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PATTERNS OF HEALTH UTILIZATION IN UPCOUNTRY THAILAND

- A Report of the Research Project on "The Effect of Location on Family Planning/Health Facility Use"-

by

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Bangkok 4, Thailand

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ABSTRACT

This final report sets forth the general data, major findings, and recommendations from a comprehensive project on the use of different health providers in Thailand. Four different data sets were collected in the large rural upcountry province of Suphanburi 1) a general survey on health search behavior of the local people, 2) data and opinions of health personnel, 3) government health facility use statistics and 4) a survey of outpatients at both the amphoe and changwat hospitals Findings showed the universal appeal and wide use of drugstores for health and family planning needs In the government sector the changwat hospitals showed high use, while the primary health care system experienced extreme underutilization The government sector tended to cater toward the more modernized and urban population while the very remote areas were associated with the services of the injection doctor and granny midwives Distance was shown to have a distinct inverse relationship with the use of government health facilities, with distance acting most as a deterrent to use of the amphoe hospitals, somewhat less to use of the changwat hospital and of least importance to the primary health care facilities which experienced more the problem of not being attractive to the local people In the report a model of health search behavior is presented, several reasons for differential use of health providers are suggested, and recommendations are offered as possible ways to ameliorate present problems of the health system.

This publication serves as a final report for the project, "The Effect of Location of Family Planning/Public Health Facility Use A Study in Thailand", supported by the United States AID Grant 493-112-T.

This project, because of its extensive scope, involved the thoughts, time and effort of many people. The project has been a collaborative effort of the Institute for Population and Social Research at Mahidol University involving the services of almost everyone on the staff of over 40 persons at one time or another. We especially want to thank the professional research staff for their hard work and ideas which contributed to the success of this project. Soontaree Suvepakit, for her administrative guidance and advice, Chaiyuth Boonyanitaya and Bencha Voddumnern for their work with translation and pre-testing of the original surveys, Dr. Aphichat Chamratrithirong, Dr. Pramote Prasartkul, and Thavisak Svetsreni for their advice and help with the fieldwork, Chanya Sethaput, for assistance in translation and fieldwork, Chai Podhisida and Voravidh Chareonkert, for help in the fieldwork and writing the codebooks, and Uraiwan Kanungsukkasem, for her efforts both in the field and with the computer programming. We also thank Lursan Navikul, project research assistant, and Aphichat Siriphon for their help, especially in the field, and also Sumaraya Ratarajarn and Kreangkrai Indrasukhsri for their careful work in checking the data processing at the Institute, as well as the interviewing, coding, and keypunching staff at the Institute for their tireless efforts.

For the statistical design, we thank Dr. Boonserm Weesakul of the National Institute for the Development Administration. For administrative support we would like to thank the officials at the Ministry of Public Health and the Department of Technical and Economic Cooperation, the Government of Thailand. For their assistance in facilitating the fieldwork, we wish to express our appreciation to the Governor and his special assistant, Mr. Tiemboon Puntunaen, the Chief Medical Officer, his assistant and staff throughout the changwat of Suphanburi. Finally, for local-level help in Suphanburi, we thank all Kamnan and Puwaiban in the survey villages who lent a valuable hand.

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Introduction

When any research project reaches a certain size, the researcher tends to be confounded by the vast amounts of data at hand and the various avenues of approach to analysis he may take. Large and complex problems, such as the utilization of government health services, often require complex solutions, but also must produce simple-enough practical recommendations that can be put to "real life" use.

This is no easy task. For the course of this report, it means gleaning through the masses of purposefully collected information and choosing to show those data which are most pertinent and interesting. It means working foremost with those data which will yield meaningful insights into the main question, in our case, "Why is there underutilization of the government health system?" and "Do distance and location affect this underutilization?" Conversely, it means passing by all the information, much of it interesting in itself, that is not directly related to the main question at hand.

The report was written for a wide audience with varying degrees of knowledge of the Thai public health system. It will therefore sometimes risk stating the obvious for some, while lacking sufficient detail for others. This problem aside, we hope the combination of a simple analytical approach with the results of carefully pre-thought-out questionnaires will yield the most beneficial information for both the policy maker and general reader.

This report is divided into five chapters. The first describes the data collection process and presents a model of health search behavior. The second chapter describes the health worker and the government health system, while the third reports health facility utilization patterns up-country people. The fourth is somewhat more analytical and goes into reasons for and associations of various factors with "ever-use" of different providers, both public and private. The fifth chapter provides several conclusions and recommendations for the government health system, and along with chapters two and three, is probably of most interest to the policy maker.

In retrospect, this project has taken a good deal of time and effort, however, we feel the endeavor has been worthwhile if it is some small way helps in the development of a more efficient, far-reaching health care delivery system to improve the health and personal welfare of upcountry Thai people.

CHAPTER 1

METHODS AND DATA

Conception of the Project

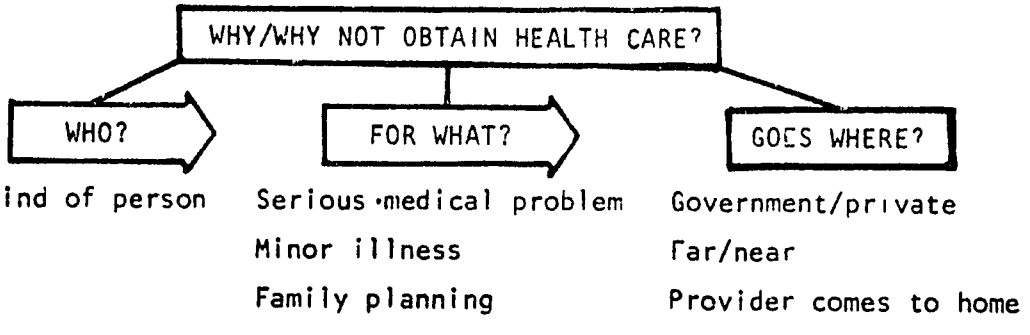
To the casual observer the most striking aspect of the Thai rural health station is its inactivity. The first impression is a pleasant health worker or midwife maning an good-sized building, but with few or any clients A more profound experience with the rural health system does not change this impression Several observors of the Thai health delivery system have noted this problem of underutilization. Cunningham in 1970 concisely summarized the issue, stating that "under-usage of all modern health institutions is a significant issue in Thailand." Numberous others, both foreign and Thai researcher and administrator have agreed with this conclusion. The Thai-American Evaluation Team (1975) in concuring with this opinion suggested that the poor location of many family planning service units was affecting the effeciency of their service, and therefore contributing to many centers falling short of their acceptor targets The problem is indeed of a large dimension and an important one to reckon with.

Growing out of this criticism and especially through the persistant questions and efforts of two of the leading members of the evaluation team, this project was born. As the project was originally planned there were two main aims to discover whether the effects of distance and location were playing an important role in the underutilization of the health system and to comprehensively uncover the causes of differential use of health facilities It seemed necessary to justify whether the huge government investment in rural health infrastructure and trained personnel was effeciently meeting the needs of the countryside people, and if not, what could be done to ameliorate this situation.

Picking up the initiative, the researchers at the Institute for Population and Social Research (IPSR) tried to formulate these problems into reasonable hypotheses which would produce accurate descriptions of the situation, answers to the main questions, and solutions applicable to improvement of the present health system. This is obviously not an easy task nor one where it is possible to come up with all the answers. The health and medical use patterns of the Thai people are complex and varied.[1]

The Model

The importance of the location of health facilities and their distance from the population were the primary focal points of the research project as originally conceived. This emphasis was reinforced because the sample and interview design were the responsibility of a trained population geographer. However, it was decided that the effects of location and distance on health facility use could not be considered in isolation. Rather these factors were only two aspects of the broader question of why people do use or do not use certain government health facilities. Nonetheless this still did not reach the basic question: we should ask which people in medical need go somewhere, and if they do, where they go, and why. Expressed graphically, it can be seen as a series of sequential steps in the health care decision-making process:



1. For a very good introduction into the complexity of rural/medical health alternatives see Rily, James N. and Santhat Sermsri "The Variegated Thai Medical System as a Context for Birth Control Services", IPSR Working Paper No. 6, June, 1974.

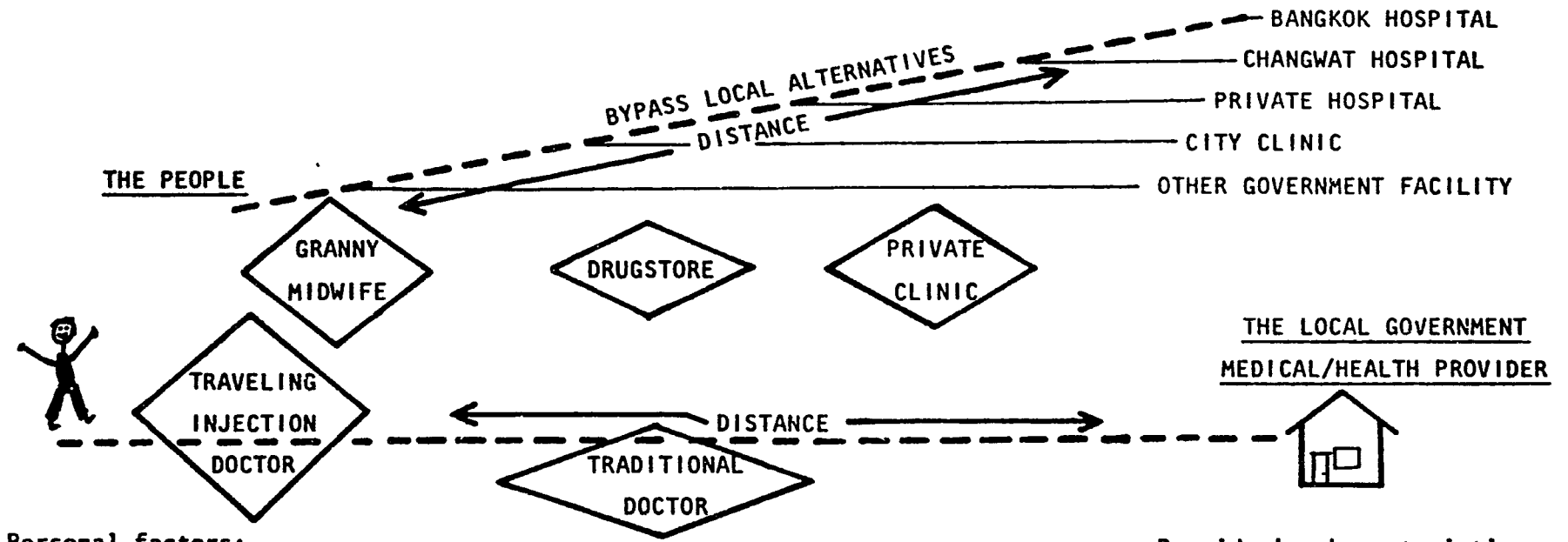
Though it is displayed as only a three-step sequence, this decision is not quite so simple as it appears. It invites numerous questions exploring reasons about what happens in the health care decision-making framework, questions such as· "Why who?", "Why who goes where for what?" or their negatives

Bearing these thoughts in mind, ideas were reworked so to especially consider utilization from the perspective of the potential patient (user) who is, after all, the sole reason all health care providers exist and who the providers must depend on for their use.

For our specific purposes, the people's utilization of government health facilities, the search for medical/health care can best be understood through the simple diagram of Figure 1. Four basic factors come into play· the people seeking service, the government provider of that service, the intervening factors between the people and the government provider, and the alternatives beyond the local health network If we combine this framework with questions emerging from our decision-making sequence, the basic methodological perspective of the project becomes clear.

The potential seekers of health service from rural government facilities are the people, and their personal traits are important in influencing where they go, and if they do go somewhere. Some of the more important factors in this respect are their perceptions of what illness really is or what needs demand outside help, their knowledge and information of available health service providers, the free time they have to go somewhere, and their tendancy to go places in general. Also important are their financial resources and other general socio-economic and cultural characteristics.

