

ASSESSMENT OF SOCIO-ECONOMIC, FUNCTIONAL AND MEDICAL PROBLEMS AMONG THE ELDERLY IN ONE RURAL COMMUNITY OF THAILAND

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Abstract. A survey of persons aged 60 years and over in Mae Sot in Tak Province, Thailand was conducted in 1989 to determine the prevalence of socio-economic, functional and medical problems. A total of 567 elderly persons from 8 villages systematically selected from 54 villages outside the municipality were interviewed and examined. Ninety-eight percent of them lived with their children or relatives. There were few elderly persons reporting difficulty performing basic physical activities of daily living due to the very low proportion of older elderly in this area. 13.3% of men and 14.5% of women reported some degree of urinary incontinence; however, most of them complained of only slight incontinence at occasional intervals. 62.4% of the study elderly had a body mass index below 20. The mean body mass index for men (19.5) was slightly higher than that for women (18.7). One hundred and two out of the 567 elderly surveyed were found to have hypertension and 51% of these hypertensives were newly diagnosed during this study. There was no association between the prevalence rate of hypertension and any of the other studied variables, including age, sex, educational level and smoking habits. The overall prevalence rate of diabetes in these elderly people was 1.6%. The mean body mass index of the diabetic group (23.1) was significantly ($p < 0.05$) greater than that of the non-diabetic group (19.1).

Special homes for the aged may become necessary in the future as young people migrate away from rural areas where their aging parents live to urban areas. Since there were a number of elderly with untreated diseases such as hypertension and cataracts, multidimensional assessments of the elderly in the community should be carried out by a geriatric team, comprising both hospital personnel and local health care workers. Good cooperation and communication between the hospital and health center will lead to the effective management of the problems among the elderly.

INTRODUCTION

The life expectancy of the Thai population has increased during the last two decades and resulted in a growing number and proportion of older people. Since the elderly are more likely to suffer from chronic diseases and disabilities, socio-medical care for later life becomes increasingly needed. Both institutional and non-institutional care services have been far more established in developed countries than in developing countries.

In Thailand, the proportion of people over the age of 60 has increased from 4.7% (1.7 million people) in 1970 to 6.1% (3.4 million people) in 1990, and it is estimated to rise to 7.0% (4.5 million people) by the year 2000 (National Economic and Social Development Board, 1985). Socio-medical

services for the elderly are insufficiently established in many areas of the country, particularly in rural communities. This report presents a community-based survey of the prevalence of socio-economic, functional, and major medical problems among the elderly in one rural community of northern Thailand, aiming to identify the needs for the development of appropriate socio-medical care services for these elderly Thai people.

MATERIALS AND METHODS

A study was conducted between February and April 1989 in Mae Sot, a semi-rural district of Tak Province, located 500 km north of Bangkok. The total population of the district in 1989 was 73,181; 52,850 individuals (72%) lived in 54 villages outside

the municipality. Approximately 5.6% of them were persons 60 years of age and over. The sampling frame included 8 villages systematically selected from the 54 villages ordered by village size. All persons aged 60 years and older living in these 8 villages were identified. There were a total of 602 elderly persons, of which 567 (94.2%) were included in the study; the remainder were absent during the study period. All of the 567 elderly (or their relatives if they had problems with speaking) agreed to be interviewed and examined.

The assessment questionnaire had three parts. The first part covered questions on socio-economic

conditions, including age, sex, marital status, education, religion, occupation, income and sources of income and the person(s) they lived with. The second part contained questions on 6 basic activities of daily living (ADL), including bathing, dressing, using the toilet, transfer, feeding and continence. The third part comprised information relating to health, including smoking, sleeping problems, dental problems, drug use and sexual desire.

Prevalence of major chronic health problems, including hypertension, diabetes mellitus and mature senile cataract, was determined. Blood

Table 1

Socio-economic conditions in the elderly in Mae Sot, Tak, 1989.

