	0.8	0.5	0.7	0.6
10-14	0.4	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.6	0.4
15-19	1.3	0.5	1.7	0.6	1.7	0.6	1.6	0.5	1.9	0.6
20-24	2.4	1.1	2.8	1.2	2.7	1.2	2.5	1.0	2.6	1.0
25-29	5.2	1.8	5.7	2.2	5.3	2.4	4.5	2.2	4.1	2.1
30-34	6.1	1.7	6.9	2.3	6.9	2.4	6.4	2.5	5.6	2.2
35-39	5.4	1.7	6.5	2.2	6.5	2.4	6.4	2.5	5.6	2.1
40-44	5.0	2.1	6.2	2.7	6.3	2.7	6.2	2.7	5.9	2.5
45-49	5.8	2.9	6.9	3.5	7.0	3.5	6.8	3.5	7.0	3.5
50-54	7.3	4.1	8.7	4.9	9.0	5.1	9.0	5.1	9.2	5.1
55-59	9.9	6.0	11.7	7.0	11.5	6.9	11.3	6.8	12.6	7.6
60-64	14.4	9.4	16.9	10.7	16.4	10.6	16.7	10.5	16.6	10.5
65-69	22.2	15.0	25.1	17.3	24.1	16.7	24.1	16.8	24.1	16.2
70 and over	57.5	53.7	64.6	58.5	63.9	58.0	65.3	59.0	56.3	48.2

Source: Public Health Statistics 2002, Ministry of Public Health, Bangkok, 2002.

Both males and females in the age group 10-19 constituted the group with the lowest death rate. In addition, the fall in the death rate of children aged 5-9 years from 1964-1965 to 1985-1986 was striking, suggesting a marked improvement in health care for children. Death rates from the Public Health Statistics, however, indicate that from 1998 to 2002 the improvement in adult mortality³ had slowed down. The age group 65 and over experienced no significant change in the death rates.

Assuming that death rates are influenced by socio-economic factors, one would expect that death rates differ in different areas within a country, given the different living conditions and access to health care. Table 3 presents crude death rates from 1964-1965 to 1995-1996 by region. Bangkok residents appear to have the lowest crude death rates with a slight improvement over the period 1974-1976 to 1995-1996 (from 4.3 to 3.9 per 1,000 populations). In areas outside Bangkok, the northern and the north-eastern regions experienced the highest death rates while the southern region recorded lower levels. However, despite the high death rates in northern and the north-eastern regions, much improvement has been evident during the period 1964-1965 to 1995-1996. Death rates decreased by almost half the original levels in 1964-1965. Even though the gap in regional mortality differentials seemed to narrow in Thailand during the 30-year period, improvements in other regions yielded death rates higher than the death rates in Bangkok 20 years earlier.

Table 3. Crude death rates by region (per 1,000 population)

	1964-1965	1974-1976	1985-1986	1989	1991	1995-1996
Thailand	10.8	8.6	6.4	6.0	5.9	6.0
Municipal area	5.6	6.4	4.2	3.8	3.6	4.1
Non-municipal area	11.3	9.0	6.9	6.5	6.5	6.5
Bangkok Metropolis	na	4.3	3.8	3.4	3.3	3.9
Central region (excluding Bangkok)	10.4	6.6	5.8	5.5	5.6	5.8
Northern region	12.4	9.9	7.2	6.8	6.7	7.0
North-eastern region	11.4	9.8	6.8	6.4	6.3	6.1
Southern region	8.6	10.2	7.0	6.6	6.6	6.7

Source: Report of the Survey of Population Change, 1995-1996, National Statistical Office, Bangkok, 1996.

Infant and maternal mortality

Evidence shows that infant mortality is influenced both by conditions during pregnancy or at delivery and external factors during child rearing (Razzaque, Alam, Wai and Foster, 1990; Rahman, Wojtyniak, Rahaman and Aziz, 1985). Infant mortality is therefore often used as an indicator of the health-care system and of family status. In Thailand, infant mortality rates were reported in the Survey of Population Change in every round of the survey. When comparing similar periods, the rate seems to be slightly higher in the Survey of Population Change (from 38.8

per 1,000 live births in 1985-1986 to 40.7 in 1989) than in the Demographic Health Survey (35.2 per 1,000 live births in 1987).