On the receiving end of the health search process there is the rural government health facility which in our case is defined as the amphoe hospitals, second class health centers and midwifery centers. The characteristics of these places will determine whether they are chosen as the provider of health service. Some of the more important characteristics are the quality of service, extent of treatment or service offered, the personal manner of the health personnel in approaching the people or the rapport they have, how expensive treatment is, length of waiting time,



Personal factors:

1. Perception of illness
2. Knowledge of available medical/health providers
3. Time available
4. Past experience and familiarity with which providers
5. Mobility: tendancy to go places in general
6. Financial resources
7. General socio-economic and cultural characteristics

INTERVENING FACTORS

1. Distance
2. Means of transport and conditions of roads/waterways
3. Opinions of friends and relatives
4. Alternative providers of medical/health care

Provider's characteristics:

1. Quality of service/reputation
2. Equipment/type of treatment that can be offered
3. Rapport with the people and community
4. Cost of service
5. Waiting time

Figure 1. Model of the search for medical/health care: the people and the rural government provider

and the location of the health facility

Also important are the factors coming between the people and government rural health facility These are the distance, measured either by kilometers or travel time, and conditions of the routes and means of transport to the health facility which affect the travel time and cost of the trip Also, another extremely important set of intervening factors are private sources of medical service which may be nearer to the people These might include the whole gamut of rural health practitioners, drugstores, or an injection doctor who will drive his motorcycle up to the villager s door to provide medical care. Finally, the opinions of friends and relatives play an important intervening role in the health care search process

Besides these factors stopping or hindering the health service searcher from finding his way to the rural government facility, there is also another facto , which for lack of a better name, we will call "alternatives beyond " These describe those places gone to when people bypass the rural government facility and local practitioners for a more prefered place These include the extensive health facilities of Bangkok, the changwat (provincial) hospital, private clinics and hospitals, and other health providers, public and private These can be described by basicly the same characteristics of the rural government health facility itself

The Data

If we accept that this model fairly closely approximates the health search process, then the next step is to collect detailed information about each of the four main factors discussed above To accomplish this, the project assembled descriptive, evaluative and opinion data in the form of five different, yet interrelated sets of information three surveys and two statistical sets. Four of these sets of data came from Changwat Suphanburi, the largest being a random sample of 2110 households from the whole province This survey elicited information from the people if they have ever gone to various medical providers and where they go in case of major illness, minor illness, and for family planning. Besides soliciting reasons for why they go to certain places, the interview also collected detailed information on important personal characteristics believed to affect the health care search process.

As the first set of data, the "People's Survey", was primarily concerned with identifying individual characteristics of the health seekers as well as the alternative providers of health service they chose to go to. The second survey concentrated on the government provider. One hundred and eight government health personnel (at least one from each health facility in Changwat Suphunburi) were interviewed to obtain their personal characteristics, opinions, activities and suggestions. The "Health Worker Survey" also collected information on the health center itself (such as its precise location) and the tambon (township) in which it is located. Directly following the interview with the health worker, we collected another set of data, the "Health Service Statistics". These consisted of statistics on the number of outpatients in the last six months and family planning acceptors in the previous month, as well as the village location for each health station user. These statistics were for calculating the extent of the service areas of the second class health stations in addition to showing the effects of distance on rural government health center use.

In contrast to the "People's Survey" which questioned potential users of the government health system, the third survey from Suphanburi, the "Outpatient Survey" queried actual users of the government system, those people coming for treatment at the amphoe and changwat hospitals. This data not only provided characteristics and opinions of these patients, but also information on distance traveled which permitted us to delineate the approximate cachement areas of the hospitals. Viewing all these surveys together we can see they hold detailed interrelated data on the potential and actual user, and the potential and actual provider of government medical/health service. Complementary to this is a large amount of information on alternative sources of medical provision.

The fifth set of data, which is not directly related to the Suphanburi data, is a complete set of 28 comparative social and health statistics for each of the 643 amphoes (districts) in Thailand. These data were used in the selection of Suphanburi as the survey site and were collected prior to the field work. The statistics stand on their own for evaluation and planning purposes for the country as a whole and will not be further discussed in this report as they have already been published as a complete health sourcebook with explanation entitled

Table 1. Data sets from the project

Data set	Number of cases	# of data cards	Geographical coverage	Source of data	Type of sample	Approximate # of variables	Date of collection
Amphoe Level Statistics	643 (amphoes)	2	National	National government, mostly from Ministry of Public Health	Complete for all amphoe existing in October, 1975	22	1977
People's Survey	2110 (households)	5	Suphanburi	Households in (197) villages and (2) municipal areas	Two stage systematic random sample for villages and households	115	February-April, 1977
Health Worker Survey	108 (health workers)	4	Suphanburi	Government health worker	At least one survey each active health facility, more for hospitals	62	February-April, 1977
Health Facility Service Statistics	619 (villages for 63 2nd class health centers) 6 (hospitals)	1	Suphanburi	Every active government health facility	Complete for all active places as of April, 1977	18 (for health stations) 30 (for hospitals)	February-April, 1977
Outpatient Survey	271 (outpatients)	2	Suphanburi	Outpatients using four amphoe hospitals and the changwat hospital	For amphoe hospital: all patients in a two day period; for changwat hospital: three days	28	April, 1977

"Comparative Social and Health Statistics for Thailand by Amphoe" by the Institute for Population and Social Research.

Selection of Sample Site Suphanburi

Besides the close examination of medical/health care search on the individual level, the project was also directed toward understanding the workings of the whole health system. A macro-level approach was also maintained to view how all the health care seekers and providers interacted together. To understand the complexities of these interactions is quite difficult; to find the connections in only the government health network is somewhat simpler, but still a complex task. Nonetheless, the project made several inroads into unraveling these relationships: specifically through questions on where people go before and after seeing a certain provider and questions on referrals and advice on where to go. It was also possible to see interrelationships among the providers by looking at facility-use statistics, and where and how far people go to avail themselves of the providers' services.

Precisely because of the project's aim to view the health system as a network and discover interactions, the research effort was intensively directed at one area, the changwat of Suphanburi. This changwat was chosen as the study site because it had a fairly self-contained health system (not greatly overlapping with other changwats), except for the people's partial reliance on the services of Bangkok which was also of analytical interest. Specifically, we wanted to discern if there was a meaning ful hierarchy of health service: whether the people preceived and used what services for what degree of need, and whether the government system itself was working as a real step-by-step health provider. A step-by-step system assumes that people would use the local health stations for minor services, amphoe hospitals for treatment which requires an M.D., to be referred on to the provincial hospital for serious cases, and to seek the use of Bangkok hospitals for specialized or very serious needs. If the government health system is efficient, it should approximate this model and work in a related fashion.

Changwat Suphanburi was chosen as the survey site by looking at geographical, administrative, and health statistics (obtained from the

previously mentioned "Amphoe Data") for each of the 71 provinces and then eliminating the provinces one by one if they did not fit a certain set of criteria. Suphanburi fit the study objectives for it can be, in many ways, considered average or representative for Thailand It has a reasonably well developed health network with 63 health stations, five amphoe hospitals, and a large provincial hospital Administratively, there are nine amphoes (including a king amphoe) and a population of about 700,000 people. To complement the changwat health hierarchy, the province is an intermediate distance (approximately 150 kilometres) to Bangkok, site of the most sophisticated health facilities in the country Only two midwifery centers, are in the province. This situation, similar to other changwats, is presumably because village-based midwifery centers have been upgraded to second class health centers.[2]

In regards to socio-economic characteristics Suphanburi is somewhat average for Thailand in that it is reasonably economically well-off, though not rich the economy is almost entirely agriculturally based with approximately its eastern half in the rice paddy lands of the Central Plain while its western half slopes to the uplands and mountains and is devoted to dry cash crops, presently, mostly all sugar cane Paddy rice and cash field crops (especially cassava, corn and sugar cane) dominate rural Thailand where 85% of the population live.

Preparations for the Field Survey

At the same time the study changwat was being selected, the format and content of two of the three main surveys was being written up. In the main survey, the "People's Survey", much care was taken to include only those questions which were meaningful and would lend themselves to analysis, while being careful not to omit data crucial for the analysis The survey aimed mainly at household information on personal characteristics, what people do (i.e., where they go) for minor and serious sickness as well as family planning, their travel behavior (mobility), and knowledge and assessment of the government health system. The survey was carefully

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2. It should be noted here that before the survey actually went upcountry, the most recent government statistics claimed Suphanburi to have eight midwifery centers.

translated into Thai by one of the Institute's anthropologists, taking special care to avoid linguistic misinterpretations of the questions while being sure the questions were in a context familar to the rural Thai people. The second survey, the "Health Worker Survey" was likewise carefully translated and then both surveys were gone over by the Institute's staff in a meeting. After several revisions the surveys were printed up and pre-tested in Changwat Ayuthaya, Amphoe Nakorn Luang, an area similar to and not far from the study area of Suphanburi. The pretest resulted in more alterations, and the final field copy was changed slightly once more after two days in the field and then put into final form.

Besides finalizing the design and content of the questionnaires, other preparations were made before going into the field. A set of fifteen 1:50,000 scale precise topographic maps were obtained from the Royal Thai Survey to supplement a set of maps from the mapping division of the National Statistical Office (NSO) which were more up-to-date but less detailed. The accuracy of the maps and locations were inherently very important to this study in that distances from villages to health facilities had to be accurately measured. We also collected further detailed statistics for each amphoe in Suphanburi along with health facility and personnel listings and statistics both from the Ministry of Public Health, Division of Rural Health and the Provincial Health office of Changwat Suphanburi.

The Sample Design

The sampling procedure for the "People's Survey" was devised by Dr. Boonserm Weesakul, Vice Rector of the National Institute for Development Administration (NIDA), who also did the statistical design for the 1970 Thai census. A two-stage random sample started with 200 village areas or "muban" (approximately one out of every three) in the changwat being chosen by systematic random selection in proportion to the number of households in each village. To ensure a good geographical spread, the villages were listed tambon by tambon so that any tambon would have a number of villages selected from it also in proportion to the number of households. Finally, a sample for the two municipal areas in Suphanburi was chosen, again in proportion to number of households.

In each village, households were selected by an approximate random walk method assuring a good spread of ten homes within the boundary of a village area Before interviewing the team supervisor toured the extent of the village with the "Puyai Ban" or "Kamnan", and then assigned households to the interviewers on the basis of approximate distance between the homes In the municipalities ten households within census enumeration blocks were interviewed, the number of blocks being systematically chosen so as to keep the sample proportionate to number of households and consistent with rural (village sample

Field Operations

After week-long training for the interviewers, the survey was taken into the field from late February to late April, 1977. Three survey teams each consisting of a jeep, driver, three interviewers, and a supervisor were responsible for covering two villages or twenty interviews a day The interview took 20-25 minutes with about the same amount of time on the average spent for transportation around the village This schedule meant a busy days work, but did not fatigue the interviewers or pressure them into a pace that mistakes would more likely be made The project supervisor was in the field for almost the whole duration of the survey ensuring coordination and consistancy in the survey as well as observing and taking notes on the interviews to better understand how the actual responses could be interpreted at the time of analysis Finally, a special research assistant was in the field full time with the main tasks of conducting the "Health Worker Survey" and collecting the "Health Service Statistics" at each health facility

The "Health Worker Survey" interview took about 20 minutes, and at the second class health centers, was given to at least one of the health personnel or both if possible At the hospitals two to five people were surveyed depending on the size of the facility Whenever there were any doubts concerning whom to interview, the more senior official was chosen for the reason that he probably had more influence over the activities of that health facility After the personal interviews, the "Health Service Statistics" were tabulated using the health center's record books and the aid of the health worker or midwife These data comprised outpatients for a 6-month period and family planning acceptors

in the last month from each village and the distance from the village to the health center. This data was combined with National Statistical Office (NSO) data on total population and household statistics for each village and tambon (township) for use in the research analysis concerning influence of distance upon health center utilization.

