

FACTORS AFFECTING UTILIZATION OF HEALTH CENTERS IN A RURAL AREA OF CHON BURI PROVINCE, THAILAND

Dirgha Raj Shrestha¹ and Amphorn Ittiravivongs²

¹Asean Institute for Health Development, Mahidol University; ²Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University, Bangkok 10400, Thailand

Abstract. A descriptive study was carried out in two subdistricts of Nong Heng and Nong Kakha, Phan Thong District, Chon Buri Province eastern Thailand with the aim to determine factors affecting health center utilization. A cross-sectional survey was conducted on 206 randomly selected households in which household head or senior person in each household was interviewed using a structured questionnaire. The study household was classified as either high or low health center utilization group on the basis of using health services more than 50% of total health services needed in each household. The results revealed that age group, sex, education, family size, and distance from household to health center were not associated with the utilization of health center, whereas occupation, economic status, knowledge and attitude towards health center and quality as well as convenience of health services were found to be associated with health center utilization. It was seemed that underutilization of health centers was multifactorial, in which some factors were related with the personality of individual whereas others were concerned with the health center itself.

INTRODUCTION

In most developing countries such as Thailand, health centers have been established as the base of a pyramidal government health care delivery system. In Thailand there are 8,040 health centers throughout the country. All are located at subdistrict level in rural areas where more than 80% of the population live. Health centers normally provide preventive and promotive health services such as prenatal and postnatal care, obstetric services, immunization, nutrition, family planning, water supply and sanitation monitoring as well as simple curative treatment. Generally the staff in the health centers are auxiliary midwives and junior sanitarians.

Since rural populations have their own traditional beliefs, behaviors and health seeking patterns, the utilization of health center by villagers is a subject of interest among public health administrators. In the northeastern part of Thailand it was reported that about 60% of villagers attend health centers for health services (Rauyajin, 1983). However, a national survey on health service utilization in 1985 (Institute for Population Research, 1985)

reported that the rate of health center utilization was 14.7%, while 31% of population went to drug stores for self treatment and to traditional healers. It has been proposed that the different rates of health center utilization in many parts of country are likely due to different cultural, behavioral and socioeconomic factors which need investigation as information on this issue is limited. The present study sought to determine factors affected health center utilization in the rural area of Chon Buri Province in the eastern part of Thailand.

MATERIALS AND METHODS

Study area

The survey was carried out in Pan Thong District, Chon Buri Province, 80 km east of Bangkok. Pan Thong District consists of 11 subdistricts and each subdistrict has a health center. Based on the data of health center utilization from Chon Buri Provincial Medical Office, two subdistricts, namely Nong Hong and Nong Kakha, were purposely selected as study areas. The rate of health center utilization in 1992 in Nong Hong and Nong Kakha was 78 and 21.73 visits per 100 persons per year, respectively.

Sample size estimation

The present descriptive survey was designed to

Correspondence to: Dr Amphorn Ittiravivongs, Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University, 420/6 Rajvithi Road, Bangkok, 10400, Thailand.

have the precision within 5% points of the true value with 95% confidence. Based on the health center utilization rate from the national survey in 1985 of 14.7% with the above criteria, a sample size of 193 persons was estimated (Lemeshow *et al.*, 1990). However 7% of expected non-response was included in the sample size estimation, thus a sample of 206 was obtained.

Data collection

A random sampling household survey was conducted in Nong Hong and Nong Kakha sub-district. Nong Hong consists of 6 villages with 4,695 population while Nong Kakha comprises 5 villages with 3,198 persons. The head of each selected household or a senior person was interviewed using a structured questionnaire. The questions included general characteristics of study subjects, demographic and socioeconomic factors, frequency and type of health services that had been used, knowledge and attitudes of health centers and satisfaction of health services in terms of quality and convenience. The study questionnaire was pretested on 10 households in the area before administration to ascertain the validity of the questions.