According to the SPC, infant mortality for both males and females decreased considerably during the 1964-1996 period, from 84.3 in 1964-1965 to 26.1 in 1995-1996. Although male infants had a higher mortality rate than female infants in all rounds of the survey, the mortality differential seemed to narrow over time, suggesting an improvement in the environment over the period (data not shown).

Table 4 shows infant mortality rates by region. When considering the regional differentials of infant mortality, similar to overall mortality trends, the northern and the north-eastern regions appear to have infant mortality rates higher than those displayed in other regions. The southern region had the lowest infant mortality rate during 1964-1965 (excluding Bangkok), while the central region (excluding Bangkok) had the lowest infant mortality rate during 1995-1996. The considerable reduction in infant mortality rate from 94.0 to 19.4 deaths per 1,000 live births in the central region (excluding Bangkok) from 1964-1965 to 1995-1996 is worth noting. This success in improving the infant mortality situation suggests that much can be done along the same lines in other regions of Thailand.

Table 4. Infant mortality rate (per 1,000 live births) by region

	1964-1965	1974-1976	1985-1986	1989	1991	1995-1996
Thailand	84.3	51.8	40.7	38.8	34.5	26.1
Municipal area	67.6	19.6	27.6	23.6	21.0	15.2
Non-municipal area	85.5	58.7	42.6	41.4	37.0	28.2
Bangkok Metropolis	na	25.2	27.4	26.3	22.5	18.9
Central region (excluding Bangkok)	94.0	48.9	30.0	29.8	26.2	19.4
Northern region	96.5	74.0	48.0	46.3	42.4	30.8
North-eastern region	83.4	52.1	45.1	43.7	39.0	29.4
Southern region	48.5	51.4	36.7	35.6	31.1	25.7

Source: Report of the Survey of Population Change, 1995-1996, National Statistical Office, Bangkok, 1996.

In Thailand, data on maternal mortality was obtained from the database of the Ministry of Public Health. Maternal mortality rates are presented in table 5. Overall, there was a substantial reduction in maternal mortality during 1986-2002, from 34.7 per 100,000 live births in 1986 to 14.7 per 100,000 live births in 2002. The ratios declined steadily during this period, but in 1997 and 1998 they dropped

significantly, to 9.7 and 7.0, respectively. In 1997-1998, Thailand experienced a nationwide economic crisis. The substantial variation in these figures might be attributable to the fact that more women might have chosen to give birth at home during the crisis because of financial constraints. As a consequence, those deaths from deliveries might not have been properly reported to the health authorities leading to severe under-registration.

Table 5. Crude birth and death rates, infant mortality rate, and maternal mortality ratios, 1986-2002

Year	Crude birth rate	Crude death rate	Infant mortality rate	Maternal mortality ratio
1986	18.0	4.1	9.5	34.7
1987	16.5	4.3	10.6	37.2
1988	16.0	4.2	9.3	27.1
1989	16.3	4.4	-	22.1
1990	17.0	4.5	8.0	24.8
1991	17.0	4.7	8.3	19.4
1992	16.8	4.8	7.5	14.2
1993	16.5	4.9	7.4	12.5
1994	16.3	5.2	7.1	10.8
1995	16.2	5.5	7.2	10.7
1996	15.8	5.7	5.5	12.7
1997	14.8	5.0	3.7	9.7
1998	14.7	5.1	4.9	7.0
1999	12.3	5.9	6.6	12.3
2000	12.5	5.9	6.2	13.2
2001	12.7	6.0	6.5	12.9
2002	12.5	6.1	6.5	14.7

Source : Ministry of Public Health, 1986-1997, Registration Administration Bureau, Department of Local Administration, Ministry of Interior, 1998-2002.

Notes: a. Crude birth and death rates are the number of live births and deaths per 1,000 populations.
 b. Infant mortality rate is the number of infant deaths per 1,000 live births; maternal mortality ratio is the number of maternal deaths occurring per 100,000 live births.
 c. Maternal mortality ratio is defined as the number of maternal deaths per 100,000 live births.

