An Assessment of the Thai Government's Health Services for the Aged

Financial pressure may make the policy of universal free health care for the elderly increasingly difficult to maintain

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In 1998, Thailand's Health Systems Research Institute, a unit within the Ministry of Public Health, launched a comprehensive review of health services available to elderly people in Thailand. As part of this review, staff at Khon Kaen University gathered data on the provision of services by

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public facilities. Four methods of gathering data were used: (a) interviews with policy makers and implementors; (b) a survey of elderly people in the community; (c) exit interviews with patients at hospitals; and (d) observations in hospitals. This article summarizes results obtained through the latter three methods, A more detailed account of all four methods and the results can be found in the final report (Kamnuansilpa and others, 1999).

Sample design and fieldwork

Data were gathered from 24 provinces covering all 12 zones administered by the Ministry of Public Health; because Bangkok is not administered by the Ministry of Public Health, it was therefore not included in the sampling frame. The survey in the communities covered 2,533 respondents aged 60 or older, who were chosen using multi-stage sampling. The sample was self-weighted between urban and rural areas and between regions. In each province, hospital-based data were collected at one provincial hospital and two district hospitals. Exit interviews with five elderly patients were attempted at each hospital. Because some hospitals had fewer than five elderly people when the authors visited, there are only 35.5 exit interviews, rather than the full 360. Observation data were collected on patient management methods in each hospital. An interviewer sat in a consulting room observing the patient-doctor interactions of five cases in each hospital.

All this was carried out during October 1998 by seven teams, each led by a member of the research group from Khon Kaen University. Most interviewers were recruited from nursing colleges in the areas where the data were collected.

Community and exit interview samples

Good reviews of the demographic profile and living conditions of the Thai elderly can be found in Knodel and Debavalya (1997) and Knodel and Chayovan (1997) in volume 12, number 4 of this *Journal*. The background social and demographic data which we obtained from our surveys, shown in table 1, do not differ in any significant way from those presented in the earlier reviews. The majority of elderly people in the community and exit interview samples have little schooling and large families, Females outnumber males by about 2 to 1. About 40 per cent report themselves as having a profession (occupation); by far the most common occupation is farming.

The health status of the elderly was not a major focus of this study. Up-to-date information on the subject can be found in Wongsith and Siriboon (1999: 122), who report that the most common chronic illnesses of the elderly in Thailand are arthritis, diabetes, hypertension and diseases of the neural system.

Two points about coverage by the health care system can be inferred from the table. First, the proportion of people interviewed at the hospital was smaller than would be expected given their share in the overall population. The health of people aged 80 or older is presumably poorer than that of younger groups, so their under-representation is likely to reflect their reduced mobility. Second, urban people seem to be over-represented among out-patients. Urban biases such as this are commonly observed in studies of health-seeking behaviour. Urban people live closer to the hospital, and also tend to have a better education and more contact with officialdom, which makes them more willing to make use of public facilities.

Coverage of the "old people's card" scheme

In 1992, the government launched a programme issuing free health care cards, known as "old people's cards" (*bat phu sung ayu*), to all Thais aged 60 or older (Gilson and others, 19988; Bunchalaksi and Worasiriamon, undated:328). In late 1998, instead of such cards, elderly people were provided "health care cards" (*bat sor phor ror*), i.e. the same cards that are given to other target groups. The goal of providing free health care cards to all elderly people was, however, retained. Table 2 shows the coverage of old people's cards at the time of our survey. Note that in this and other tables we have rounded numbers independently, so some rows or columns may not tally to exactly 100 per cent.

As can be seen in table 2, about 80 per cent of the elderly people possessed old people's cards, about 9 per cent did not possess the cards, but were enrolled in another scheme, and about 10 per cent were not enrolled in any scheme. Under Thailand's health care card scheme, even this 10 per cent are entitled to request an exemption if they cannot afford the fees and are approved by a social worker or other hospital staff (Tangcharoensathien, 1995:10-11; Gilson and others,1998:8). The administrators of some hospitals that we visited during fieldwork for the survey told us that they had an informal policy of granting free care to all elderly people, regardless of whether or not they held old people's cards, without requiring an interview with a social worker.