Classification of high and low health center utilization

In the present study, only 5 health services in the health centers were used for classification the level of high and low health center utilization among study households. They were: treatment for common illness, treatment for injury, antenatal care, immunization and family planning. The classification of low and high health center utilization was based on the following criteria. If the household utilized the type of health services in the health center for more than 50% of the total health services needed in the household, then it was classified as a high health center utilization group. For instance, if a household consisted of two persons - husband and pregnant wife - in this household there was three types of health services needed: treatment for common illnesses, treatment for injury and antenatal care. If they utilized any two types of health services in the health center, then they were classified as a high health center utilization group.

Measurement of knowledge and attitude of health center and satisfaction with health services

The measurement of knowledge on health center was done on 5 questions regarding opening

time and day, type of available health services, number of health staff and the referral system. A score of 1 was given for each correct answer and zero for an incorrect one. Attitudes towards the health center were measured by 13 questions relating the usefulness of the health center, the role of health staff, cost and efficacy of drugs in the health center, existing health services and working hours. Each question was designed as a leading question with a choice of 5 answers: strongly disagree, disagree, uncertain, agree and strongly agree. The scoring system was implemented as follows : 5 for strongly disagree, 4 for disagree, 3 for uncertain, 2 for agree and 1 for strongly agree (Fishbelin and Ajzen, 1975). Regarding the satisfaction with health services, quality and convenience were considered. The measurement was based on 6 questions each for quality and convenience. The questions included skills of health staff, quality of drugs available in the health center, type of existing health services, waiting time for health services, emergency service and medical advice. A score of 1 was given for answer of unsatisfaction while score of 2 and 3 accounted for answers of uncertainty and satisfaction, respectively.

Data analysis

Knowledge about the health center was categorized as high and low based on the following criteria. The high knowledge group was identified as those having total scores on knowledge higher than the mean score of the group while those with total scores on knowledge equal to or less than mean score were defined as being in the low knowledge group. Similarly, the classification of low and high groups regarding attitudes towards the health center, satisfaction with the quality of health services and satisfaction with the convenience of health services used the same criteria.

All information was coded and stored in a microcomputer using Epi Info software (Dean *et al.*, 1990). Statistical analysis was by Mantel Haenszel chi-square test (Mantel and Haenszel, 1959).

RESULTS

Out of total 206 households, 106 (51.5%) and 100 (48.5%) were classified as high and low health center utilization groups, respectively. Table 1 shows general characteristics such as age group,

FACTORS AFFECTING HEALTH CENTER UTILIZATION

Table 1

Distribution of general characteristics : age group, sex, education and family size among high and low health center utilization group.

Variables	Health center utilization				p-value
	High utilization		Low utilization		
	No.	(%)	No.	(%)	
Age group					0.468
< 30 years	13	(12.2)	14	(14.0)	
30 - 49 years	47	(44.3)	51	(51.0)	
> 50 years	46	(43.5)	35	(35.0)	
Sex					0.078
male	35	(33.0)	22	(22.0)	
female	71	(67.0)	78	(78.0)	
Education					0.342
no schooling	11	(10.4)	9	(9.0)	
primary school	86	(81.1)	76	(76.0)	
secondary school and higher	9	(8.5)	15	(15.0)	
Family size					0.918
1 - 3 members	29	(27.4)	28	(28.0)	
> 3 members	77	(72.6)	72	(72.0)	

sex, education and family size among high and low health center utilization groups. It was noted that there was no age group difference between high and low health center utilization groups ($p=0.468$). Most respondents in high (44.3%) and low (51.0%) health center groups were in the age group of 30 - 49 years. Conversely, the majority of respondents in the high (67.0%) and low (78.0%) health center utilization were female and this difference was not statistically significant ($p=0.078$). No significant differences in the distribution of education ($p=0.342$) and family size ($p=0.918$) between high and low health center utilization groups were found. In the present study, most respondents attended primary school and had more than 3 members in their families. General characteristics such as occupation, distance from household to health center and economic status between the groups of high and low health center utilization are presented in Table 2. It was noted that most study households in high (80.2%) and low (83.0%) health center utilization groups were located within 3 km from a health center and this distribution was not statistically different ($p=0.626$).