During the final month of fieldwork the research team undertook the translation and pre-testing of the third and final questionnaire, for interviewing outpatients coming in to use the amphoe and changwat hospitals This survey was similar in content to the "People's Survey" but differed in perspective in that it questioned persons who had actually come to the government health facilities for treatment. The information from this survey dovetails well with our other surveys to provide a more comprehensive picture of health service delivery. This final "Outpatient Survey" was conducted for two days at four amphoe hospitals and three days at the changwat hospital in late April, 1977. A total sample of 271 outpatients were interviewed. At the amphoe hospitals most all patients (n = 149) were able to be interviewed. However, at the changwat hospital because of the large number of patients, we only took an approximate 50% random sample, including patients with an odd-numbered ID card. Also, at all the hospitals detailed service statistics were gathered by month for the last year and a half and by day for a recent three week period. At this time other detailed information and observations were recorded.

The Data Processing

At the beginning of May, 1977 with the return of the survey from the field, the IPSR staff immediately set to the task of making codebooks for each survey and instructing the seven coders and three checkers on how the data would be coded. On the basis of approximately 20% of the responses, each open-ended question was assigned detailed coding classifications for its responses. Coding extended from May to July with each interview being completely reviewed by a checker, two of whom were the project research assistants and the third a research assistant from the Data Processing Section of the Institute.

After the data was partially coded, keypunching commenced. By September the data was into the computer edit. After corrections

and some re-punching, computer frequency counts were listed so that the project supervisor could go through the data value listings for each variable and have unusual values rechecked and other mistakes corrected. After this, a final "cleaned" frequency count was produced to be sure that all changes had been made and the data was in good order.

After each survey was coded and rechecked, the codebooks were updated and revised to include new responses, explanations and codes created during the data coding process These codebooks were than reprinted in final form for research analysis work and the reference of future users. Also, because the responses to the open-ended questions were recorded in detail, the codebook itself can offer insights into the variety and extent of answers to several important questions, especially those answering "Why?" The final codebooks were completed in August and September The complete set of bi-lingual (Thai-English) codebooks including geographical identifications was assembled in one volume of over 150 pages and may be obtained wholely, or in part, from the Information and Documentation Center of IPSR

The final stage of the computer processing, the cross-tabulation and analysis, took place in October and November, 1977. All the computer processing took longer than expected due to the large amount of data (5 different sets and over 14,000 cards) and the long turnaround time of the computers the Institute has access to

The Quality of the Data

Two important questions which should be asked of any survey research is "How accurate are the data?" and "How close does the information reflect reality?" The answer for us is, in part, a standard answer most all surveyors would give: the accuracy varies depending on the question. On some questions we can expect quite accurate and realistic responses, on others the answers may be dubious at best. While this is true. it is also correct that the accuracy depends to a good extent on the presentation of the survey questions and the quality of the survey team. We have many reasons to believe both were of good quality.

Firstly, considering the presentation, our survey was designed

to have a flow of events, that is, wherever possible thoughts and questions would link together to help the villager feel he was more just having a conversation and therefore more at ease rather than being grilled with haphazard and unrelated questions. Secondly, from the original writing of the survey, we tried to eliminate sensitive and awkward-to-answer questions. Nonetheless, a few poorly-designed questions were not removed and ended up as "junk" questions of little value. Some of these will be discussed later in the next section. Thirdly, the interviewers attempted to put the respondents at ease by explaining the purposes of the survey, that they were not connected with the local government, and that they did not want the name of the respondent. Fourthly, the "Puyai Ban" (village headman) of the villages and sometimes the "Kamnan" (tambon chief) was asked to help introduce the interviewers to the selected households. This, and the fact that the basic interviewers were all women, lessened suspicion, helped put the respondents at ease and made entry to the houses easier.

Concerning the quality of the survey team, it was felt they were of quite high standards. All women interviewers were university graduates, and a majority came from the prestigious schools of Chulalongkorn, Thamasat and Mahidol. They were intelligent, alert, and reasonably well-trained and versed with the questionnaire before going into the field. The supervisors, likewise, were highly qualified, all coming from the permanent staff of the Institute, and most trained in both population and survey techniques from universities abroad. All but one of the supervisors were of M.A. degree or above and most had former field work experience. During the field work, the supervisors changed approximately every two weeks with a total of 7 supervisors participating for an average of 3-4 weeks apiece.

Problems with Information Loss on the Surveys

However, no matter how qualified a survey team or how conscientious the design, there is always loss of information in survey research because of the inexactness and problems inherent in the process itself. Mistakes can be made and information inaccurately transmitted in each step of the research starting from the researcher's original conception of the problem through the data collecting and processing procedures to

the conclusions of the final report. The complexity and variety of changes the information goes through is presented in Figure 2. Starting with the researchers' perspective which develops a research frame of hypotheses and possible ways of looking at the problem, a questionnaire is then drawn up and revised (and translated in the case of our survey), read and given to the respondent whose answers are classified into coding frames by the researcher The respondent's information is then coded by a coder, whose work is rechecked by the checker, and then keypunched. The data, now on data cards, are both hand and computer edited, mathematically manipulated and analyzed by the researcher who then writes his final report

This detailed process is presented to remind the reader of the large opportunity for mistakes and the possibility of that error being increased in the research process. The recognition of this fact led us to be extremely conscious of checking for inaccuracies or misrepresentations of the information throughout the survey.

For our survey project, we feel that the greatest losses of data came in four specific instances. In stage 3, improper interview format and instructions caused the interviewers to skip one section of questioning and omit other data These omissions, however, were caught too late in the survey to amend Secondly, in the interview situation (stages 4 and 5) there were problems of misunderstanding and inability to answer parts of the questionnaire, which reflects back on the stages 1 and 2: the researcher and his ability to preceive the problems and phenomena in a way that the villagers can meaningfully respond to them. A third step involving loss of information was the coding stage (#6). Problems here ranged from just careless mistakes to inability to correctly place proper answers to open-ended questions in the correct classifications. However, detailed codebooks and the conscientious work of the checkers as well as the computer edit helped to alleviate these shortcomings The final instance of loss of information was in the post-survey activities of the researcher: stage 6, where he makes the decision on how to classify and summarize the raw data, especially open-ended question responses, and stage 11, where he must interpret the data values of the variables as representing concepts and phenomena. Finally, the stages that we felt were the most error-free were the key-punching

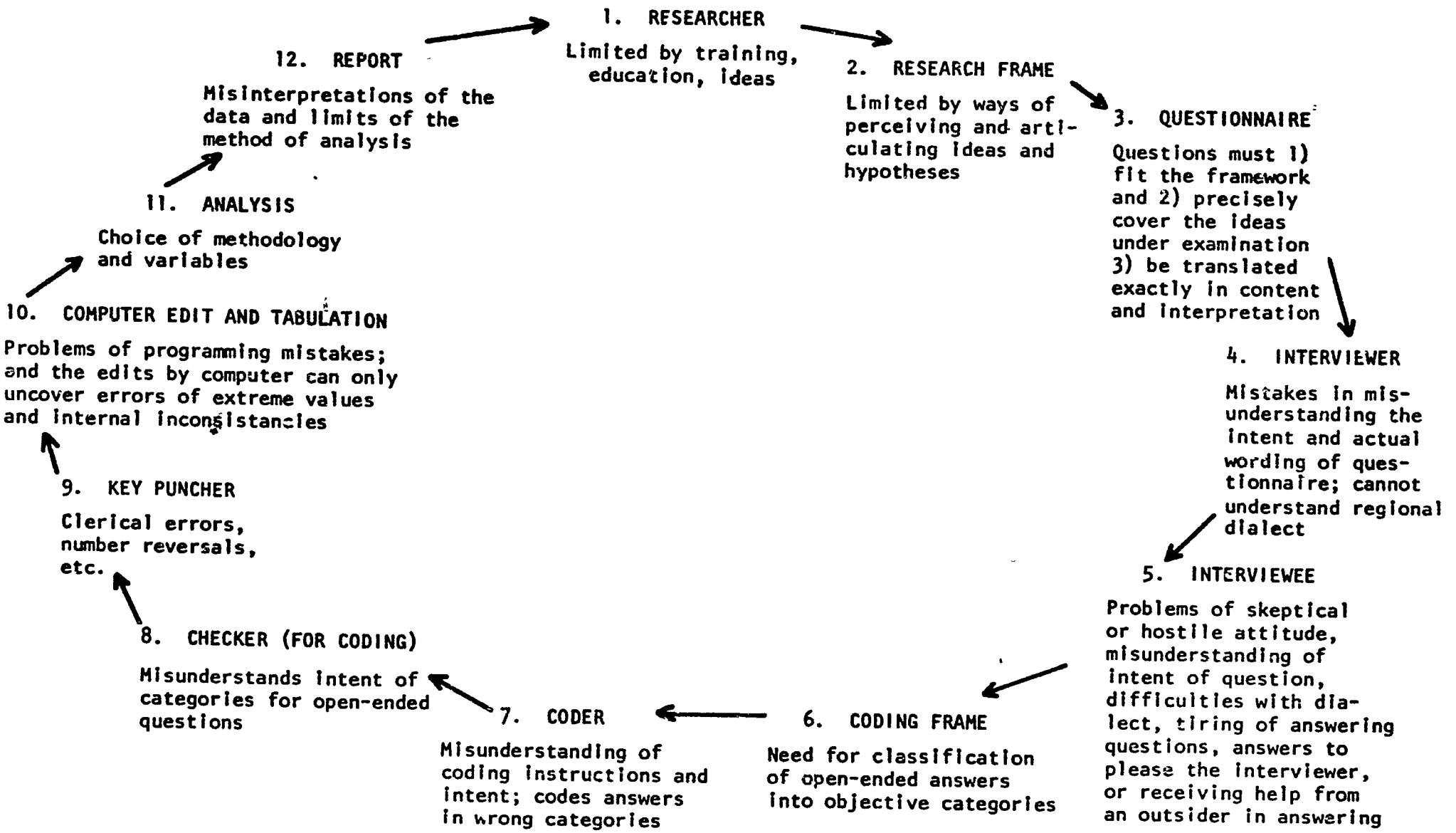

Figure 2. Actors on the problem and the solution: the survey information process or "the vicious circle of research information"

which contained very few mistakes and the data computer processing which went smoothly

Problems with the Questionnaire Response

It was felt that the overall response of the "People's Survey" was much better than the "Health Worker Survey". Although the "Health Worker Survey" information was adequate, it seemed only a minority of the personnel really spoke their minds Often many seemed to provide answers that sounded like they came from a government manual This apparent reluctance to speak out, however, was understandable in some ways: many, especially the younger health personnel, seemed to suspect (wrongly) that we were there to evaluate their activities, and others could not speak out in their official role because of a conflict of interest with their public/private roles as a health provider. This aside, the rural health personnel of Suphanburi were not only very friendly and helpful to the research team, but also a vast source of knowledge and good suggestions when talking informally

The response on the "People's Survey" was good Also, the ease in which the survey teams were by and large accepted into the villages was encouraging After being outrightly refused in one village in Ayuthaya during the pre-test, we anticipated problems in Suphanburi. However, this never materialized, and the only instance of any local problems at all was in western Sam Chuk where nobody in one village wanted to take responsibility to assist because both the "Kamnan" and "Puyai Ban" were away at a meeting. Besides a generally very good reception, we felt the people, for the most part, gave sincere responses and showed interest in the content of the survey.

The survey design, as with all surveys, was faced with the choice of open-ended or set response questions. We felt that for the most part the open-ended format is superior in that it allows the respondent to give <u>his</u> own answer and phase it in his own words. Of course even though it is his own answer, it may have to be interpreted by the researchers when the coding scheme is devised. Nevertheless, the open-ended framework leaves room for more options and a wider perspective, which is what we were looking for in our survey. On the other hand, set response questions would probably give more exactness and a better

response rate, but at the cost of having most all the answers subjectively pre-determined by the researcher before the survey. We have doubts whether most researchers understand the options so well before going into the field that they can predict the range of possible responses.