Table 1. Background characteristics of respondents in community and exit interview surveys in Thailand

(per cent)

Characteristics	Community surveys		Exit interview survey	
	Males	Females	Males	Females
Age				
60-69	51.6	49.6	50.7	57.1
70-79	34.6	35.8	44.2	35.5
80+	13.7	14.2	5.1	7.4
Total	100	100	100	100
Marital status				
Never-married	1.8	3.4	0.0	2.3
Currently married	74.6	38.3	76.1	41.9
Separated	2.2	4.0	1.4	5.5
Widowed	20.7	53.0	21.7	49.3
Divorced	0.7	1.2	0.7	0.9
Total	100	100	100	100
Living children				
0	4.3	6.1	2.2	3.7
1-2	9.2	11.2	11.6	12.4
3+	86.5	82.6	86.2	83.9
Total	100	100	100	100
Residence				
Urban	11.2	11.6	33.3[a]	32.3[a]
Rural	88.8	88.4	66.7[a]	67.7[a]
Total	100	100	100	100
Schooling				
None	14.3	31.5	9.4	26.6
Some primary	72.3	64.8	76.1	66.8
Higher, other	13.4	3.7	15.5	6.5
Total	100	100	100	100
Profession (occupation)				
None	48.0	67.2	45.7	61.8
Farmer	36.7	21.4	34.8	24.9
Retired official	3.9	0.4	8.7	0.9
Other	11.3	11.0	10.8	12.4
Total	100	100	100	100
Source of income				
Employment	34.5	22.9	30.4	33.6
Children	73.6	82.4	68.8	75.6
Other relatives	1.7	2.3	1.4	3.7
Pension	4.7	3.0	10.9	1.8
Living allowance	1.7	1.8	2.2	0.9
Savings, interest	4.1	3.5	5.8	7.4
Rent	2.0	0.8	0.7	0.9
Total[b]				

Table 1. (continued)

(per cent)

Characteristics	Community surveys		Exit interview survey	
	Males	Females	Males	Females
Region				
North	22.9	21.4	23.2	26.3
North-East	35.3	38.9	29.7	22.6
Centre	27.4	25.6	36.2	32.7
South	14.3	14.2	10.9	18.4
Total	100	100	100	100
Overall	35.1	64.9	39	61
Numbers	889	1,644	138	217

[a] Direct information on urban-rural residence unfortunately was not gathered for the exit interview sample. Therefore, anyone living less than 5 km from the hospital was defined as urban, and those living 5 km or more from the hospital as rural. Also, it should be noted that the sample does not include Bangkok.

[b] Totals do not add up to 100 because some elderly people had more than one source of income.

As can be seen in table 2, people in their 60s are less likely to have old people's cards than those in higher age groups. One reason for this seems to be delays in providing people with cards after they reach 60. As shown in table 3, a person's likelihood of holding a card increased quite sharply with each year they have attained over age 60. Unfortunately, the survey question on people's age did not require the elderly person to give an answer in completed years. Most elderly people in Thailand calculate their age by subtracting the year of their birth from the current year, which overstates age in completed years by one year if they have not had a birthday during the current calendar year. This means that the results in table 3 exaggerate the delay in issuing cards. However, since there were only 2-3 months remaining in the calendar year at the time when we conducted our survey, only one sixth to one fourth of the people are likely to have overstated their ages in the way discussed above, and the results shown in table 3 only slightly overstate the real situation.

People living in urban areas and people with more education were less likely than other groups to hold a card. More detail on these two factors is shown in table 4. Both factors were evidently important: well-educated people in urban areas were less likely to have cards than well-educated people in rural areas, while urban people who were well-educated were less

Table 2. Percentage of elderly covered by the old people's card and other health insurance schemes in Thailand (excluding Bangkok)

	Have old people's card[a]	Do not have old people's card		Total	Number
		Covered by other scheme[b]	Not covered by other scheme		
Sex					
Male	79	12	9	100	889
Female	81	10	9	100	1.644
Age					
60-69	77	13	10	100	1,275
70-79	85	8	7	100	897
80+	81	7	12	100	361
Residence					
Urban	64	22	14	100	290
Rural	82	9	9	100	2.243
Schooling					
None	81	7	12	100	645
Some primary	82	10	8	100	1,709
Higher, other	67	23	11	100	179
Region					
North	89	7	4	100	555
North-East	86	8	7	100	953
Centre	73	11	16	100	665
South	66	21	13	100	360
Overall	80.2	9.4	10.4	100	2,533

Source: Community interviews.

[a] Note that some of these people are also covered by other schemes.

[b] For instance, the person has a health insurance card, is a retired official, or has a child who is a retired official.

likely to have cards than urban people who were poorly educated. To some extent, the reduced coverage in urban areas suggests that the municipal authorities are less able or willing to obtain high coverage rates than their rural counterparts. However, as shown in table 2, the proportions of urban people and educated people covered by any scheme was not much lower than the other groups. This suggests that there may have been less demand for old people's cards among urban people and educated people, since they were already covered by other schemes.