Regarding occupation, 34.0% and 13.0% of

high and low health center utilization, respectively, engaged in agriculture and these proportions was significant difference ($p=0.0004$). There was no difference in other types of occupation in the utilization of health center. For economic status, significance differences in high (> 3,000 baht/month) and low (< 1,500 baht/month) economic status between the group of high and low health center utilization was obtained ($p=0.001$).

Table 3 presents the distribution of knowledge and attitude on health center among high and low health center utilization groups. It was found that 77.4% of high health center utilization group had high level of knowledge on health center and was significantly higher than low health center utilization group of 58.0% ($p=0.003$). Similarly, 61.3% of high utilization of health center group had high level of attitude towards health center while 46.0% of low health center utilization group had. This difference was statistically significant ($p=0.028$). Concerning satisfaction of health services both quality and convenience (Table 4), 74.5% and 73.6% of high health center utilization group were highly satisfied with the quality and convenience of health services, respectively. While 56.0% and

Table 2

Distribution of general characteristics : distance from household to health center, occupation and economic status among high and low health center utilization group.

Variables	Health center utilization				p-value
	High utilization		Low utilization		
	No.	(%)	No.	(%)	
Distance from house to health center:					0.626
1 km	37	(34.9)	31	(31.0)	
2 - 3 km	48	(45.3)	52	(52.0)	
> 3 km	21	(19.8)	17	(17.0)	
Occupation					0.0004
agricultururer	36	(34.0)	13	(13.0)	
laborer	47	(44.3)	42	(42.0)	
trader	13	(12.3)	27	(27.0)	
others	10	(9.4)	18	(18.0)	
Economic status					0.001
> 3,000 baht/month (high class)	24	(22.6)	43	(43.0)	
1,500 - 3,000 baht/month (middle class)	45	(42.5)	41	(41.0)	
< 1,500 baht/month (low class)	37	(34.9)	16	(16.0)	

Table 3

Distribution of knowledge and attitude on health center among high and low health center utilization group.

Variables	Health center utilization				p-value
	High utilization		Low utilization		
	No.	(%)	No.	(%)	
Knowledge about health center					0.003
high knowledge	82	(77.4)	58	(58.0)	
low knowledge	24	(22.6)	42	(42.0)	
Attitude towards health center					0.028
high attitude	65	(61.3)	46	(46.0)	
low attitude	41	(38.7)	54	(54.0)	

48.0% of low health center utilization group were satisfied with the quality and convenience of health services, respectively. There were significant difference in the distribution of quality satisfaction ($p=0.005$) and convenient satisfaction ($p=0.0002$) of health services between high and low health center utilization groups.

DISCUSSION

It was apparent that the classification of high and low health center utilization of each household by using the criteria of utilizing type of health services more than 50% of total type of health services needed in the household served quite well in

Table 4

Distribution of quality and convenient satisfaction of health services among high and low health center utilization group.

Variables	Health center utilization				p-value
	High utilization		Low utilization		
	No.	(%)	No.	(%)	
Quality satisfaction					0.005
high quality	79	(74.5)	56	(56.0)	
low quality	27	(25.5)	44	(44.0)	
Convenience satisfaction					0.0002
high convenient	78	(73.6)	48	(48.0)	
low convenient	28	(26.4)	52	(52.0)	

the present study. Conventionally, the rate of health center utilization is determined by the number of visits per head of population per definite period of time such as a month or a years (Neumark *et al*, 1992; Van Lerberghe and Pangu, 1988). There were two advantages to the use of present criteria. First of all, the number of health center visits would not be able to reflect the true situation as people might come to the health center for only one type of health service such as treatment of minor illness. Thus the criteria of utilizing various health services would reflect more comprehensive information. Secondly, by interviewing, information about the number of health center visits was more likely to be inaccurate compared with information on the utilization of specific types of health services. Thus, it seemed that health center utilization was best measured by determining both the type of health services utilization and the frequency of use of each health service.