Finally, we would specifically like to discuss a few methodological problems encountered in the surveys. First, the interview situation, second, the poor response to multiple questions of a similar nature, third, certain types of questions found inadequate for the rural upcountry respondent. Lastly, we point out the problem of the general need for socio-economic related surveys in upcountry Thailand to gather data on more relevant discriptive characteristics of the Thai rural countryside people.

The first, and probably most valid criticism of our survey is a response bias in favor of the government. Even though we explained to the respondents that we were not connected to the Ministry of Public Health, our actual government affiliation and the government uniforms sometimes worn by the supervisors were bound to make the villagers feel we were "official". That there is a good deal of "social distance" between government officials and upcountry people needs little explanation here. More serious yet, several times the local health worker, who aided the survey teams by guiding them to the "Puyai Ban's" house, went along with the interviewers and in a few cases actually helped the people answer the questions. In a household favorably disposed toward the local health officials, their presence probably did not affect the responses. However, for respondents not favorable or neutral towards the local government health workers, their true feelings might well have been surpressed or they might have even reported having used the local health facility when they in fact had not. We believe this phenomenon produced a slight overestimation of favorable responses on the use of and suggestions for government health services.

The second criticism concerns a mistake in the survey design that did not result in loss of information but rather miscalculated how much meaningful information could be obtained from a certain type of question. Specifically, we are referring to a number of questions that required two or three responses and/or were in a series of questions of a similar nature. For these types of questions, answers following the

first or second response had a very poor response rate. The project supervisor in his zeal to be comprehensive in the questionnaire design actually wasted a good deal of questionnaire time, paper, and time spent on data processing "no answers".

A good example of this situation was the last series of questions in the "Health Worker Survey" on his evaluation of his health center. Four questions of similar nature were asked in a row, each requesting two or three responses Question 56 asked what the health personnel thought were the best points of the service offered by his health facility. Question 57 asked the exact opposite the main deficiencies. Question 58 asked if there were any other important problems not yet mentioned and Question 59 asked if they had any recommendations for improving the health and family planning service for the local people We can see in Table 2 how response rates decrease both down and across as the series of questions progresses.

Table 2. Health worker response rate for a multi-answer series of similar questions on evaluation of his own health center

	Response		
	First	Second	Third
Q. 56 "Service : good points"	94%	88%	N.A.
Q. 57 "Service : main deficiencies"	71%	20%	N.A.
Q. 58 "Other problems"	43%	7%	0%
Q. 59 "Recommendations for better service"	63%	12%	5%

N.A. = Not applicable

This simple table suggests several observations about the health workers' "response behavior". Most important is that the response rate decreases rapidly for second and third responses, as well as when the series progresses down. We may surmise that the respondents are running out of answers or also possibly are not easily able to differentiate the different intent of each question, feeling the questions to be much in the same vein. Secondly, they respond more eagerly to the "good points" of their service than the "main deficiencies". This is most likely due to the very human tendency to prefer to talk about and recognize what you

do best. Also the "good points" question was asked first before the others. In the "People's Survey" this decreasing response rate was evident in several sequences, most obvious of which were the questions asking "if you or someone in your family was sick and one place did not cure you, where would you go" (for a third or fourth time).

Thirdly, some questions were found inappropriate to the up-country respondent. The most glaring example was Question D.11 of the "People's Survey" which asked the villager if he was satisfied with the main market he goes to (and requiring responses such as not satisfied, somewhat satisfied, satisfied, and very satisfied) This question often brought laughs and the responses "I must be satisfied, it is the only market around here" or "I would be satisfied if I had enough money" Obviously, the rural Thai is not in the same mental (conceptual) framework as an advertising-oriented opinion surveyor of the Western countries. The rather complete failure of this question leads us to seriously doubt the results of certain opinion research questions including some on past knowledge, attitudes, and practice (KAP) of family planning surveys.

A second question of the "People's Survey" with very limited usefulness was "Do you or your spouse listen to the radio, and if so about how many times/month?" This information has on past surveys has been used as an indicator of "extent of communications" or "modernity", but in our case almost 80% answered "Yes, everyday" and 15% answered "sometimes". We have found out that in most all rural Suphanburi households the radio is almost as common as the cooking pot, but the information helps us little at all in differentiating peoples of the rural community by characteristic. Further, the question asks the respondent to differentiate a monthly activity by "number of times", something the respondents repeatedly found difficult to do for a number of questions

The respondents also had difficulty in answering how far it was from their home to certain places such as the main market or closest health center. However, we consistantly found that more people could tell the distance in travel time than in actual kilometers. For the main market, which probably ought to be well known to most all the respondents, 11.5% could not approximate the number of kilometers while only 5.3% could not answer by the amount of travel time. For a place more distant, the "nearest changwat hospital", 26.0% could not answer by kilometers and 9.5%

bv travel time.

As a final methodological comment, we would like to discuss a vital concern for socio-economic surveys in general· the necessity to search out relevant information to describe and differentiate the rural Thai peoples All too often rural Thai surveys collect data on rural characteristics with survey questions and a frame of reference barrowed from the west. The information a western researcher might find appropriate for describing western people might not at all be suitable to a rural Asian setting. A classic example of this is the national Population and Housing Census which goes upcountry and procedes to question the rural villagers on a host of questions such as "What is your house made out of?", "How many years ago was it built?", "What kind of toilet do you have?", and so on We suspect that this information is of little use to anybody We seriously doubt whether the government will use this information for planning and futhermore, the data does not meaningfully describe much of anything about the rural population. (Indeed, for the "toilet" question in 1970, 81% of the village people in Suphanburi responded "other".) We speculate these sorts of questions are asked because the Thai Census of Population and Housing question design is based on a western model, most likely in fact, the U.S (or U N.) model

The present survey experimented with some different questions it considered important for describing rural household characteristics. Several provided quite useful information, but it is too early to report their usefulness for socio-economic oriented surveys in general. One such variable is the "type of farm", especially whether or not there is single or double cropping. This, we believe, is quite important, because the double crop not only changes the farmer's financial condition, but also requires a larger input of time, work, and resources and therefore affects his lifestyle. Two other important variables are number of "rai" owned (2.5 "rai" = 1 acre), a wealth measure, and number of "rai" planted, an occupation or work description. Also, when asking about occupation, we got a 52% response on the secondary occupation of the head of household. This variable could prove important in providing a clear picture of the work patterns of upcountry Thais.

One of the most standard socio-economic variables, religion, was skipped in this survey. In that 99.6% of population of Suphanburi

professed to be Buddhists at the time of the 1970 census, there obviously would not have been any variation by religion in our random sample. To a lesser extent the same reasoning might advise against asking about educational status because the vast majority of the countryside adults fall into the same or similar categories, four years (the former compulsory education) or less. For our survey 66.6% finished four years, 11.1% from one to four years, and 12.3% had no education. This gives us four categories (including those above 4 years), but very little of the variation that contrasts western or urban populations. Nevertheless, we found this variable, along with another the "frequency of reading the newspaper", as a reasonable indicator of educational status.

These shortcomings of the data and general suggestions have been discussed to make the reader aware of methodological and question design problems that not only confronted our survey, but also confront all surveys. Despite certain inadequacies of our data, we still believe the data to have been collected, processed and analyzed with great care and in general, to remain of quite high quality.

CHAPTER 2

THE HEALTH WORKER AND THE GOVERNMENT HEALTH SYSTEM

Having looked at our model of health care search behavior and the design of the project in general, we now turn to the subject under investigation The health worker and the government health system The medical/health facilities available in Thailand are predominantly under the control of the Ministry of Public Health In terms of potential and investment it dominates the country, although the private sector is large and growing and many ministries and parts of the government have their own medical care facilities and personnel Present statistics (1977) place the extent of its empire at 5,677 facilities 1,394 midwifery centers, 3,928 second class health centers, 269 amphoe hospitals[1] and 86 hospitals, and with over 20,000 medical/health personnel [2] Its size has rapidly increased in the last ten years and promises to do so at an even greater rate in the next five years on account of the *Fourth National Economic and Social Development Plan (1977-1981)* (NESDB, Bangkok, 1977) which will substantially augment the ministry's presently large expansion program The extent of geographic coverage of the Ministry of Public Health's program is surpassed only by the Ministry of Interior's administrative system and the national school system. It is indeed a big part of the government's extension of service to the people.

While the third chapter of this report addresses itself to the problems of utilization of the public health system, and its actual value to the people, this chapter will attempt to describe the system, its personnel, how the system does (and does not) work together, reasons for

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1. Including medical and health service centers
2. Personnel estimate as of 1974

location choices of facilities and other related issues.

A General Description of the Health System

The nomenclature for the facilities of Ministry of Public Health seems to have changed enough recently to keep the general public confused about what is called what [3] At present facilities can be designated by five classes The smallest, the midwifery center, is for one government midwife whose main responsibilities entail maternal and child health, family planning and general health services It is supposed to serve an immediate population of at least 2,000 people If the service area expands to a population of 5,000 then the midwifery center can be upgraded to a second class health center. This in fact often happens and a large number of midwifery centers disappear yearly from the government books. The second class health centers have a male junior health worker besides the midwife and offer more services than the midwifery center, such as santitary work, communicable disease control and minor medical care. Its designated service area usually comprises a tambon (township). Also, if a second class health center is located at a "tua amphoe" (district seat) which has no amphoe hospital, the amphoe health officer will usually have a larger staff and will provide services for a larger number of patients than the average second class health center.

At the amphoe (district) level there are two classifications of facilities: the medical and health service center and amphoe hospital. These carry a more complete health staff, at least ten beds, and can care for both inpatients and outpatients. Both have a varying assortment of personnel and, at a minimum, usually one or two nurses, two junior health workers, a couple of nurses aides, midwives, and a laboratory technician. The technical difference between the two facilities is that a medical and health service center is usually smaller and is waiting for the assignment of a medical doctor, after which it is upgraded to an amphoe hospital Finally, at the peak of the changwat

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3. A serious methodological problem throughout the survey upcountry was trying to be sure the people knew what type of facility we were talking about. This problem was partly overcome by the interviewer learning which facilities nearby were of which designation.

health system is the changwat hospital which is usually a rather large institution in the changwat capital offering the most extensive medical services in the changwat The size of the hospital usually depends on the size of the changwat and in a few cases one finds more than one Ministry of Public Health hospital in a changwat

The general administration of the whole system is the hands of the changwat chief medical officer and his deputy with the aid of the amphoe health officers. Depending on their personality and status amphoe health officers can have very little or quite substantial influence in changwat health affairs The amphoe health officer's position carries little chance of job promotion and many officers therefore have spent a long time in the local area On the other hand the chief medical officer and his deputy are transfered by the ministry rather often, and therefore sometimes they may have to rely heavily on the amphoe health officers for local support and evaluation.

Throughout this report for the sake of simplicity will refer to some of the above mentioned facilities under the same title Firstly, medical and health service centers and amphoe hospitals, both being similar and intermediate to the local health facilities and the changwat hospital will be considered in the same class and called "amphoe hospitals". Secondly, midwifery centers will be considered in the same category as the second class health center and be called "health stations" Although the midwifery center does not have the large physical facilities of a second class health center, the midwife's duties and responsibilities seem to be about the same at both places Also, the two midwifery centers in Suphanburi are located in tambons without a second class health center and therefore approximately serve the same administrative area Finally, when we use the term "health facilities" we are referring to all the government centers and hospitals regardless of class.

The Public Health System as a Hierarchy

One of the original aims of this project was to discover the extent the present government rural health organization works as a hierarchical health system By a "system" we mean a group of medical health providers working in an organized connected way By a "hierarchical"

system we imply that the functions of the providers are graded in levels so that some offer less services while others are more extensive and more specialized.