Maternal death is becoming a rare occurrence in Thailand. Figures on maternal mortality ratios are therefore highly sensitive to a small increase/decrease in the number of maternal deaths even though the rates are

calculated per 100,000 live births. Hence, researchers and policymakers need to be aware of this larger sample size problem when making policy recommendations on ways to further reduce maternal mortality.

Causes of death

Causes of adult deaths

The number of deaths and death rates (per 100,000 population) from leading causes of death during 1999-2003 can be found in table 6. Data from death certificates for the year 2003 include only those having occurred between January and June of that year. There were approximately 360,000-380,000 registered deaths per year in Thailand during 1999-2003. The ten leading causes of death in Thailand are: (1) external causes of morbidity and mortality, including accidents; (2) neoplasms; (3) certain infectious and parasitic diseases; (4) diseases of the circulatory system; (5) diseases of the respiratory system; (6) diseases of the digestive system; (7) diseases of the genitor-urinary system; (8) endocrine, nutritional and metabolic diseases; (9) diseases of the nervous system; and (10) diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism.

Table 6. Death rates per 100,000 population of first ten leading causes of death 1999-2003

Leading causes of death		Order	1999	2000	2001	2002	2003
External cause of morbidity and mortality , other accidents, including late effect	Total	1	63.5	66.4	64.4	68.4	73.0
	Male		101.0	105.4	102.5	108.9	118.8
	Female		26.5	27.9	26.9	28.6	28.0
Neoplasms	Total	2	58.6	63.9	68.4	73.3	69.3
	Male		69.4	75.2	80.7	85.9	81.3
	Female		48.0	52.8	56.4	60.8	57.4
Same types of infectious and parasitic diseases	Total	3	41.4	51.7	54.8	71.7	67.6
	Male		55.1	66.7	68.5	86.3	81.1
	Female		27.7	37.0	41.3	57.4	54.2
Diseases of the circulatory system	Total	4	68.7	52.3	56.2	52.6	50.8
	Male		82.2	61.5	64.2	59.7	58.1
	Female		55.3	43.3	48.3	45.6	43.5
Diseases of the respiratory system	Total	5	33.5	34.2	37.7	40.3	36.1
	Male		44.9	45.3	49.4	52.3	46.9
	Female		22.3	23.2	26.2	28.6	25.4

.../

Table 6. (Continued)

Leading causes of death		Order	1999	2000	2001	2002	2003
Diseases of the digestive system	Total	6	14.0	14.7	17.1	18.0	16.4
	Male		20.1	20.6	23.7	25.0	22.7
	Female		8.0	8.8	10.6	11.1	10.7
Diseases of the genitor-urinary system	Total	7	11.3	15.3	17.0	17.6	16.4
	Male		12.0	15.8	17.2	17.5	16.3
	Female		10.6	14.8	16.8	17.6	16.5
Endocrine, nutritional and metabolic diseases	Total	8	12.1	13.1	14.6	13.3	11.8
	Male		9.4	10.4	11.2	10.4	9.3
	Female		14.7	15.7	17.9	16.1	14.3
Diseases of the nervous system	Total	9	16.6	17.3	15.3	11.4	9.3
	Male		21.3	22.1	19.0	14.1	11.5
	Female		12.0	12.7	11.7	8.7	7.1
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	Total	10	16.1	14.9	13.9	5.4	1.2
	Male		21.7	19.1	17.4	6.3	1.2
	Female		10.5	10.7	10.5	4.4	1.2

Source: Health Information Group, Bureau of Health Policy and Strategy.

Last Data Update: 4 February 2004, *ICD Mortality Tabulation List1, the 10th Revision*.

External causes of morbidity and mortality, including accidents, constitute the leading cause of death, especially among men in Thailand. During the five-year period under study, the death rate from external causes for men increased by almost 19 per cent. However, infections and parasitic diseases are still predominant. The death rate from these causes of death increased from 41.4 to 67.6 per 100,000 population with a peak of 71.7 per 100,000 population in 2002. In addition, men tend to be more prone to these causes of death. The death rates from neoplasms increased from 58.6 per 100,000 population in 1999 to 69.3 per 100,000 population in 2003. The increase in the incidents of death from neoplasms, however, is evident for both males and females.