Socio-economic conditions	Male	Female	Total
	No. (%)	No. (%)	No. (%)
Total	256 (100.0)	311 (100.0)	567 (100.0)
Age (years)			
60-69	150 (58.6)	189 (60.8)	339 (59.8)
70-79	82 (32.0)	97 (31.2)	179 (31.6)
80+	24 (9.4)	25 (8.0)	49 (8.6)
Education			
No	97 (37.9)	169 (54.3)	266 (46.9)
Primary 1-4	149 (58.2)	139 (44.7)	288 (50.8)
Further	10 (3.9)	3 (1.0)	13 (2.3)
Family ties			
Living with children	247 (96.5)	292 (93.9)	539 (95.1)
Living with relatives	5 (2.0)	13 (4.2)	18 (3.2)
Living alone*	4 (1.6)	6 (1.9)	10 (1.8)
Income (baht) (US\$ 1 = 26 baht)			
< 500	137 (53.5)	215 (69.1)	352 (62.1)
500-1,000	65 (25.4)	60 (19.3)	125 (22.0)
> 1,000	54 (21.1)	36 (11.6)	90 (15.9)
Income sources**			
Family	163 (63.7)	223 (71.7)	386 (68.1)
Work	111 (43.4)	87 (28.0)	198 (34.9)
Money saved	51 (19.9)	41 (13.2)	92 (16.2)
Others	40 (15.6)	53 (17.0)	93 (16.4)

* 4 couples and 2 women lived without children or relatives.

** Some reported more than one source.

pressure was measured on the right arm of the seated person after a rest period of 15-30 minutes. Hypertension was defined as diastolic blood pressure ≥ 95 mmHg, and/or systolic blood pressure ≥ 160 mmHg (WHO, 1978). Fasting plasma glucose screening by the enzymatic method (Glucose enzymatique PAP, BioMerieux) was used to determine the prevalence of diabetes. Venous blood was obtained from each elderly person after a 10-12 hour fast and sent to the laboratory center of Mae Sot General Hospital within 2 hours. Diabetes was diagnosed in those who had fasting plasma glucose ≥ 140 mg/dl (National Diabetes Data Group, 1979). Visual acuity of both eyes was screened first by Snellen testing and then the eyes were examined by the physician. Persons with profoundly low vision classified according to WHO (1981) were referred to an ophthalmologist for further evaluation. Height and weight measurements were made to obtain body mass index (weight, kg/height, m²). Medical records of those elderly who gave a history of these medical problems at the health center and/or the hospital were reviewed in order to include those with current treatment in the analysis.

We used chi-square test and Fisher's exact test for comparison of proportions and analysis of variance to evaluate the significant differences among groups. Logistic-regression analysis was used to correlate the risk of disease.

RESULTS

Socio-economic conditions

Of the 567 elderly interviewed, 256 (45.1%) were males and 311 (54.9%) were females. Table 1 presents the distribution of age and socio-economic conditions of the elderly surveyed. The age distributions in both sexes were similar, with approximately 60% of them aged 60-69 years old. About half of the elderly had no formal education and nearly all of the remainder had an educational level of primary school grade 4 or less. Almost all (99.1%) were Buddhists.

Ninety-five percent of the elderly lived with their children. There were 4 elderly couples and 2 elderly women who had no children or relatives and therefore stayed alone. Of these, 8 refused to go to a special home for the aged and gave reasons

that their neighbors were available for help; only 2 agreed to enter the institution provided that it existed nearby and provided good services.

Although 84.1% of the elderly reported their monthly income was 1,000 baht (US\$ 40) or less, this low income was not regarded as a serious economic problem as they had no need to pay for their own food or for house rent. The major sources of income were from their family (68.1%), work (34.9%) and their own saved money (16.2%). All the 10 elderly living alone had their own houses but had salaries less than 1,000 baht, and therefore received some help with food and clothes from neighbors. Most of the elderly in this study helped do housework such as house cleaning, cooking or taking care of their grandchildren.