In Thailand the present provincial health system is designed to operate basically on three distinct levels (see Figure 3). There is the most local level which includes a midwifery center or second class health center located in the tambon. The amphoe hospital or medical and health center in the "tua amphoe" provides an intermediate type of service, and the extensive all-encompassing capabilities of the changwat hospital covers the changwat level. This system involves a spatial distribution of facilities to reach the population locally, while establishing a reasonable accessibility to the higher, more specialized levels when needed Each level has its function to serve the people, and as the levels ascend they increase in specialization and area served, while at the same time decreasing in actual numbers. This tiered health system is represented on a national level by the extensive medical facilities of the capital, Bangkok, to which many people travel long distances to get treatment at where they assume (correctly) that the best and most sophisticated medical services are available. The facilities of Chiangmai might be also considered as on this highest level and possibly, the regional hospitals and maternal and child health centers at a level somewhat in between

This description, however, is the theoretical administrative and spatial arrangement of the health system hierarchy and not the reality. Typical to Thailand's historical and present stress on centralization, the system is most complete and most effective at the highest levels and quite lacking at the primary levels Guided by the western model of large, expensively equipped hospitals, investment historically has centered on building large hospitals almost all located in Bangkok and the provincial capitals. It has only been in the recent few years that government investment has been put into developing the health system at the more local levels. Today less than half of the eligible amphoes have an amphoe hospital and while local facilities are now quite numerous, large areas still remain unserved because of building concentration in better developed areas and the very limited service area of the facilities. Indeed, the people we surveyed recognized the health system hierarchy in respect to the more extensive services of the changwat and even more

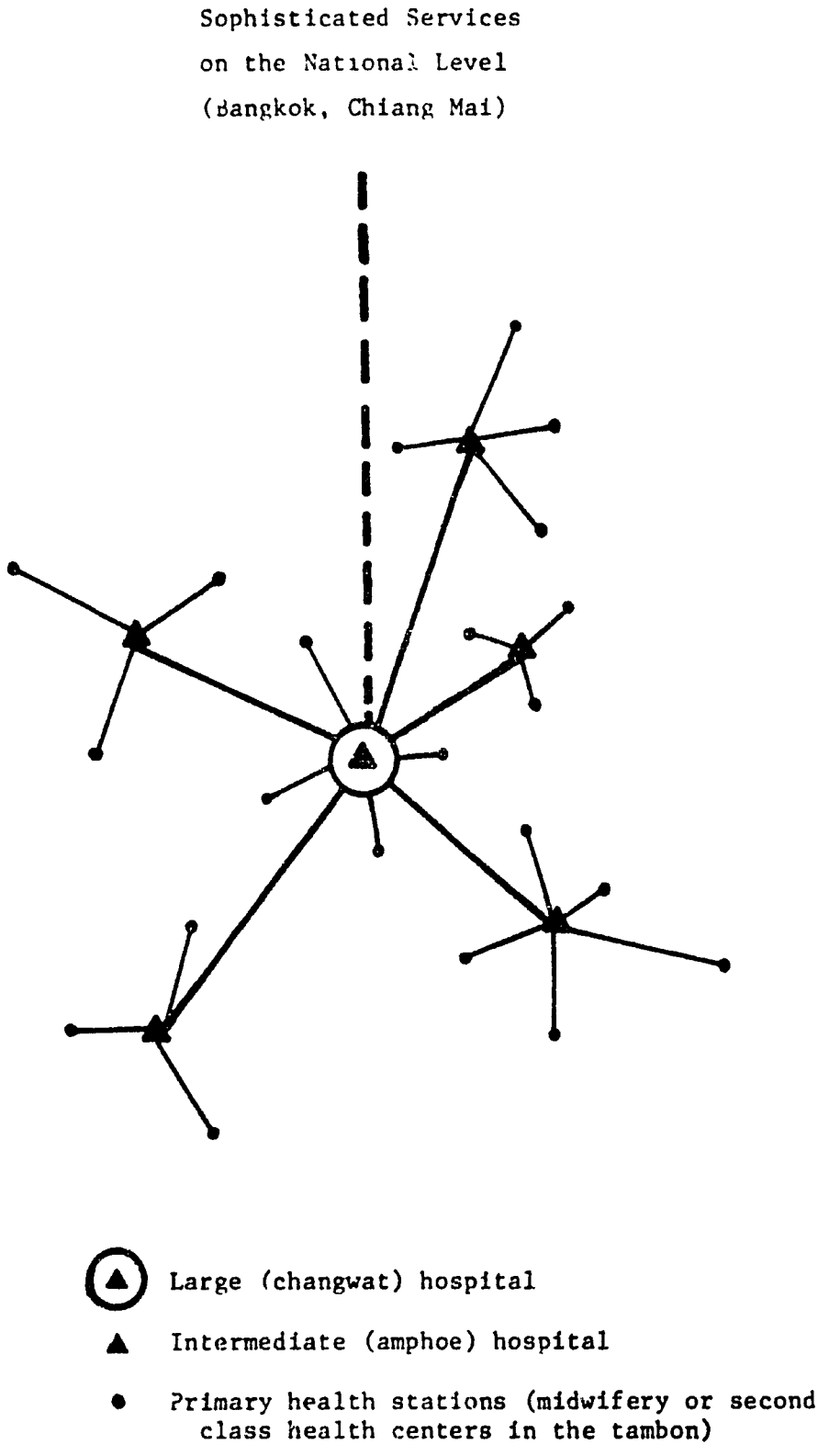

Figure 3. The spatial hierarchy of the public health system in Thailand

sophisticated and better services of Bangkok. However, very few recognized or used the amphoe and tambon levels of government health service in a systematic or hierarchical way.

The Health System of Suphanburi

The health organization of our sample changwat reflects the three-tiered hierarchical administrative system previously described. The extent of this system as of March, 1977, the time of the survey can be seen on the accurate-to-scale map enclosed with this report and in the statistics by amphoe in Appendices A1 and A2. At the local level there are 62 health stations, 60 of which are second class health centers and only two are midwifery centers. At the intermediate level there are five amphoe hospitals, the one in Doembang-Nangbuat quite new and without a doctor, and therefore still of "medical and health center" status. The remaining three eligible amphoes (the changwat hospital serves the amphoe muang) are scheduled for amphoe hospitals: Si Prachan and U-Thong in the near future and King Amphoe Dan Chang in approximately four years. At the top level the changwat hospital with approximately 250 beds is equipped to give extensive medical service for the changwat. Also, other hospitals occasionally used by Suphanburi residents are the changwat hospital at Singburi in the north and Kamphaengsaen Air Force Base Hospital in the south. Both of these places seems to hold a better reputation than the changwat hospital in Suphanburi and are a shorter travel distance for a part of the population.

On the average health stations are about 6.4 kilometers from other health facilities, though ranging from less than a kilometer to 19 kilometers apart. The average distance between amphoe hospitals (including the changwat hospital in this network) is approximately 20 kilometers, while the average distance of both amphoe hospitals and health stations to the changwat hospital (or another equivalant sized but nearer hospital) is about 33.5 kilometers. However, these statistics are somewhat misleading if we are judging the total health delivery system: they reflect only the proximity of health facilities already in operation. The figures then do not take into account that the eastern part of the changwat has a large portion of the existing health facilities and those in the western part are few and far between and not heavily contributing in number to the

above statistics. The population density throughout the changwat does not justify this maldistritbution of facilities.

The development of the health system in Suphanburi is similar to other parts of the country in that it reflects the historical administrative development along the river systems. Of the original seven "tua amphoes" only U-Thong is located off the Tachin River system. Today, although the waterways play less of an importance, many roads parallel the river to connect the administrative and market towns. As a result of this historical development more administrative units, especially tambons, of smaller area size have been created in this area. The areal density of health facilities reflects this concentration: the clustering around the river system can be seen by a quick look at the map of Suphanburi's health system. This concentration is in some ways justified because of somewhat higher population density in this area. However, this concentration has come at the expense of underdevelopment of the western and more recently settled part of the changwat In the western part, administrative areas are larger: For example, Muban (village area) One in Tambon Chaeng Ngam is over ten kilometers long. Similarly tambons may vary widely in area These two factors of larger administrative areas and fewer administrative areas with health facilities in the west have combined to make the local health system inaccessible and almost unknown to most of the local population. Stating this whole phenomenon another way. it seems health facilities have been established under political and administrative criteria rather than on the basis of geographic spread or density of population to serve.

Despite the fact that health facilities are allocated on an administrative basis, the people themselves nevertheless do not particularily heed administrative borders but rather go to the nearest place that fits their purposes and liking. We can notice this if we check the place of residence of outpatients coming to hospitals. Table 3 shows that the three amphoe hospitals at Bang Yai, Don Chedi, and Sam Chuk do not just draw patients from their own amphoe but rather a substantial proportion come from neighboring amphoes. This situation is even more pronounced with health stations and tambon bounderies. The record books of health stations show over 25% of the outpatients and family planning users come from outside of the tambon in which the health station is

located, and nine of the stations actually had more users coming from outside their tambon than within. Perhaps this point seems quite obvious to the reader, but it is mentioned here because health facility locations are not planned with the actual cross-political boundary movements of people in mind.

Table 3. Amphoe of residence of outpatients by amphoe hospital

Amphoe of residence of outpatient	Hospital			
	Don Chedi	Bang Yai (Bang Pla Ma)	Sam Chuk	Doembang Nangbuat
Muang	7.4	0.0	0.0	0.0
Don Chedi	59.3	0.0	0.0	0.0
Doembang Nangbuat	0.0	0.0	25.9	100.0
Ban Pla Ma	0.0	57.1	0.0	0.0
Si Prachan	25.9	0.0	1.9	0.0
Sam Chuk	7.4	0.0	68.5	0.0
Song Phi Nong	0.0	42.9	0.0	0.0
U-Thong	0.0	0.0	0.0	0.0
Dan Chang	0.0	0.0	0.0	0.0
Other changwats	0.0	0.0	3.7	0.0
	100.0	100.0	100.0	100.0
	n = 54	n = 21	n = 54	n = 20

Source: "Outpatient Survey"

The Health Facilities

Reflecting the national trend, the health system of Suphanburi is expanding at a rapid pace. Approximately 50% of the present facilities were built in the last seven years, and several more are in various stages of planning. The oldest facility reported was 41 years old. About 70% of the facilities are as they were originally designed, while the other 30%, mostly older places, had expanded to provide more equipment, beds, rooms, or buildings. Ninety per cent of the facilities are on the original site of construction.

In response to the question of why the present location was chosen, two main reasons (each about 40% of all the answers) were reported: that the land was donated and that the location was a market or town center. Others responses included that the health facility was placed on government land, put in a location easily assessible to the people, located so to promote local development, and placed at a reasonable distance from other health facilities As to whom the health workers reported as responsible for picking the location of the health facility the response with many was quite varied (see Table 4).

Table 4. Person responsible for the decision to choose the health facility location as reported by the health personnel

	Per Cent	Number
Governor	1.2	1
Amphoe Officer ("Nai Amphoe")	9.8	8
Tambon Chief ("Kamnan")	13.4	11
Village Headman ("Puyai Ban")	2.4	2
Member of Parliament	2.4	2
Village committee	9.8	8
Tambon or Santitary District ("Sukabiban") committee	12.2	10
Abbot or Monk	6.1	5
Villagers	4.9	4
Changwat Chief Medical Officer	2.4	2
Deputy Changwat Chief Medical Officer	1.2	1
Amphoe Health Officer	26.8	22
Tambon doctor	1.2	1
Other government officials	6.1	5
Do not know	-	(26)
	100.0	82

The amphoe health officer was among the most noted, being mentioned over 1/4 of the time. Other officials of importance were the tambon chief and the amphoe officer, with the village headman being mentioned only twice. Local committees were named 22% of the time. The fairly large number of health workers who reported that they did not know (n = 26)

were probably either very new on the job or at health stations which were rather old. The second case probably being the more frequent, our answers may be slightly biased toward more recently made decisions. From our experience it appears that probably the best combination of decision-making would be the cooperative effort of a local committee, who understands the needs of the local area, and the amphoe health officer (with the advice of the changwat health office), who can cooridinate the decision considering the network of health facilities planned and already in existance to assure a good spatial distribution throughout the changwat.