While age was not associated with health center utilization in the present study, it has been reported that age was found to be a powerful determinant of utilization, particularly pediatric health services (Belcher *et al*, 1976; Caldwell *et al*, 1989; Gesler, 1979). The explanation for this difference is likely due to the study questionnaire being focussed on general health services, and not specifically to pediatric health care. There was no sex difference in the pattern of health center utilization, a finding supported by Sauerborn *et al* (1989) in Burkino Faso, but in contrast to studies from Bangladesh (Chen *et al*, 1981) and India (Howard,

1978). It was probably due to different cultural environments. From the literature, family size was not related to health center utilization (Chandra *et al*, 1980; Sauerborn *et al*, 1989) whereas a positive association was found in a study from Colombia (Selwyn, 1987).

Inadequate access or difficult access to health centers was one of the major factors for underutilization of health services (Amin *et al*, 1989; Ayeni *et al*, 1987). However no significant association between distance from household to health center and health center utilization was obtained in the present research. This was because most study households (80%) were located nearby the health centers, within 3 km.

Concerning occupation and economic status, there were significant associations between occupation, economic status and health center utilization. It was apparent that working class persons such as farmers, laborers and lower economic classes utilized health centers more than traders and high economic class persons. This finding was consistent with the study on social differences in health and utilization of health services in Italy by Piperno and Di Orto (1990). A possible explanation is that higher economic groups believe that expensive health care gave better quality of treatment than low priced health services. There was no educational difference in the pattern of health center utilization in the study, while many studies (Piperno and Di Orto, 1990; Sauerborn *et al*, 1989) have shown an association, which has been explained

on the basis that highly educated persons tended to prefer specialist services. However in the present area most people had a primary level of education and differences in education did not exist.

Significant associations between knowledge and attitudes towards health centers and health center utilization were noted. It was considered likely that individuals who had better understanding and attitudes about the role and activities of the health centers would prefer to use more health services than those who had less knowledge. The significant associations between knowledge and attitudes towards health centers and health center utilization and lack of relationship between education and the utilization of health centers would indicate that the perception of the utilization of health centers was depend on the knowledge of and attitude towards the activities of health centers more than the background education of individuals. Thus the distribution of information on the role and activities of health centers requires to be done throughout the community in order to increase the utilization of health services.

Among various measures in the assessment of health service utilization, patient or user satisfaction was, recently, widely used. Patient satisfaction was considered as an indicator of the efficient utilization of health services, as it was related to the person's attitude about health services received and the extent to which these services met the person's wants and needs (Di Tomasso *et al*, 1991; Zastowsky *et al*, 1983; Ware *et al*, 1983). People's satisfaction of health service in the present study was evaluated in terms of quality and convenience of health service. It was noted that there were significant differences between quality and convenience satisfaction of health services and health center utilization. About 70% of high health center utilization was associated with satisfaction with both quality and convenience of services. These figures would suggest that quality and convenience of health service need to be emphasized. Thus, besides the knowledge of public health and community medicine that health center staff have to learn, they also needed to study administration and management of health centers in order to provide good quality and convenient health services to the community. The causes of low health center utilization were multiple, of which some factors were related to the personality of individuals whereas some were concerned with the problem of the nature of health centers. These factors also

varied according to socioeconomic conditions, health beliefs and culture of the community as well as to the health system in the area.

ACKNOWLEDGEMENTS

This investigation received financial support in the form of a scholarship in the MPH Course for Mr Shrestha from the American Himalayan Foundation. The authors are grateful to Dr Somarch Wongkhomthong, Dr Sommai Wansorn and Mr Mathee Chanjaruporn for their valuable guidance and suggestions. Special thanks are due to staff of Chon Buri Provincial Medical Office, Pan Thong District Health Office, Nong Hong and Nong Kakha Health Centers and the people in Nong Hong and Nong Kakha Subdistricts for their excellent assistance during the study.