Data also shows a great improvement in the death rates for both males and females caused by diseases of the circulatory system, diseases of the nervous system, and diseases of the blood system and immune mechanism. The reduction in the death rate from heart disease from 49.9 per 100,000 population in 1999 to 22.6 per 100,000 population in 2003 (table 6) suggests an impressive improvement, linked to medical advancements and the successful campaigns carried out by the Ministry of Public Health promoting healthy activities and lifestyle.

While there was a great reduction of deaths from certain diseases, other causes of death emerge as increasing problems. The death rates from accidents and poisonings increased from 48.5 to 56.1 per 100,000 population (data not shown in the table). Data also indicate an increasing number of deaths from hypertension and cerebrovascular diseases during the five-year period. The death rates from these causes increased from 15.6 in 1999 to 26.8 per 100,000 population in 2003 (data not shown). Furthermore, there does not seem to be a reduction in the number of deaths from endocrine, nutritional and metabolic diseases. However, death rates from suicide, homicide and other injuries appear to be high at approximately 13-17 deaths per 100,000 population (data not shown). In sum, causes of death from risky behaviours related to social factors are of increasingly greater concern in Thailand.

Causes of infant and maternal deaths

The sample size from the data on infant and maternal deaths is too small to reveal any significant trend regarding causes of death. In terms of incidence of infant deaths, although infectious diarrhoea remains a problem, respiratory conditions (such as pneumonia and respiratory failures) and heart conditions are becoming leading causes of deaths. However, the prevailing causes of infant deaths are usually described as unspecified, ill-defined or unknown. The majority of infant deaths due to respiratory and heart conditions are also reported with unspecified respiratory conditions of the newborns, unspecified pneumonia, and unspecified heart anomalies. Unspecified septicemia also emerged as a leading cause of infant deaths, especially in the two years preceding the study.

In terms of maternal deaths from 1999 to 2003, data show that complications of labour, delivery, and abortion are among the leading causes of deaths. In addition, although the number of maternal deaths due to complications arising during the postpartum period or puerperium is decreasing, it seems to remain among leading causes of maternal death (Ministry of Public Health, 1980-2002).

Estimations of survival of the Thai population

The survival estimations in this section draw from the wealth of data available from "death certificates", that have approximately 2.8 million observations recorded during 1996-2003. Survival probabilities at all ages are estimated based on these raw data which provide detailed information on mortality and help identify survival patterns at different ages over time. Assuming that death registration is complete, all death certificates in a specified year provide sufficient information to estimate the probabilities of dying at specific ages for the whole population during that same year.

Figure 1 compares age-specific survival estimates of the entire population (both sexes) in the year 1996 and 2003. The survivor probabilities are statistically different between 1996 and 2003, suggesting that the mortality situation in Thailand has improved significantly.

Figure 1. Kaplan-Meier comparison by year: 1996 and 2003

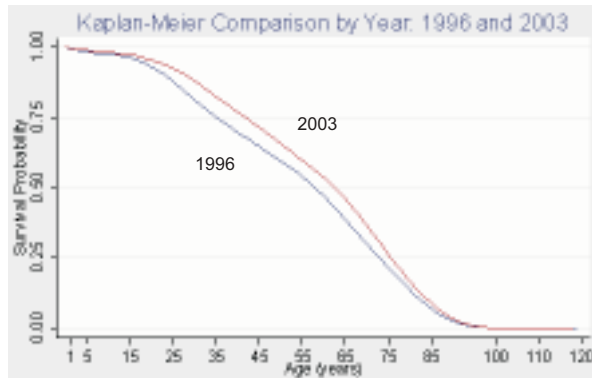
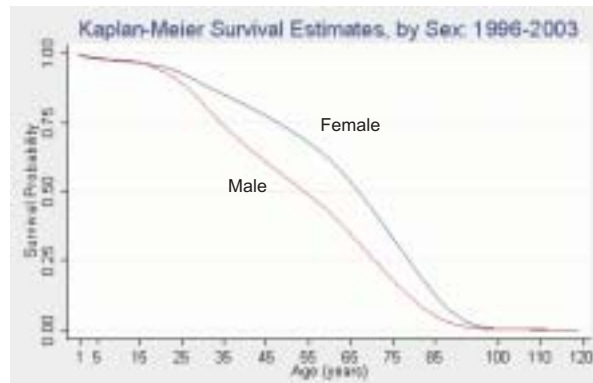


Figure 2 shows survival probabilities at different ages by sex in 1996 and 2003. The estimates show that the survival probabilities for both Thai males and females seem to drop at a faster rate after age 60. Males and females have similar survival probabilities up to 20 years of age, after which adult females tend to have a significant and persistent higher survival probability than adult males. Overall, the survivor functions of males and females are statistically different between the two sexes in 1996 and 2003.