Table 5 shows the locations of the health stations in relation to the local transport routes. Access is very important for the health center for it will determine in part the potential number of people who can reach the health center.

Table 5. Locations of health stations in relation to transport routes

	Per Cent	Number of Places
On a good paved road	15.9	10
On a good paved road and near a waterway	4.8	3
On a good dirt road near a main paved road	3 2	2
On a poor dirt road, but near a main paved road	31.8	20
Near a good paved road	3.2	2
Near a good paved road and on a waterway	1.6	1
On a good dirt road	6.4	4
On a poor dirt road	7.9	5
On a good dirt road and a waterway	1.6	1
On a poor dirt road, near a waterway	4.8	3
On a poor dirt road and on a waterway	11.1	7
On a waterway only	6.4	4
Near a waterway only	1.6	1

Note: "near" as used above implies less than a half a kilometer away.

We can see that there is a variety of types of transport routes. However, if we combine some of the figures, we find that 58.9% of the health stations are located on or near a main paved road. This might enable higher

utilization of these stations, however, at the same time, the good roads might allow the local population to easily bypass the health station and go to a more favored place further away. Also of interest in Table 5 are five health stations located solely on or near the river and canal ("klong") system as well as ten others partly depended on the water system. Most of these stations are located in the flood plains areas of amphoes Bang Pla Ma and Song Phi Nong where transport is mainly by boat and motorcycle. Finally, twelve health workers reported difficulty of access for the local people during three to four months of the rainy season.

Lastly in connection with the description of the health facilities, we might briefly describe their equipment. As for official vehicles, one third of the facilities had none, another third and more had one motorcycle, and the remaining places reported having bicycles, more than one motorcycle, or possibly a jeep (in the case of amphoe hospitals). Very few places (4%) reported having better equipment than the average health facility of their type. However, 55% claimed to be lacking in standard equipment in some way. However, only a limited number of these health personnel could respond specifically, the vast majority saying "they did not know what equipment was lacking" or simply "all equipment". This type of response seems to indicate an inclination of many health personnel to stress the importance of equipment in general, while not even specifically knowing what they really need. This in some ways shows a western-oriented type of faith in and reliance on equipment and technology, rather than simple, cheaper, and more "people"-oriented treatment or preventative medicine. This observation is again reinforced in later data, however, this should not be interpreted that we are implying all facilities are adequately equipped, for this often is not the case.

The Health Personnel

As said before, we found the vast majority of health personnel we met alert, amicable, and interesting to talk to. On the average they were fairly young (31.6 years old) and 30% were still single. The married personnel averaged two children per family, while those who had completed or nearly completed their families (i.e. 35 years old or more) had three living children. In that most of the personnel are directly or indirectly

connected with the family planning program, these reasonably-sized families should be an asset. Also over 70% of the married couples had used family planning at some time.

Out of the 108 personnel we interviewed 86% were born in Suphanburi and the rest in nearby provinces of the Central Region. They had lived an average of 13.7 years in the amphoe they were stationed in. Both of these statistics reflect the ministry's success in recruiting local people for the rural health services. This "localness" ought to be an asset to the general program as the more local people usually have better rapport with the community. The average number of years the personnel had been with the government health system was 8.7 years (median = 5 years) while the time worked at the present health center was 5.8 years (median = 3.7).

To determine whether the length of government service affected performance, we arranged evaluative data on the number of monthly acceptors for the midwives and nurses by the number of years worked at the local health station (see Table 6).

Table 6. Family planning acceptors in one month (percentage distribution) by the number of years worked by midwife/nurse at health station

Acceptors	Years worked		
	1 - 2	3 - 5	6+
5 - 22	10	17	24
24 - 33	30	25	8
34 - 50	20	25	26
51 - 107	10	25	21
119 +	30	8	21
	100.0	100.0	100.0
	(n = 10)	(n = 12)	(n = 19)

Although we suspected there might be a relationship between more years of working experience and better family planning performance, Table 6 does not support this. Possibly the data shown here is complicated by too many other factors. While the categories "1-2 years" and "3-5 years" show a rather equal distribution among the categories of "number of

acceptors" and therefore no relationship, the category of "midwife/nurse"-working six years and more shows a slight grouping of extreme values. There seems to be more experienced personnel with lower family planning performances than we might expect Women who work for a longer time appear to settle into the pattern of a rather strong performance or weak performance Possibly after five years they have either worked up a good family planning clientele, or to the contrary, alienated the local women or neglected the government family planning program This pattern also holds true for the health personnel when evaluating the outpatient data. This idea, however, should be interpreted with caution for Table 6 is based on a small sample and is not statistically significant (for reasonable values of chi square) Also, many other factors we have not accounted for could be influencing these statistics

Health Personnel's Perception of Their Job

When asked about their job and what consummed the greatest amount of time, most gave responses similar to their government job description. It is hard to estimate how close these responses reflect the reality of their job situation The doctors and nurses overwhelmingly saw their responsibilities in patient care, the health workers mainly in patient care with an assortment of other duties, and the midwives saw their family planning involvement as most significant, with patient care and child delivery also important Home visits were frequently reported by both the miswife and male health workers

The health personnel were asked to cite the strong points and weak points of their health facility. These are shown in Tables 7 and 8 for the second class health centers and amphoe hospitals Information for the midwifery centers and changwat hospital were left out because of very small sample sizes. The health personnel's responses on the strong points of their service are almost identical to their job description previously reported above This tends to suggest those activities which the health personnel spend most of their time on are also the strong points of the health facility service. Considered in this light, this information is of doubtful importance for evaluation of the health system. All this aside, family planning and curing were cited as the main strong

points of service, while personnel at the second class health centers also mentioned santitation and maternal and child/family health.

Table 7. Health personnel's views of strong points of the service their facility

	Views of personnel at the:	
	Second class health center	Amphoe hospital
Maternal and child/family health	17	3
Family planning	54	10
Curing	50	13
Prevention of disease	20	1
First aid	5	-
Santitation	5	-
Referral	1	1
Total	152	28

Note: some personnel gave more than one response.

The health personnel's views on the main deficiencies in service had a much lower response rate than the good aspects of service. Reasons for this have been previously suggested in the methodology part of this report. However, of those answers given, 40% mentioned lack of equipment and 24% stated problems with medicine at the second class health centers. This again seems to suggest that lack of equipment is preventing the health personnel from doing his job better. We seriously doubt that if better equipment was supplied to the second class health center that utilization would increase much. The job of a primary health care worker should not depend heavily on capital or equipment but rather should be to provide treatment for common illnesses and immediate concerns and to be responsible for community and preventative health. Sophisticated equipment is not particularly needed for this task. An interesting example of treatment with minimum equipment in rural Thailand is the traveling injection doctors, many of whom are quite effective and have a large clientele.

Table 8. Health personnel's views of main deficiencies with the service of their facility

	Views of personnel of the	
	Second class health center	Amphoe hospital
Need better cooperation	3	2
Administrative problems	8	3
Training	0	0
Personnel	1	3
Equipment	30	4
Medicine	18	1
Treatment	4	1
Others	13	2
Total	75	16

Note some personnel gave more than one response.

If we examine the responses of the residents of Suphanburi (in Table 9) when they were asked what they wanted changed in the health facility nearest their home to make the service better and more convenient, only 10.7% answered they needed better equipment and buildings. This difference in response is interesting, for both the health personnel and people were interviewed on this subject with open-ended questions, that is, leaving the response entirely up to the person with no suggestive guidelines from the interviewer The people seem to have provided a more thoughtful variety of responses than the health worker. The people were especially concerned about obtaining more personnel or at least those who are more skilled (25.1%), receiving better and more respectful service (18.0%), having better accessibity to the health center (18.1%), being able to get better and more medicine (8 1%) and being charged less (7.4%). Over 12 per cent of the respondents said the nearest place was already good, however, a higher proportion of these answers came from people who could not identify what the designation of the facility was, and therefore were probably the least familiar with the health system. This leads us to suspect many of the "good" answers were given by respondents with little knowledge of government facilities. All tnese general response categories of the people are noted in great

Table 9. People's suggestions on desired changes in the government health facility nearest their home to make the service better and more convenient (in percentage distribution)

Suggestion	All facilities (total)	Changwat hospital	Amphoe hospital	Health station	Do not know type of facility
Want more personnel	10.1	4.8	15.0	11.5	12.2
Want more skilled personnel	15.0	3.2	11.5	16.0	17.4
Want better service	9.4	16.1	6.5	9.2	1.5
Want more respectful service	8.6	35.5	9.0	4.7	4.2
Want cheaper medicine and treatment	7.4	3.2	4.0	5.6	11.3
Want better medicine and more adequate supply	8.1	0.0	4.5	6.2	9.9
Need better building and equipment	10.7	8.1	11.0	10.5	2.4
Need better location of health facility and better transportation (accessibility)	18.1	14.5	22.0	22.8	15.5
Already good	12.7	14.5	16.5	13.6	18.8
Total	100.0	100.0	100.0	100.0	100.0
	n = 1951	n = 62	n = 200	n = 917	n = 213

Note: This table excludes "do not know" answers and includes second answers for the "all facilities" column.

detail in the survey codebook and would in many ways make a thought-provoking checklist for a health facility to test how close it is to the expectations of the people. This is especially true because the health personnel's feelings on what their health facility needs for improvement is very different from the opinions of the people he is supposed to serve.

Referral in the Health System

If the health system is indeed a (hierarchical) health system, then referral should be an important aspect of the health personnel's job. If each level of the provincial hierarchical health system is to have a special function, then to make the system work effectively, each level must perform its own duties adequately while referring people to other levels when necessary. The Ministry of Public Health specifically recognizes the importance of referral A hierarchical health care system in the prodominately rural Thai countryside intuitively makes good sense primary health workers for immediate and everyday concerns (the health station), intermediate skilled medical staff and facilities (the amphoe hospital) and finally the extensive equipment and staff of skilled doctors and specialists for serious and special needs (the changwat hospital). However, does this model system represent reality in Suphanburi and how much do the health personnel use referral to develop this system?

When questioned in what situations they usually referred, almost all the health personnel reported that they referred when the situation was beyond their ability to handle. The specific responses can be seen in Table 10.

Table 10. Cases in which health personnel usually refer people elsewhere

	Per cent	Number of responses
Male and female sterilization	2.8	3
Serious condition, sickness, or accident	9.3	10
When lacking medicine, expertice or equipment	54.2	58
Complications	15.0	17
When cannot diagnose	10.3	11
If patient wants to go elsewhere	8.9	1
Do not know or answer	7.5	8
Total	100.0	108

The places the health staff would refer the people for both minor and serious cases are presented in Table 11. Almost all the health personnel reported they would refer patients through the government system. For all options, if we disregard the "no answers", the amphoe or changwat hospitals are over 95% of the destinations of referral. In minor cases, as opposed to serious cases, the amphoe hospital plays a little more importance. However, of more interest is the high number of responses (62.6%) for health personnel referring minor cases directly to the changwat hospital. This shows two points: first, there is an over-reliance on the changwat hospital, and second, the health personnel either misunderstands the intermediate role of the amphoe hospital in receiving minor referrals or has little faith in the nearest amphoe hospital (though in number of cases the changwat hospital is closer than the nearest amphoe hospital).

Table 11. Where health personnel refer patients they cannot cure (percentage distribution, n = 108)

Place	For minor illness		For serious cases	
	First option	Second option	First option	Second option
Bangkok hospital	2.8	0.0	0.0	1.9
Changwat hospital	62.6	9.3	73.8	8.4
Amphoe hospital	28.0	15.0	20.6	3.7
Other	1.9	1.9	0.9	0.9
No answer	4.7	73.8	4.7	85.0

However, when we questioned the outpatients using the amphoe and changwat hospitals, a majority reported that nobody suggested they go to hospital (see Table 12). For those who were influenced by suggestions family and relatives were of greatest importance, followed by friends. Only a little more than 10% mentioned any referral by an official doctor or health official.