Activities of daily living

Aside from problems with urinary incontinence, few elderly people in our study had problems with basic physical activities, including bathing, dressing, using the toilet, transfer and feeding, as seen in Table 2. Those in the older age group of both sexes tended to need more help with these physical ADL than the younger. Thirty-four men (13.3%) and 45 women (14.5%) reported some degree of urinary incontinence. The prevalence of incontinence increased with increasing age in both sexes. Of these 79 incontinent persons, 77 (97.5%) complained of only slight incontinence at occasional intervals. The remaining 2 people (one man and one woman) complained of continuous wetting which required the changing of clothes.

Body mass index

The percent distribution of body mass index among the study elderly is shown in Table 3. About 62.4% of them had a body mass index below 20. A decreasing proportion of those with higher body mass index was observed when age increased. The mean body mass index was 19.5 for men and 18.7 for women. The proportion of women whose body mass index was below 20 (66.3%) was greater than that for men (57.5%). The mean body mass index increased with higher education and decreased with smoking.

Prevalence of some chronic diseases

The overall prevalence rate of hypertension in these elderly persons was 18.0% (102/567). The age-specific rates by sex are shown in Table 4.

Table 2

Number and prevalence rate per 1,000 of elderly persons who had difficulty with physical activities of daily living (ADL), and prevalence rate of urinary incontinence in Mae Sot, Tak.

ADL	Male (N = 256)			Female (N = 311)		
	60-69 years No. (Rate)	70-79 years No. (Rate)	80+ years No. (Rate)	60-69 years No. (Rate)	70-79 years No. (Rate)	80+ years No. (Rate)
Bathing	1 (6.7)	2 (24.4)	3 (125.0)	1 (5.3)	1 (10.3)	1 (40.0)
Dressing	1 (6.7)	1 (12.2)	2 (83.3)	0 (0.0)	2 (20.6)	1 (40.0)
Using toilet	0 (0.0)	1 (12.2)	2 (83.3)	0 (0.0)	1 (10.3)	1 (40.0)
Transfer	0 (0.0)	2 (24.4)	1 (41.7)	0 (0.0)	1 (10.3)	2 (80.0)
Feeding	0 (0.0)	2 (24.4)	1 (41.7)	1 (5.3)	1 (10.3)	1 (40.0)
Incontinence	15 (100.0)	14 (170.7)	5 (208.3)	27 (142.9)	14 (144.3)	4 (160.0)

Table 3

Percent distribution and the mean of body mass index* in the 567 elderly by age, sex, educational level and smoking habits.

	Percent distribution of body mass index				Mean
	< 15.0	15.0-19.9	20.0-24.9	≥ 25.0	
Total	7.1	55.3	33.0	4.6	19.1
Age (years)					
60-69	6.2	54.4	33.5	5.9	19.3
70-79	7.5	56.9	32.8	2.9	18.9
80+	12.8	55.3	29.8	2.1	18.1
Sex					
Male	2.0	55.6	37.3	5.2	19.5
Female	11.3	55.0	29.4	4.2	18.7
Education					
No	8.5	62.0	26.4	3.1	18.5
Primary 1-4	5.9	50.2	38.3	5.6	19.5
Further	6.7	40.0	40.0	13.3	21.0
Smoking habits					
Smokers	6.7	63.2	27.8	2.3	18.7
Ex smokers	8.9	47.6	36.6	6.8	19.3
Never smokers	4.3	42.9	44.3	8.6	20.1

* According to the standard Quetelet's formula (weight, kg/height, m²).

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Men had a slightly higher prevalence rate than women in all age groups. An increased prevalence rates of hypertension with greater body mass index was observed but this trend was not statistically significant ($p = 0.07$). The prevalence rate of hypertension was not significantly associated with any of the other studied variables, including age, sex, educational level and smoking habits by both univariate and multivariate analysis.