Figure 2. Kaplan-Meier survival estimates, by sex: 1996-2003



Figures 3 and 4 show that the gap between the survival functions of the two sexes decreased between 1996 and 2003. In addition, the reduction in the gap of the survivor probabilities was due to a significant improvement in the survival function of males at every age. This finding points to improvements in the health-care system for the overall population, giving males an edge in survival although they are biologically more prone to death.

Figure 3. Kaplan-Meier survival estimates, by sex: 1996

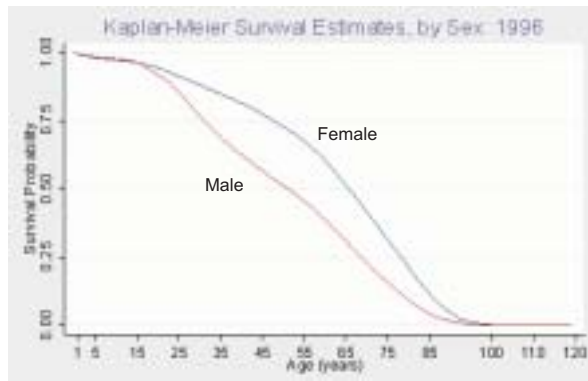
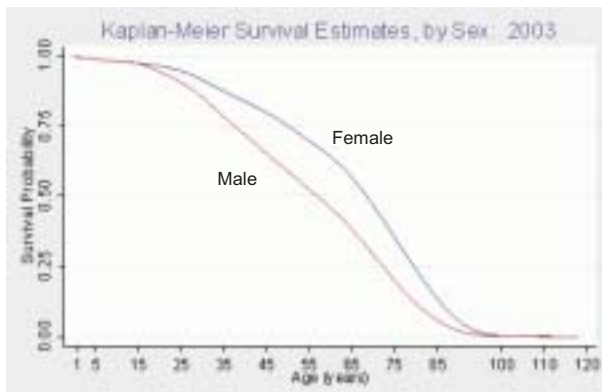


Figure 4. Kaplan-Meier survival estimates, by sex: 2003



Data-quality discussions

The main source of data on mortality in Thailand is the Vital Registration System, which was established in 1917. The information gathered in this system basically conforms to international standards. The Ministry of Interior is responsible for registering deaths at the local administrative level, while the Ministry of Public Health is responsible for processing vital statistics data for the whole country, and disseminating the information on an annual basis, through the publication of the Report of Public Health Statistics (Kanchanasinith and Porapakkham, 1988). The most recent such report was published in 2002.

In Thailand, death is registered at the place of occurrence. If death occurs in a health institution, a medical death certificate will be issued by a health personnel (physician, nurse or medical coder). If death occurs outside a health institution, a death notification report will be issued by a local registrar (village head or health centre personnel). The medical death certificate and death notification report each have two parts; the first part is sent to the district registrar and the second part is retained by the issuers. Then the death certificate will be issued by the district registrar within 24 hours. The death certificate is divided into three parts: the first part is handed to the death informer, the second part is submitted to the Registration Administration Bureau (RAB), Department of Local Administration of the Ministry of Interior, the third part is submitted to the district health office. Since 1996, the district registrars have issued only one part to the death informer, while the data on death have been sent electronically to the RAB (the second and third parts were left unused).

It should be understood that when the mortality analysis is done by province or region, it refers to the place where deaths occurred, which was not necessarily the place of residence of the deceased (Kanchanasinith and Porapakkham, 1988). By law, the head of a household has the responsibility to notify the local registrar at the place of residence (if different from the place of death) in order to delete the name of the deceased from the household registration form.

Completeness of the official registration system

When a death occurs, the head of the household or institution is responsible for reporting the death, except when the death occurs outside the house or an institution. In this case, the person who finds the body is responsible for reporting the death.