REFERENCES

- Abramson JH. Survey methods in community medicine. New York : Churchill Livingstone, 1979.
- Amin R, Chowdhury SA, Kamal GM, Chowdhury J. Community health services and health care utilization in rural Bangladesh. *Soc Sci Med* 1989; 29 : 1343-9.
- Ayeni B, Rushton G, McNulty ML. Improving the geographical accessibility of health care in rural areas : a Nigeria case study. *Soc Sci Med* 1987; 25 : 1083-94.
- Belcher DW, Wurapa FK, Neumann AK, Lourie JM. A household morbidity survey in rural Africa. *Int J Epidemiol* 1976; 5 : 113-20.
- Caldwell J, Gajanayake I, Caldwell P, Peiris I. Sensitization to illness and the risk of death : an explanation for Sri Lanka's approach to good health for all. *Soc Sci Med* 1989; 28 : 365-379.
- Chandra R, Saxena S, Bagga S, Srivastava V, Srivastava B. Utilization of services of community health workers by the rural population. *Indian J Med Res* 1980; 71 : 975-84.
- Chen L, Huq E, D'Souza S. Sex bias in the family allocation of health care in Bangladesh. *Pop Devel Rev* 1981; 7 : 55-70.
- Dean AD, Dean JA, Burton AH, Dicker RC. EPI Info, version 5 : A word processing, data base and statistics program for epidemiology on microcomputer. Stone Mountain, Georgia : USD, 1990.
- Di Tomasso RA, Willard M. The development of a patient

FACTORS AFFECTING HEALTH CENTER UTILIZATION

- satisfaction questionnaire in the ambulatory setting. *Fam Med* 1991; 23 : 127-31.
- Fishbelin M, Ajzen. *Belief, Attitude, attention and behaviour*. New York : Addison - Wesley, 1975.
- Gesler WM. Illness and health practitioner use in Calabar, Nigeria. *Soc Sci and Med* 1979; 13D : 23-30.
- Howard G. Socio-economic factors affecting utilization of a rural Indian hospital. *Trop Doctor* 1978; 8 : 210-9.
- Institute for Population Research. *The morbidity and mortality differential Asean population program phase 3 Thailand*. Bangkok : Mahidol University, 1985.
- Lemeshow S, Hosmer Jr DW, Klar J, Lwanga SK. *Adequacy of sample size in health studies*. New York : John Wiley and Sons, 1990.
- Mantel N, Haenszel W. Statistical aspects of the analysis of data from retrospective studies of disease. *J Nat Cancer Inst* 1959; 22 : 719-48.
- Neumark Y, Palti H, Donchin M, Ellenweig AY. Utilization of paediatric health services in Jerusalem. *J Commun Health* 1992; 17 : 271-81.
- Piperno A, Di Orio F. Social differences in health and utilization of health services in Italy. *Soc Sci Med* 1990; 31 : 305-12.
- Rauyajin O, Plianbangchang S. Psychosocial aspects of rural health service in the northeast region of Thailand. Research Report Series No. 2. Bangkok : Mahidol University, 1983.
- Sauerborn R, Nougara A, Diesfeld HJ. Low utilization of community health workers : results from a household interview survey in Burkino Faso. *Soc Sci Med* 1989; 29 : 1163-74.
- Selwyn B. Family size, illness and use of medical services among preschool Colombian children. *J Trop Pediatr* 1987; 33 : 16-23.
- Van Lerberghe W, Pangu K. Comprehensive can be effective : The influence of coverage with a health center network on the hospitalization patterns in the rural area of Kasongo, Zaire. *Soc Sci Med* 1988; 26 : 949-55.
- Ware Jr JE, Synder MK, Wright WR, Davies AR. Defining and measuring patient satisfaction with medical care. *Eval Progr Plan* 1983; 6 : 247-63.
- Zastowsky TR, Roghmann KH, Hengst A. Satisfaction with medical care : replications and theoretic re-evaluation. *Medical Care* 1983; 21 : 294-322.