Of the 102 hypertensive persons (51 men and 51 women), 30 men (58.8%) and 22 women (43.1%) were newly diagnosed during this study. The remaining 21 male and 29 female hypertensives were previously diagnosed, with 12 men (57.1%) and 18 women (62.1%) currently under treatment.

Of the 567 elderly surveyed, 493 (86.9%) were eligible for fasting blood glucose screening; the

rest had not fasted and were not eligible for the test. However, none of these unexamined persons had a history of diabetes. Eight out of the 493 elderly (1.6%) were found to have diabetes. Three were men and 5 were women. Six cases were newly detected whereas the other 2 were previously detected and currently treated. The prevalence of diabetes was higher with increasing body mass index. The mean body mass index of the diabetic group (23.1) was significantly ($p < 0.05$) greater than that of the non-diabetic group (19.1). Other studied variables were not significantly related to diabetes prevalence.

Twenty-eight of the 40 cases with blindness (70.0%) were due to untreated cataracts, the disease commonly affecting the elderly. The others were caused by corneal opacity, glaucoma and other disabling visual disorders.

Table 4

Prevalence of hypertension and diabetes in the elderly according to age, sex, body mass index, educational level and smoking habits.

	Hypertension		Diabetes		
	Cases	Rate (%)	Cases	Rate (%)	
Total	102	18.0	8	1.6	
Age (years) and sex					
60-69	M	28	18.7	2	1.5
	F	27	14.2	4	2.4
70-79	M	17	20.7	1	1.4
	F	18	18.6	1	1.1
80+	M	6	25.0	0	0.0
	F	6	24.0	0	0.0
Body mass index					
< 20.0		58	16.6	2	0.7
20.0-24.9		33	17.8	4	2.4
≥ 25		9	34.6	2	9.5
Education					
No		46	17.8	2	0.9
Primary 1-4		51	17.8	4	1.6
Further		3	18.8	2	13.3
Smoking habits					
Smokers		48	16.0	4	1.6
Ex-smokers		38	19.9	2	1.2
Never smokers		14	20.0	2	3.3

Health-related information

Tobacco smoking was a traditional behavior pattern in the northern region in the past decades. Overall, 247 men (96.5%) and 249 women (80.1%) had a history of tobacco smoking. However, 77 men (31.2%) and 117 women (47.0%) among these smokers reported quitting smoking (ex-smokers). The most popular form of tobacco used was hand-rolled produced locally (tobacco rolled in dry leaves).

Among the elderly persons in this study, 318 (56.1%) reported occasionally to sometimes (46 nearly always) having problems with sleeping and 111 of them occasionally to sometimes (9 nearly always) used sleeping pills. One hundred eighty-five elderly persons (32.6%) suffered from dental problems. Eighty-two men (32.0%) and 80 women (25.7%) had some degree of hearing impairment evaluated by the interviewer (no audiometry). The proportion of elderly men (43.8%) who reported occasionally to sometimes having sexual desire was greater than the elderly women (14.1%).

DISCUSSION

The most common form of institutional social service for the elderly is a home for the aged. There seems to be no serious need for these homes in rural Thailand where children are expected to take care of their parents according to Thai culture. Homes for the aged may be necessary in the future when low income from agricultural products and extension of industrialization may force young people to migrate from rural to urban areas, thereby separating them from their aging parents. However, the provision of this institutional setting should be considered scrupulously only for those elderly who are really in need since supply often induces demand. The traditional pattern of the extended family system should be encouraged as much as possible. Early identification of asymptomatic health problems by geriatric health screening programs with subsequent proper management can postpone the onset of chronic diseases and reduced subsequent disabilities and therefore reduce the need for institutionalization of some elderly.