Mortality data in Thailand severely suffered from under-registration until changes were implemented in the official registration system in 1996. As indicated in the 1974-1976 SPC (which used the dual-record system methodology by matching the events reported in the survey with those officially registered), about 41 per cent of the total deaths in Thailand were not registered officially. Even though there seems to be very little variation in the completeness of registration by sex of the deceased, there is a substantial difference in the coverage between municipal and non-municipal areas. About 86 per cent of total deaths are officially registered in municipal areas, while only 58 per cent of total deaths were registered in non-municipal areas. By contrast, in the Bangkok Metropolis, completeness rates are as high as 90 per cent.

After 1996, the completeness of the official death registration system of Thailand has been greatly improved. According to SPC reports, completeness in reporting of death in 1995-1996 was higher than that in 1985-1986. For the whole country, the death data were estimated to be 94.8 per cent complete in 1995-1996 compared with 75.7 per cent in 1985-1986. Even though the completeness differential decreased after the changes, the completeness of the registration was still better in municipal areas than in non-municipal areas. In 1985-1986, the highest death completeness of registration was 87.1 in the north. The lowest was in the south in both surveys, with about 87.9 per cent registration in 1995-1996 and 67.9 per cent in 1985-1986. The death completeness of the registration in the Bangkok Metropolis was reported to be 100 per cent in 1995-1996. In addition, even though adult mortality data were reported to be approximately 5 per cent incomplete, infant mortality registration was still reported to have 60-70 per cent incompleteness. This severe incompleteness of the data directly results in a downward bias of the infant mortality rates, which are often used to assess the overall condition of the population's health. It is also suspected that the under-registration of infant deaths is much more severe than it is reported. The evidence can be found when comparing infant mortality rates from the Vital Registration database (Ministry of Public Health) with those from the Survey of Population Change. For instance, in 1986, infant mortality rate was reported to be 40.7 per 1,000 live births in the Survey of Population Change while the rate was only 9.5 per 1,000 live births in the Ministry of Public Health's data. Infant mortality rates could be much less reliable when the completeness varies among different areas and/or at different periods.

Completeness of the cause of death reporting

The quality of diagnosis of the cause of death is of crucial importance to direct policy responses in the public health-care system in Thailand. Undoubtedly,

the quality of data in the Vital Registration System depends largely upon the attendant at death. Porapakkham (1986) indicated that the manual on the diagnosis of cause of death prepared by the Division of Health Statistics, which uses symptoms leading to death, has proved very helpful to local health personnel and local registrars when death occurred outside a hospital.

Even though mortality data from vital registration in Thailand has improved significantly in terms of completeness, during the period 1970 to 1978 about 45 to 58 per cent of deaths were coded by certifiers under "ill-defined and unspecified diagnosis". The proportions decreased to around 30 per cent since 1979 when the Ninth Revision of the International Classification of Diseases (World Health Organization) was adopted (Porapakkham, 1986). Lopez and others (1993) reported that the overall proportion of ill-defined causes of death was around 40 per cent. However, the proportions of ill-defined causes of death across regions do not differ significantly, with the exception of the central region, which appears to have a lower proportion of ill-defined causes of death.

When classified by age groups, the proportion of the ill-defined causes of death varies significantly. Among deaths of infants under one year, the proportion of ill-defined causes of death is only 2.4 per cent of the registered infant deaths. This proportion has decreased to less than 1 per cent since 1979.⁴ The highest proportions, however, fall in the above 65 years age group. The proportion is relatively constant at around 29 per cent (Lopez and others, 2003).

Other problems related to the quality of data on the causes of death relate to the methodology used to identify actual causes of death. Lopez and others (2003) suggest that even though a specific International Classification of Diseases (World Health Organization) cause is identified for 60 per cent of reported deaths, the validity of the underlying cause is questionable because many deaths are coded by either non-medically trained staff or by health personnel who had little contact with the deceased. The inaccuracy of the coding can have a substantial impact on the specificity of coding, which in turn is required for targeted policy responses. For example, in 2001, 35 per cent of the 43,000 neoplasm deaths reported were coded as ill-defined (Ministry of Public Health, 2002). Almost 60 per cent of the 19,000 heart disease deaths were coded as ill-defined heart disease. Only one death out of these 19,000 cases was coded as atherosclerosis.