Table 12. Person who suggested the "outpatient" come to the changwat or amphoe hospital (in percentage distribution)

	Place of service	
	Changwat hospital (n = 122)	Amphoe hospital (n = 149)
Nobody	66.4	46.3
Family, relative	12.3	24.2
Friends	9.8	15.4
Doctor	5.7	4.0
Tambon doctor	0.0	0.7
Health Worker or Midwife	5.7	9.4

We are not intimating that most people coming to the hospitals ought to be referred. Many people can be expected to come to the hospital under their own volition. However, the very small role the health personnel play in the movement of patients to the amphoe and provincial hospitals shows they have a small contribution to and little control over the process. Stated another way, it seems the provincial health system is acting less as a hierarchy and more as anarchy. It is rather a laissez-faire phenomenon. The health stations, in particular, seem to be playing a very inactive role.

Finally, one more point in connection with referral might be mentioned. The heavy use of the provincial hospital by patients with minor problems is definitely a misallocation of physician and facility time. People who come from afar for minor illnesses or problems which require further care might be "referred backward" (after treatment) to their local health station or nearby amphoe hospital. At present this sort of solution to make the system perform as a hierarchy is probably rather idealistic, for the people will still decide themselves where to

go. However, we believe "backward referral" ought to be encouraged with the hope that in the future the health system with improvement can function in a more orderly way.

Drugs and the Health Station

As a final topic in this chapter on the health system, we would like to address ourselves to a problem we found of interest and therefore tried to examine in detail while interviewing: the dispensing of drugs at health stations.

First, the utilization statistics of the next chapter show that drugstores are probably the largest provider of health service in the province. For their most recent minor health problem 57.9% of the households went to the drugstore. A further 4.5% went for their most recent serious illness while 29.4% of all family planning pill users went there also. The drugstores are obviously providing a much needed service.

In contrast to the drugstores the second class health centers appear to lack services and reasons to attract the people: While the government has defined the primary health worker's role in a very limited way allowing him to treat only the most minor sicknesses and accidents and dispense weak medicine in his official role, all the local practitioners and druggists have access to strong medicine and can treat medical problems of all levels of seriousness. Therefore, the government health worker (in his official role) is probably the most limited health provider in the whole rural countryside. It seems that a possible solution to this situation is to allow the primary health center to dispense strong medicine and expand more into curing, with further training as needed. This could be facilitated by hiring new trained paramedics, or probably more efficiently by briefly re-training the present primary health personnel.

In our surveys we set out to determine the opinions of the health personnel and the local people towards the issue of more powerful drugs at the health centers. Slightly over half of the health personnel responded that a larger supply and variety of drugs, including more "dangerous drugs" would definitely increase the usage of their health facility. Another 42% said it would increase the usage some, while the remaining 5% who responded said it would not make any difference. We

then probed more specifically and asked the health personnel if they personally thought that if the Ministry of Public Health had a program for the second class health centers to sell "strong drugs" at competative market prices to the local people, would it be beneficial. The results are shown in Table 13 cross-tabulated by the position of the health personnel. Sixty per cent reported such a program would be beneficial or very beneficial, 13% answered somewhat beneficial and 22% responded nagatively. It is interesting to note that those most favorable to the proposal were the lower ranking personnel, precisely those who work in the primary health stations. We might speculate that the three M.D.'s interviewed with their negative answers possibly reflected their counterparts throughout the country. The medical profession in the past has been adverse to sharing their role as a government healer with the primary health care workers.

Table 13. Health personnel's response to. "Would a Ministry of Public Health program to have second class health centers sell 'dangerous drugs' at market prices to the local people be beneficial?" by job position

	Total percentage	Doctor (n=3)	Nurse (n=6)	Amphoe health officer (n=5)	Male health worker (n=42)	Mid-wife (n=42)	Nurse aides/ others (n=8)
Not beneficial	22.2	100.0	0.0	40.0	23.8	21.4	0.0
Somewhat beneficial	13.0	0.0	50.0	0.0	11.0	14.3	0.0
Beneficial	13.9	0.0	16.7	0.0	7.1	23.8	0.0
Very beneficial	46.3	0.0	33.3	60.0	54.8	40.5	62.5
Do not know	4.6	0.0	0.0	0.0	2.4	0.0	37.5

Chi square significant at .001

In explaining their answers, those who were positive toward the proposal said it would more convenient, safer (than going to a nongovernment practitioner) and furthermore the government worker could aid the people by explaining and advising closely about the drugs. Those who were negative almost all doubted the experience and knowledge of the health workers was sufficient to safely administer "strong drugs". These doubts are to an extent justified, however, any deficiency could be alleviated by further training the primary health worker in administering drugs.

Finally, the health personnel were asked that if the ministry allowed the primary health workers to sell "strong drugs" would they voluntarily sell them. Seventy-one per cent answered yes, 6.5% yes with reservations, 5.5% did not know, and 16.7% said they would not All in all response seemed favorable, especially on the part of the primary health care workers.

Besides discussing this proposal with the health personnel, we asked the local people if the closest health facility sold "strong drugs" similar to an amphoe or changwat drugstore, would it be useful to them? Sixty-one per cent replied "most useful" and another 20% answered "somewhat useful" about 11% could not answer while the remaining 7% said it would not be useful to them. However, when the negative respondents were questioned further less than half of them could give a reason why For those who responded why, most all stated they were afraid of the dangerous effects of the medicine which is less a comment about the health worker administering the medicine but rather more about properties of the medicine itself or the ignorance among the populace

When the people who answered positively were asked why it would be useful to have strong drugs sold at the nearby health facility, they expressed confidence in the primary health worker, especially in comparison with drugstores. They seemed especially interested in having strong medicine close to their homes. The specific answers for those people who would be most closely affected by the proposal, that is, with a second class health center nearest their home are shown in Table 14.

Table 14. Reasons why selling "strong drugs" at the health center would be useful, for those people with a second class health center nearest their home

Reason	Percent	Number
Distance is less	28.0	287
Medicine more effective (than what the present health station has)	39.7	407
Government health worker is more reliable	9.7	100
Cost is less	9.4	96
Diagnosis would be better	3.6	37
No reason	2.2	23
No answer	1.9	19
Other	5.6	57
Total	100.0	1026

These reasons for the above questions on "strong drugs" for both the local people and the health workers were again obtained through open-ended questions which adds to their credibility. It seems that 80% to 90% of both groups are favorable towards a proposal to sell strong drugs at the second class health center. Therefore, it would seem prudent for the ministry to look closely into the feasibility of these ideas.

CHAPTER 3

THE UTILIZATION OF HEALTH AND FAMILY PLANNING PROVIDERS

With an understanding of the health personnel and the government health facility hierarchy, we can now suggest various reasons for differential use of health providers, the special emphasis of this project. This chapter will start by analyzing actual government health facility use statistics to point out the degree of utilization of each specific type of facility. We will then describe the extent of service areas including the distance range they cover. Thirdly, we will report where the people actually go for health service, and next why they do go there. Lastly, and comprising the whole of Chapter 4, we look at the factors behind people "ever using" various types of health providers in an attempt to point out reasons for use emanating from the health seeker, the health provider, and intervening factors. For these analyses all four sets of data from the fieldwork in Suphanburi are used.

Utilization Statistics: The Government Record Books

Utilization data for the government health system in Suphanburi were collected throughout the fieldwork period from record books of the health personnel for use in analysis, especially in dealing with the effects of distance on usage. We were interested in finding out relationships between different levels of the health hierarchy in terms of relative usage and the size of the service areas for different types of facilities. The data was not collected for specific evaluation of the individual personnel who work in Suphanburi's health service and we hope they will not be used in the way.

Statistics for inpatients, outpatients and family planning clients are presented in Table 15. Facilities are classified A to F

Table 15. Outpatients and family planning acceptors/working day/health facility by type of facility in Suphanburi

Facility	Location	Personnel	Inpatients (for 1 year:1976)	Outpatients (for 1 year:1976)	Family planning (one month)**	Outpatients/ working day[a]	Family planning acceptors/ working day[a]
A-Changwat hospital	Suphanburi	138	9,656	43,667	-	173.3	-
B-Amphoe hospital	Bang Yai	10	117	4,256	50	16.9	2.4
	Sam Chuk	14	343	7,260	862	28.9	41.0
	Don Chedi	13	738	13,277	196	52.7	9.3
	Song Phi Nong	4	N.A.	5,054*	-	20.1	-
	Sub-total		1,198	29,847	1,108	29.6	17.6
C-Medical and health center	Doembang Nangbuat	7	N.A.	-	-	-	-
D-Amphoe second class health centers (where no amphoe hospital exists)	U-Thong	3	N.A.	2,188*	81	8.7	3.7
	Si Prachan	7	N.A.	1,484*	240	5.9	11.4
	King Dan Chang	2	N.A.	4,526*	206	18.0	9.8
	Sub-total		N.A.	8,198	527	10.8	8.4
E-Second class health centers	(all others)	119 (n=57)	N.A.	38,776* (n=49)	2,581 (n=52)	3.1	2.4
F-Midwifery centers		2 (n=2)	N.A.	1,504*	108	3.0	2.6
	Totals		10,854	121,992	4,324		

N.A. Not applicable
- No data
* Estimated for one year from the half-year totals from August 1, 1976 to January 31, 1977
** For the month of January, 1977
a Calculated "per health facility" for categories E and F

according to government designations as explained in Chapter Two, with the addition of a special category for the three second class health centers in the amphoe centers which have been designated for an amphoe hospital in the future. These three places stand out from the other second class health centers because of their location and that they are the home base of the amphoe health officer. Considered in our hierarchical framework, A (the changwat hospital) is on the top level, B (amphoe hospitals) and C (the medical and health center) are on the intermediate level, E (second class health centers) and F (midwifery centers) occupy the primary level, while D (special amphoe center health stations) are considered on the primary level but in fact function in some ways on the intermediate level.

Viewing the total picture, the changwat hospital (A) clearly dominates the health system of Suphanburi. It receives all but 11% of the inpatients: it is clearly evident that the amphoe hospitals are not yet functioning in an intermediate role. Although we should expect the changwat hospital to assume a dominant role, the supporting roles of amphoe hospitals only seem to be well taken by Don Chedi and Sam Chuk. However, this supporting role hopefully should increase with the opening of the new large inpatient facilities at Song Phi Nong as well as future development of the other amphoe hospitals.

The changwat hospital also clearly dominates outpatient care in the province. It treats over 35% of the outpatients, more than the intermediate level service facilities (B and C combined) or the primary care centers outside the amphoe centers (E and F combined). Our statistics for E and F are collected for 51 locations (out of a possible 59) and they make a rather startling statement when we realize one location (A) is serving more outpatients than the combined totals of 51 different places. Outpatients are considered to be and ought to be a main concern of the intermediate and primary levels of the health system, however, the role has obviously been taken over by the changwat hospital by defult.

We will not make a system-wide comparison of family planning because we did not obtain data from the changwat hospital. However, our statistics and others seem to suggest the intermediate and primary levels of health service play a more substantial and meaningful role in providing this service.

Finally, in Table 15 we have constructed two simple indices to show the average number of outpatients or family planning users received at each health center on a working day Using the arbitrary figure of 21 working days per month or 252 per year, we see the changwat hospital receiving 173 3 outpatients/day on the average, amphoe hospitals 29.6/day, special second class centers 10 8/day and other second class health centers 3 1/day If we consider only the categories E and F, then on the average working day 59 of 68 facilities in the changwat receive 3.1 outpatients As these 59 places average 2 personnel, that means there are almost as many personnel as outpatients at the health station on a working day

This obviously points out great underutilization on the primary health care level. However, we realize that the primary health care workers whole job is not outpatient care. They also receive 2.4 family planners/day (50/month) on the average as well as have home visits, sanitation work, special projects, and other jobs Nevertheless when surveyed, 44% of the health workers reported patient care (including maternal and child/family health) as one of their two main activities. As another 35% reported family planning, it seems a vast majority see themselves mainly involved in these two activities which brings 5 5 people to the center on the average working day Even if these figures might underestimate the amount of patient care and family planning the health station is involved in, the performance of the primary health care system is still woefully inadequate and absurdly unproductive from the standpoint of costs and benefits.