The proportion of older persons who have

problems with physical ADL has been found to increase with increasing age, and bathing is the most commonly reported activity needing help (Fried and Bush, 1988). Similar findings were observed in the elderly in our community. However, since the proportion of older elderly in this area was very low, there were not many persons reporting difficulty performing ADL. Although urinary incontinence was very common among the elderly, nearly all the affected persons reported only minor degrees of incontinence and rarely sought medical care. They may be reluctant to present the condition. Further study is needed to determine the natural history of this condition, treatment benefit and the way of increasing people's acknowledgement of the problem.

The findings in our study indicate that a substantial proportion of both elderly men and women were underweight and obese elderly were extremely rare. The mean body mass indexes of both sexes in this study were close to those found in other rural areas of Thailand (Srithong, 1987) but were slightly lower than those observed in urban areas (Srithong *et al.*, 1989). Undernutrition may lead to nutritional deficiency diseases (Forciea, 1989) and increase in the number of elderly with cognitive dysfunction (Goodwin *et al.*, 1983). Those who are undernourished may be vulnerable to developing complications from pre-existing disease (Forciea, 1989). Nutritional assessment should therefore be included in the geriatric screening program, and those who are malnourished should receive thorough evaluation and proper management as the etiology of malnutrition may be multifactorial.

Many studies have shown that overweight and obesity are associated with an increased risk of chronic diseases such as hypertension and diabetes (Garfinkel, 1986; Negri *et al.*, 1988; Seidell *et al.*, 1986; Stern *et al.*, 1981). The low proportion of overweight elderly in this area may play a part in the low prevalence rate of hypertension and diabetes.

This study shows that tobacco smoking was highly prevalent among the elderly in this rural community of Thailand. Since smoking is one of the most important preventable causes of death in our society, great efforts should be directed towards anti-smoking programs, including health education about the health hazards of tobacco

smoking, mass media campaigns and cessation programs. Successful programs in the reduction of tobacco use in this age group may have additional beneficial effects on others in the family as Thai people have a high respect for the elderly, especially parents and grandparents.

The prevalence rate of hypertension among the elderly in this study was slightly higher than that detected in one rural community of Thailand (Achananuparp *et al*, 1989), but lower than other previous reports in Thailand (Bunnag *et al*, 1987; Srithong *et al*, 1989). The diabetic prevalence rate was also lower than most rates published previously (Bunnag *et al*, 1987; Srithong *et al*, 1989; Vanna-saeng *et al*, 1986). The reasons for these discrepancies include differences in the study methods and the nature of the population. Those with hypertension or diabetes in this rural community may have died before 60 years of age. Thus, screening of hypertension and diabetes in the younger age group such as the age of 40 and over should be carried out.

This study revealed that about half of the hypertensive persons were newly diagnosed during this study and a significant number of those who knew that they had hypertension were not currently under treatment. These findings agreed with those in other reports (Achananuparp *et al*, 1989; Franco *et al*, 1985; Sitthi-Amorn *et al*, 1989; Srithong *et al*, 1989). Since adequate treatment of hypertension can reduce cerebrovascular and coronary risks, our findings underscore the need for more efforts in the control of hypertension at the community level, including regular screening for hypertension, simple treatment and patient follow-up, patient referral, and patient health education.

Although at present elderly Thai persons can receive medical care free of charge from public health care centers throughout the country, there were a number of elderly with untreated diseases and disabilities such as unoperated cataracts which were found to be prevalent in this age group in the community, particularly in rural areas as observed in this report. Assessments of the elderly in rural communities of Thailand should be periodically carried out by a geriatric team, comprising a physician, a public health nurse (or a nurse practitioner), a social worker from a hospital, and a community health care

worker from a local health center. The effectiveness of the team will be improved if there are good cooperation and communication between the health center and the hospital. Simple treatment and patient follow-up for the control program of hypertension can be performed by local health care workers who should be sufficiently trained and supervised by the physician of the geriatric team. A geriatric evaluation unit in the hospital which has been shown to provide substantial benefits at low cost on health care of the elderly (Rubenstein *et al*, 1984) should be established as a referral center for those elderly who need specialized evaluation and management. In addition, community socio-medical programs, including day-care centers and home care should be provided when there are more financial and manpower resources.