Table 5 shows more detail on the people who did not have old people's cards, but were covered by other schemes. The "health insurance

Table 3. Elderly people possessing old people's cards by single year of age, Thailand

Age	Percentage with cards	Number in sample
60	52	122
61	65	105
62	76	119
63	73	139
64	86	116

Source: Community interviews.

cards" are for a voluntary scheme promoted by the Ministry of Public Health, in which households bought cards for 500 baht (US$l = about 38 baht) a year covering visits to public facilities for five of their members. Retired government officials and parents of officials were entitled to free care at government hospitals under the Civil Service Medical Benefit Scheme. As apparent in the table, a large majority of the elderly people who were not covered by the old people's card, but who were covered by other schemes, had children who were officials.

Payments

During 1999, the Ministry of Public Health began to discourage elderly people from holding old people's cards if they were already covered by another scheme. At the time of our survey, however, it was not uncommon for an elderly person to be covered by more than one scheme. In cases where this occurred, the elderly person and the hospital had to decide which scheme they would use to pay for treatment. Hospitals generally prefer elderly people to use the Civil Service Medical Benefit Scheme, which reimburses the costs of treatment on a fee-for-service basis. The other schemes such as the health care cards and health insurance cards

Table 4. Percentage of elderly people holding old people's cards, by residence and education, Thailand

Education	None	Some primary	Higher	Overall
Residence				
Urban	73	64	50	64
Rural	81	84	72	82
Number	645	1,709	179	2,533

Table 5. Percentage of elderly people who have no old people's cards, but are covered by other schemes, Thailand

	Have health card	Retired Official	Child is an Official	Number
Sex				
Male	19	25	60	111
Female	22	5	76	161
Residence				
Urban	10	22	76	68
Rural	24	11	68	204
Overall	21	13	70	272

Source: Community interviews.

Note: Respondents could answer more than once, so rows do not add up to 100.

operate on a capitation basis: hospitals' budgets are adjusted according to the number of cases they treated during the previous year, rather than by the cost of each treatment. Almost all hospital directors with whom we spoke claimed that capitation payments under the health care card scheme were not sufficient to cover costs.

During fieldwork, members of the research team observed that some elderly people were reluctant to use the Civil Service Medical Benefits Scheme for out-patient visits because they or their children were usually required to pay "up front", and there was a delay before reimbursement. In-patients who are treated under this Scheme usually receive optional extras such as private rooms. It is not known whether out-patients receive comparable advantages.

Among elderly out-patients who had old people's cards, 87 per cent reported using them to pay for treatment (table 6). Of the remaining 13 per cent, 9 per cent used other schemes, and 6 per cent reported that they themselves or their children paid for treatment. Gilson and others (199850-l) also found cases of people covered by health care cards making payments when visiting health facilities. There are a number of possible reasons why people with cards might have reported paying. Some of them may have sought treatment outside the area where they were registered. Some may have been paying for special services not covered by the old people's card, such as supplementary foods or the fitting of dentures. Some may have been paying fees for obtaining cards. And finally, some may have been forced to make payments for services which were supposed to be provided free.

Table 6. Source of payment for treatment of elderly people in Thailand

(per cent)

	Made payment themselves		Used scheme				Total	Number
	Elderly person/ spouse raid	Child or relative paid	Old person's card	Child is Official	Health card	Other[a]		
Hospital								
District	7	4	66	13	8	2	100	233
Provincial	5	3	56	16	17	3	100	122
Sex								
Male	7	7	62	7	14	4	100	138
Female	7	2	62	18	9	2	100	217
Age								
60-69	7	4	60	12	16	2	100	194
70+	6	3	65	I7	6	4	100	161
Residence								
Urban[b]	8	3	57	20	9	4	100	116
Rural[b]	6	4	65	11	12	2	100	239
Schooling								
None	3	3	76	14	3	1	100	72
Some primary	6	4	60	13	15	2	100	246
Higher, other	19	3	49	19	3	8	100	37
Health scheme								
Old people's card[c]	4	2	87	6	2	1	100	251
No card, has other[d]	9	3	0	42	44	1	100	86
No card, no other[e]	33	33	0	0	0	33	100	18
Overall	7	4	62	14	11	3	100	355

Source: Exit interview.

[a] Village health volunteer, retired offtcial, veteran schemes, or granted exemption by hospital.