The findings presented above lead to the conclusion that the data used in the study of mortality in Thailand are highly defective as regards to causes of death if the problem is not systematic and consistent over the study period. However, Porapakkham (1986) indicated that after a careful examination the problems encountered have been more or less systematic and consistent over the study

period. Thus, researchers are advised to take into account only major causes of death for their analysis. Larger groupings of data make the analyses more consistent and robust to systematic errors. In sum, a careful examination of the accuracy of data needs to be carried out before formulating targeted policy responses aimed at reducing mortality.

Conclusion

The paper examined the overall mortality trends in Thailand and emerging problems in terms of causes of death from two sources of data: the Survey of Population Change and the death certificate data. The paper finds that the overall mortality situation for both males and females improved significantly. More specifically, infant mortality and mortality of the 65 and above age groups show a measurable improvement. While infectious diseases are still among the leading causes of deaths in Thailand, other causes such as risky behaviours related to social factors like hypertension, cerebrovascular diseases, accidents and suicide are becoming equally important causes of death and deserve policy makers' attention.

The estimates of the survival probability at different ages in a particular year suggest that Thai males and females have similar survival probability up to early adulthood, after which adult females tend to have a significantly higher survival probability at every age than adult males. This finding clearly suggests the increasing importance of family in providing appropriate care for older females, as they tend to be healthier and live longer than males. Special attention should be given to gender differences in providing old-age care, especially among widows and childless females.

In addition, there has also been a significant improvement during 1996-2003 in the survival probabilities of both Thai males and females after 60 years. The reduction in the gap of the survivor probabilities between males and females was nevertheless due to a significant improvement in the survival probabilities of males, suggesting improvements in the health-care system for the overall population, giving males an edge in survival since they are biologically more prone to death.

As accurate mortality data are crucial to assessing the mortality situation, an objective of this paper was to discuss the quality of such data in Thailand. The findings from the paper suggest a great improvement in the completeness of death registration and the quality of cause-of-death data in Thailand. Nevertheless, there still exists a 60-70 per cent incompleteness rate in infant death registration, while 40 per cent of adult deaths remain attributed to ill-defined causes. The data quality problem found in this research highlights a need for careful examination of the

accuracy of data before directing targeted policy responses with the aim of reducing specific mortality rates. In addition, users of the cause-of-death data should only take major causes of death into account in their analysis. A larger grouping of data would also make the analyses more consistent and less prone to possible errors.

Endnotes

1. Another source of data is the Demographic Health Survey (DHS) which provides a large sample data for a range of monitoring and impact evaluation indicators in areas of population, health and population. Although the survey provides data on infant and child mortality, the Thailand survey was conducted only in 1987. Therefore, DHS cannot be used to compare infant and child mortality rates throughout the desired period.
2. The next round of the survey took place in 2005. The National Statistical Office will create an electronic database of the raw data from this survey.
3. The probability of dying between the ages of 15 and 60 years
4. This could be due to the already high rate of incompleteness for infant death registration.

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The *Asia-Pacific Population Journal* is a periodical produced three times a year by the Emerging Social Issues Division of the Economic and Social Commission for Asia and the Pacific (ESCAP), with support from ESCAP and the United Nations Population Fund (UNFPA). Its purpose is to provide a medium for the international exchange of knowledge, experience, ideas, technical information and data on all aspects of the field of population in order to assist developing countries in the region in improving the utilization of data and information for policy and programme purposes, among others.

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CONTENTS

Viewpoint:

Tsunami versus HIV/AIDS: Perception Dictates Response

By Joseph Roberts

Articles:

Gender, Leisure and Empowerment

By Alaka Malwade Basu

Population Ageing in East and South-East Asia, 1950-2050: Implications for Elderly Care

By Ghazy Mujahid

Unintended Live Birth versus Abortion: What Factors Affect the Choices of Vietnamese Women and Couples?

By Linh Cu Le

Demographers' Notebook:

Mortality and Causes of Death in Thailand: Evidence from the Survey of Population Change and Death Registration

By Pungpond Rakumnuaykit



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