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REFERENCES

- Achananuparp S, Suriyawongpaisal P, Suebwonglee S, *et al*. Prevalence, detection and control of hypertension in Thai population of a central rural community. *J Med Assoc Thai* 1989; 72 [Suppl 1] : 66-75.
- Bunnag SC, Banchuin K, Sitthi-Amorn C, *et al*. Prevalence and risk factors of hypertension in elderly Thais. Proceedings of the Third Regional Congress on Gerontology, Bangkok 1987 : 72-4.
- Forcica MA. Nutrition, alcohol and tobacco in late life. In : Lavizzo-Mourey R, Day SC, Diserens D, Grisso JA, eds. *Practicing Prevention for the Elderly*. Philadelphia : CV Mosby Company 1989 : 89-105.
- Franco LJ, Stern MP, Rosenthal M, *et al*. Prevalence, detection, and control of hypertension in a biethnic community: the San Antonio heart study. *Am J Epidemiol* 1985; 121 : 684-96.
- Fried LP, Bush TL. Morbidity as a focus of preventive health care in the elderly. *Epidemiol Rev* 1988; 10 : 48-64.
- Garfinkel L. Overweight and mortality. *Cancer* 1986; 58 : 1826-9.

- Goodwin JS, Goodwin JM, Garry PJ. Association between nutritional status and cognitive functioning in a healthy elderly population. *JAMA* 1983; 249 : 2917-21.
- National Diabetes Data Group. Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. *Diabetes* 1979; 28 : 1039-57.
- National Economic and Social Development Board. Population projection for Thailand 1980-2015. National Statistical Office, October 1985 : 17-8.
- Negri E, Pagano R, Decarli A, *et al.* Body weight and the prevalence of chronic diseases. *J Epidemiol Commun Health* 1988; 42 : 24-9.
- Rubenstein LZ, Josephson KR, Wieland GD, *et al.* Effectiveness of a geriatric evaluation unit : a randomized clinical trial. *N Engl J Med* 1984; 311 : 1664-70.
- Seidell JC, de Groot LC, van Sonsbeek JL, *et al.* Associations of moderate and severe overweight with self-reported illness and medical care in Dutch adults. *Am J Public Health* 1986; 76 : 264-9.
- Sitthi-Amorn C, Chandraprasert S, Bunnag SC, *et al.* The prevalence and risk factors of hypertension in Klong Toey slum and Klong Toey government apartment houses. *Int J Epidemiol* 1989; 18 : 89-94.
- Stern MP, Gaskill SP, Allen CR, *et al.* Cardiovascular risk factors in Mexican Americans in Laredo, Texas. I. Prevalence of overweight and diabetes and distribution to serum lipids. *Am J Epidemiol* 1981; 113 : 546-55.
- Srithong C. Health examination survey of elderly at Koh-Chan, Thailand. Third regional congress on gerontology. Bangkok : International Association of Gerontology : Asia/Oceania region 1987 : pp 87.
- Srithong C, Tuttakorn V, Viputsiri O, *et al.* Examination survey of old people at Din Daeng government apartment house. *Thai Med Counc Bull* 1989; 18 : 213-6.
- Vannasaeng S, Viriyavejakul A, Pongvarin N. Prevalence of diabetes mellitus in urban community of Thailand. *J Med Assoc Thai* 1986; 69 : 131-8.
- World Health Organization. Arterial hypertension. Geneva : *WHO Tech Rep Ser* 1978 : 57-8.
- World Health Organization. International classification of impairment, disabilities, and handicaps. Geneva : WHO 1981 : 79-85.
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