[b] Respondents are defined as "urban" if they live within 5 km of the hospital, and "rural" if further away than this.

[c] Has old people's card.

[d] Does not have old people's card, but is covered by other scheme.

[e] Does not have old people's card and is not covered by any other scheme.

Among out-patients who did not have old people's cards but who were covered by other schemes, 12 per cent reported that they or their children paid (table 6). This figure does not include people who expected to have their costs reimbursed later under the Civil Service Medical Benefits Scheme. Their reasons for paying presumably paralleled those for the people with old people's cards.

Table 7. Percentage of elderly out-patients by the number of kilometres travelled to reach the hospital, Thailand

Distance (km)	0-4	5-9	10-49	50+	Total	Number
Hospital						
Provincal	24	15	55	7	100	122
District	37	25	37	1	100	233

Source: Exit interviews.

Of the 18 people in the sample who reported that they were not covered by any scheme, two thirds reported paying for their treatment, and one third reported not paying (table 6). Those who did not pay appear to have been excused payment under the provisions of the health care card scheme explained above. Because of this scheme, the two thirds who did pay may not necessarily have paid the whole cost of their treatments.

We also asked respondents about the size of the fees. Among those who paid fees themselves, 19 per cent reported paying l-100 baht; 56 per cent reported paying 101-500 baht, and 25 per cent reported paying more than 500 baht.

Travel to health facility

Table 7 shows that provincial hospitals attracted a larger proportion of elderly patients from distant areas than did district hospitals. As mentioned above, the over-representation of people living within five km of a hospital indicates that there was an urban bias in the uptake of services.

According to calculations not shown here, the most common method of traveling to the hospital, used by about half of all patients, was public transport. The average cost of the return trip was 28 baht.

Table 8 indicates that, although many elderly people go to the hospital with their children, many others go on their own, including those living 10 or more km away. This is particularly true of men – though the gender difference is partly explicable by the men's lower average age (table 2). Is the high proportion of elderly people traveling unassisted evidence of children's neglect or inability to cope? To answer this question it would be necessary to know how many elderly people find it difficult or impossible to travel to a hospital without their children. Evidence that Thai children are neglecting other aspects of old-age support is much weaker than many academics, policy makers and journalists suppose. For instance, virtually

Table 8. Percentage of elderly, by persons accompanying them to the hospital, Thailand

Distance to hospital (km)	No one	Child	Spouse	Other	Total	Number
Males						
0-4	63	28	4	4	100	46
5-9	26	41	19	15	100	27
10+	31	45	11	14	100	65
Overall	41	38	10	11	100	138
Females						
0-4	31	47	3	19	100	70
5-9	22	33	18	27	100	49
10+	24	47	6	22	100	98
Overall	26	44	8	22	100	217

Source: Exit interviews.

everyone that we interviewed in the community survey who reported having difficulty preparing food stated that a child, spouse, or relative assisted them (Kamnuansilpa and others, 1999: table 33). More generally, Knodel and Chayovan (1997) and their colleagues have collected substantial evidence showing that the vast majority of elderly people in Thailand continue to live with their children and receive assistance from them.

Care at facility

Data on time spent by out-patients at the hospital are shown in table 9. Queues were long and consultations brief, so almost all the time shown is waiting time. Average times in the hospital were longer for provincial hospitals than for district ones. From the data available, it is not possible to tell how much of this extra time was due to longer waits and how much was due to longer consultations, procedures and tests.

Table 9. Hours spent at hospital by elderly out-patients in Thailand

(per cent)

Hours	<1	1-2	2-3	3-4	4+	Total	Mean time (hours)	Number
Hospital								
District	0	46	27	12	15	100	2.1	233
Provincial	0	21	31	30	18	100	2.6	122

Source: Exit interview.

Table 10. Percentage of hospitals which provide the following services in Thailand

Service	Provincial hospitals	District hospitals
A sign identifying the rooms providing service	100	100
A queue for processing cards	91	93
Special seating for elderly people outside examination room	15	9
Number of hospitals	24	48

Source: Observation.

Measures of the way hospitals and doctors manage elderly out-patients are shown in tables 10 and 11. Visits to Thai hospitals at peak hours make it clear that few statf have time for detailed consultations or advice. It is common for one doctor to see 100 or more patients in one day. The observers should therefore be assumed to have used low thresholds when deciding whether any particular service was provided. Provision of "health education" under the circumstances described above may have consisted of little more than the display of posters or a few words of advice from a nurse. The observers reported that some doctors barely spoke during consultations, and conducted very cursory examinations before prescribing medicines.

According to results not shown in the tables, 97 per cent of respondents received drugs during their visit. By comparison, in the United States about 75 per cent of visits to a physician involve the provision of drugs (Soumerai and others, 1990831). High rates of drug prescription can be expected at *private* hospitals in Thailand, since drug charges are often their main source of income. However, these incentives do not apply at *public* hospitals, so the very high rates there are more difficult to explain.

It is possible that almost all elderly people who come to public hospitals have conditions warranting medication. Alternatively, doctors may be responding to the idea, shared by almost all ordinary Thais, that every visit to the doctor should result in the receipt of medicine. A careful study of drug prescriptions carried out at Chulalongkorn Hospital Medical School in 1988 found that a mere 4 per cent of drugs prescribed for elderly patients were "unnecessary" and a further 10 per cent were "questionable" (Chompootaweep and others, 1991:421-422). However, prescription practices and the type of patients at an elite institution such as

Table 11. Percentage of elderly out-patients receiving the following services in Thailand

	Provincial hospitals	District hospitals
Entering hospital		
Advice on how to use the service	76	75
Staff member guides patient to the ewmination room	23	11
Card room		
Advice on how to use the service	64	60
Outside the examination room		
Preliminary examination[a]	95	98
Advice on how to use the service	73	62
Health education	22	10
In the examination room		
Asks the elderly person about health problem	91	87
Gives the elderly person physical examination	77	78
Gives the elderly person an opportunity to describe symptoms	77	73
Asks the elderly person about living conditions	35	26
Informs the elderly person what condition he or she is suffering from	84	69
Informs the elderly person how to treat condition	82	71
Informs the elderly person how to take medicine	56	43
Gives advice about improving health	48	39
Provides the elderly person with an opportunity to ask questions	54	45
Tells the elderly person what to do next to receive treatment	60	70
Number of elderly persons	122	233

Source: Observation.

[a] Measures indicators such as temperature, blood pressure, pulse, weight and height.

Chulalongkorn Hospital are probably not representative of the situation in the rest of Thailand.

Outreach

The Ministry of Public Health has a "home health care" policy stating that every hospital should have an outreach team, including a physician, a nurse, a social worker and a physiotherapist, which visits people at home (Boonchaluksi and Worasiriamon, undated:334). Staff from subdistrict health centres are also supposed to visit people at home. Our results on home visits are shown in table 12. Fewer than one in three elderly persons had ever been visited by a health worker in their home. If the Ministry of Public Health is aiming for complete coverage of all elderly people, it is clearly falling well short.

Table 12. Percentage of elderly people covered by outreach programmes in Thailand

	Urban	Rural	Overall
Have ever been visited at home by a health worker	28	32	31
Have an old people's association in the community	37	25	26
Number	290	2,243	2,533

Source: Community interviews.

The Ministry also has a policy that health workers should act as advisers to communities setting up old people's associations (Boonchaluksi and Worasiriamon, undated:332). As table 12 shows, old people's associations were slightly more common in urban areas than in rural areas. Urban associations tended to be sponsored by hospitals. Casual observation during data collection for this study suggested that many of the associations were run by retired government officials and functioned mainly as social clubs for the officials and their friends. Giving public assistance to associations of this kind strengthens the urban bias previously noted. One hospital administrator made further criticisms of the policy, arguing that primary care is not the function of hospitals, and that elderly people should avoid unnecessary contact with hospitals owing to the danger of infection.

As table 13 shows, only a small minority of elderly people used disability aids. It seems likely that some elderly people who do not currently use such aids might benefit from them. This is an area where stronger outreach programmes might help.

Policy recommendations

Our study has identified a number of weak points in the public provision of health services to elderly people in Thailand. Although coverage of the old people's card and other schemes at the time of the survey was quite high, at around 90 per cent for membership in at least one scheme, it still fell short of the government's stated aim of universal coverage. Queues at public hospitals were typically very long, and doctors rarely had time for detailed examinations or for health promotion. Existing outreach programmes were weak.

One small way to increase coverage of currently free health care schemes for the aged would be to increase publicity about the schemes. During fieldwork, members of the research team often came across

Table 13. Percentage of respondents who use the following equipment, by age, Thailand

	60-69	70-79	80+	Overall
Equipment				
Spectacles	32.4	28.1	19.9	29.1
False teeth	15.1	14.7	18.0	15.6
Walking stick	3.2	8.1	25.2	8.1
Crutches	0.7	0.4	1.1	0.7
Hearing aid	0.4	0.7	0.8	0.6
Walking frame	0.5	0.7	0.8	0.6
Wheelchair	0.5	0.2	0.0	0.4
False limb (prosthesis)	0.2	0.4	0.0	0.2
Other	2.4	1.9	1.7	2.1
Number	1,274	907	362	2,533

Note: Respondents were presented with a list of options and could answer more than once. The questions were asked of all 2,533 people in the community sample.

households with a very limited understanding of the various schemes. Little information has been disseminated through television and radio, and card holders rarely receive pamphlets or clear instructions informing them how the schemes work.

A more radical measure would be to do away with the old people's cards entirely. Instead, any Thai whose identity card showed that they were aged 60 years or older, and who was not covered by another programme such as the health insurance scheme or the Civil Service Medical Benefits Scheme, would be entitled to free care at the public hospital closest to his or her home. The expenses, delays and gaps in coverage associated with the issuance of old people's cards could then be avoided. Dispensing the old people's cards would entail some reorganization. For instance, it would no longer be possible to base hospitals' budgets on the number of cards that they had issued. None of these difficulties seem insurmountable, however.

Reducing queues at public hospitals, increasing contact time with doctors, and strengthening outreach services is not going to be easy. Some of these problems can probably be alleviated through institutional reform. The Ministry of Public Health has, for instance, been seeking to increase accountability and reduce "red tape" by devolving greater decision-making power to hospitals (Chunharas and others, 1996). However, substantial improvements in measures such as the length of doctors' consultations will inevitably require more money.

If the Thai Government wants to improve quality of care and to honour its commitment to provide free care to all elderly people, then it will need to obtain more money from general taxation or from charges to younger patients. The amounts required will increase dramatically over the coming years, since the population of Thais aged 60 or older is projected to rise from 5.3 million in the year 2000 to 7.2 million in the year 2010 (United Nations, 1999:785). Financial pressure may make the policy of universal free health care for the elderly increasingly difficult to maintain.

References

Boonchaluksi, W. and Y. Worasiriamon (undated). "Old people in Thailand" in K. Sunthornthada (ed.) *Thai Populalion Policy and the Crossroads* (in Thai) (Bangkok Institute for Population and Social Research).

Chompootaweep, S, S. Thamaree and P. Nandavan (1995). "Drug prescribing for the elderly medical outpatient at Chulalongkorn Hospital Medical School" *Chulalongkorn Medical Journal* 39(6): 413-24.

Chunharas, Somsak, Choochai Supawonge, Supakorn Buasai and Udom Thumakosit (1995). *Decentralization and Health Systems: A Review of the Experience of Thailand* (Bangkok, Health Systems Research Institute).

Gilson, Lucy, Stephen Russell, Oratai Rauyajin, Thavatchai Boonchote, Vanawipha Pasandhanathorn, Pacharin Chaisenee, Anuwat Supachutikul and Nuan-anan Tangtigate (1998). *Exempting the Poor: A Review and Evaluation of the Low Income Card Scheme in Thailand* (Bangkok, Health Systems Research Institute, Ministry of Public Health).

Kamnuansilpa, P., S. Wongtanawasu, J. Bryant and A. Prohmmo (1999). *Health Policy Evaluation for the Elderly Persons* (in Thai) (Khon Kaen, Health Systems Research Institute and Khon Kaen University).

Knodel, J. and N. Chayovan (1997). "Family support and living arrangements of Thai elderly" *Asia-Pacific Population Journal* 12(4):51-68.

Knodel, J. and N. Debavalya (1997). "Living arrangements and support among the elderly in South-East Asia: an introduction" *Asia-Pacific Population Journal* 12(4):5-16.

Soumerai, S. B., D. Ross-Dengan, S. Gortmaker and J. Avorn (1990). "Withdrawing payment for non-scientific drug therapy: intended and unexpected effects of a large scale natural experiment" *Journal of the American Medical Association* 263(6):831-9.

Tangcharoensathien, Viroj (1995). "Health care financing in Thailand" in S. Chunaras (ed.) *Heath System in Transition* (Bangkok, Health Systems Research Institute).

United Nations (1999). *World Population Prospects: The* 1998 *Revision* Volume 1 (New York, Department of Economic and Social Affairs).

Wongsith, M. and S. Siriboon (1999). "Household structure and care for the elderly in Thailand" in *The Family and Older Persons in China. Indonesia and Thailand, Asian* Population Studies Series No. 152 (New York, ESCAP).