The total government health system in Changwat Suphanburi took care of about 122,000 outpatients in 1976 (an average of 7 visits/100 persons) and, although indicating low coverage, this statistic looks much better than the specific breakdowns of outpatients by type of facility and level of service. Clearly there is overutilization at the top level and extreme underutilization at the primary level and few effective intermediate level service facilities. This is a problem that hopefully will be improved. It is certainly one which demands immediate attention.

Distance and Utilization

Despite the fact that intermediate and primary health changwat health facilities are underutilized, it is important to look at the extent of their actual service areas to see how much drawing power an average facility has. This factor is important because it just can help us to determine how many people live outside an actual service area, how much needless overlapping different service areas have with each other, and how far apart from its neighboring health facility a new health facility should be built.

To estimate the extent of different-level health service areas, we will use a modified definition of the geographic concept of threshold distance. In simple terms "threshold distance" denotes a certain maximum distance from a place after which a person will not go there. The concept has been widely used in describing commercial businesses such as department stores, movie theatres or barber shops. It should be a very useful concept for health planning with the slight adaptation to cover only within that distance 90% or 80% of public health clients come from. By setting a limit before the actual threshold point we can eliminate extreme cases and see the distance within which the vast number of clients will come.

Table 16 shows the distance from which different percentages of the total outpatients come from. The 50% figures can be considered as median values, while the other three figures can be thought of as threshold distances encompassing 80%, 90% and 95% of the total outpatients respectively. Forty percent of the total outpatients for health stations in Suphanburi come from the immediate village in which the health station is located and the median outpatient comes from a distance a little less than a kilometer. The median outpatient for the amphoe and changwat hospitals comes from within five and ten kilometers respectively. For a threshold limit comprising 80% of the outpatients, the distance for health stations, amphoe hospitals, and the changwat hospital are respectively 4.2, 10, and 30 kilometers. For a threshold defined at 90% of all outpatients, the threshold distances are 7.1, 19 and 45 kilometers.

Table 16. Threshold distance in kilometers for health stations, amphoe hospitals and changwat hospital, Suphanburi

	Distance for:			
	Health stations	Amphoe hospitals	Changwat hospitals	
50% of the outpatients come from within	0.9	5	10	Kilometers
80% of the outpatients come from within	4.2(4)	10	30	Kilometers
90% of the outpatients come from within	7.1(5)	19	45	Kilometers
95% of the outpatients come from within	10.0(7)	22	60	Kilometers

Note: Figures in parentheses are the distances if the extreme case of Dan Chang is omitted from the calculations.

Source "Outpatient Survey" for amphoe hospitals (n = 131 outpatients) and the changwat hospital (n = 103) and "Service Statistics" for health stations (n = 20,873)

If we consider the threshold distances encompassing 80% or 90% of our outpatients, that is, the distance within which four out of five or nine out of ten of our outpatients are coming, as the extent of the realistic range, then these threshold distances show the majority of the health facilities presently in Suphanburi to be within the range of or overlapping each other. As mentioned before, health stations on the average are about 6.4 kilometers from other health facilities, amphoe hospitals approximately 20 kilometers apart while the changwat hospital is meant to serve the whole changwat or over 160 kilometers to the most distant point.

However, we should be careful in comparing threshold distances with the actual distances between health facilities for the two are not independent of each other. In fact, they are closely related, for maximum threshold distance is determined by the distance between similar-level facilities or what we might call "facility density". Also the statistics in Table 16 have biases which make the threshold distance higher. For example, the second class health center at King Amphoe Dan Chang pulls many clients from a long distance because of its location in a large market/administrative center and the absense of other active health facilities nearby. This artificially high drawing power due to the incompleteness of the health system in this area, has a disproportionate effect in raising the values of the threshold distances and therefore the

statistics with Dan Chang removed from the sample are included in parentheses. We can also witness this phenomenon on a smaller scale, in that the extreme distances people travel for, say 10-20 per cent of the outpatients, characterize situations in which the importance of the problem eliminates distance as a factor.

The service area for the changwat hospital is theoretically supposed to cover the whole changwat, but in reality is supplemented by large hospitals in neighboring changwats which are nearer to parts of the population of Suphanburi. An actual approximation of Suphanburi Hospital's service area for outpatients can be seen in Table 17.

Table 17. Distance traveled and amphoe of residence for outpatients at Suphanburi Hospital

Distance travelled			Amphoe of residence	
Kilometers	Percentage	Comulative Percentage		Percentage
0-1	8.7	8.7	Muang	49.2
2-3	16.5	25.2	Bang Pla Ma	16.4
4-5	6.8	32.0	Sam Chuk	9.8
6-10	19.4	51.5	Si Prachan	8.2
11-15	11.7	63.1	U Thong	7.4
17-20	10.7	73.8	Doembang Nangbuat	3.3
25-30	8.7	82.6	Song Phi Nong	1.6
31-40	7.8	90.3	Dan Chang	1.6
45-50	3.9	94.2	Don Chedi	0.8
60+	6.8	100.0	Other Changwats	2.5
	100.0			100.0
	(n = 103)			(n = 122)

Note: Nineteen respondents answered "do not know" for distance travelled

The service area is rather local despite the official designation of the hospital. Almost 75% of the outpatients come from 20 kilometers or less and 1/2 come from the amphoe muang. The main part of these patients do not come from the very immediate area: only 25.2% come from less than four kilometers, the general vicinity of the "Tua Changwat" (provincial

capital), while 48.6% come from between 4 to 20 kilometers. For these patients the changwat hospital is actually acting as a local hospital, rather like the service area of a good amphoe hospital. The other patients come from as far away as the two which made the over 100+ kilometer trip (4-5 hours) from Dan Chang However, it is hard to estimate the exact nubers of people coming from longer distances because 19 respondents did not answer One final interesting point in relation to the changwat hospital's service area can be discerned if we look at the outpatient's amphoe of residence Those contributing very few outpatients to the hospital include King Amphoe Dan Chang and Doembang Nangbuat (both far away), Song Phi Nong (far away from Suphanburi and quite near to Kamphaengsaen Air Force Base Hospital) and Don Chedi. Although Don Chedi is connected to the changwat hospital by good highway and the "Tua Amphoe" (district seat) is only 31 kilometers away, less than one per cent (one person) of our sample came from that amphoe to the changwat hospital. This seems to confirm the strong performance of the amphoe hospital at Don Chedi which is attracting patients who may have otherwise gone to the changwat hospital.

Finally, we would like to compare the threshold distances for outpatients and family planning acceptors for health stations. In family planning health stations are primarily involved in pill distribution and in all take care of 75% of the pills in the government health system in Suphanburi. The percentage distributions and commulative percentages for both family planning acceptors and outpatients are presented in Table 18. Although the distances from which clients come for both family planning and health service are similar and highly correlated, there are yet some interesting differences between the two. Firstly, only 32.6% of the family planning users come from the local village in which the health station is located compared with 40.6% of the outpatients. Secondly, a larger proportion of the family planning users come from distances greater than one kilometer to five kilometers, and thirdly, a larger percentage of the outpatients come from farther distances, especially eight or more kilometers. This suggests that family planning has a shorter drawing range or threshold distance, but however more effectively pulls clients from intermediate short distances than do the outpatient services. This might imply that a higher value is placed on family planning services of the health station by people of the nearby surrounding area, that is, it is worth the effort

to travel the one to five kilometers for family planning pills. However, the use of outpatient services outside of the local health station village itself is more related to the severity of the health need: the distance traveled becomes less important as the urgency of the need determines whether the patient will make the trip.

Table 18. Distance traveled to health stations for family planning and outpatient care

Distance	Family planning users		Outpatients	
	Percentage	Cummulative percentage	Percentage	Cummulative percentage
0.0	32.6	32.6	40.6	40.6
0.1-1.0	13.5	46.1	13.7	54.3
1.3-2.0	13.2	59.3	10.4	64.7
2.5-3.0	13.9	73.2	7.7	72.4
3.5-4.0	10.9	84.1	7.4	79.8
4.5-5.0	6.0	90.1	5.1	84.9
5.5-7.0	4.0	94.1	5.0	89.9
8-10	2.0	96.1	5.7	95.6
11-15	2.7	98.8	3.0	98.6
16-20	0.4	99.2	0.4	99.0
25-30	0.8	100.0	0.7	99.7
38	-	-	0.3	100.0
	100.0		100.0	
	(n = 2,381)		(n = 20,873)	

Source: "Health Statistics" from health station record books, 1976-1977.

As a final note to our discussion on hierarchical utilization and threshold distances, we should like to caution the reader that although many of the points are applicable throughout, the exact figures cannot be operationally applied outside Suphanburi. While we suspect the pattern of overutilized changwat hospitals and underutilized intermediate and primary government health facilities exists to various degrees throughout the country, the calculated threshold distances for each type of facility cannot be extended nationally. The degree to which the Suphanburi distance

data can be used comparatively depends how similar the other changwats are in respect to: 1) distribution and number of health facilities, 2) geographical characteristics and transportation, 3) the age and service quality of the health facilites, 4) the population density and distribution, and 5) the availability of alternative health service providers. Anyone interested in determining local and national average threshold distances and optimal spacing for building new health facilities would have to take these various factors into account.

Patterns of Utilization of Health Providers

To determine the relationship between upcountry people and the government public health system, we cannot rely solely on government health statistics. A different and more complete perspective of the countryside health search patterns can be obtained with a random sample survey of the population. With such a sample we can learn approximately who goes where and for what purpose. Also we will specifically be able to find out what portions of the people use the government or private sector for minor and major health needs, as well as family planning. The 2,110 respondents were asked both general and specific questions on hypothetical and real choices in the health search process of their household and village.

To obtain a general picture of the variety of health providers we first asked: Do you or your family ever use any of the following medical providers? The list included 16 options and though probably not exhaustive, it fairly thoroughly covered the health providers of the area. Because of the multiplicity of names that fall under the category of health provider or "maw", some responses were possibly duplications and also some providers were probably missed. However, allowing for overlap in the categories and for people's undertainty over some of the official government classifications of health facilities, the data in Table 19 gives us a reasonable idea about which institutions and providers are in fact used by the people.

Table 19. Percentage response of households which "ever used" types of health providers

Provider	Number of households "ever used"	Percentage of total sample
Drugstore	2,055	97.4
Granny midwife	1,309	65.8
Government hospital	1,292	61.3
Medical Doctor	1,238	58.7
Government public health worker	1,186	56.2
Second class health center	1,119	53.0
Private clinic	1,070	50.7
Traditional doctor	845	40.0
Tambon doctor	834	39.5
Injection doctor	785	37.2
Amphoe hospital	422	20.0
Private hospital	289	13.7
Medical and health center	233	11.0
Spirit doctor ("maw pi")	153	7.3
Midwifery center	153	7.3
Mobile clinic	135	6.4
	(n = 2,110)	

The first and most obvious conclusion from Table 19 is that the drugstore is the only universally used health provider. Over 97% of the households had used drugstores thus showing not only their popularity but also their availability to the people. The next highest "ever used" rates are around 60% relatively making the figure for drugstores even more remarkable.

Second to the drugstore in percentage of "ever-used" is the granny midwife ("maw tam yae") who is still used widely throughout the rural countryside. Even though her role is mostly restricted to childbirth, 65.8% reported ever using her services. Allowing for this and also the childless and urban households in our sample (about 12%), this figure is impressive. The granny midwife's service is definately widespread and widely used, although in some places giving way to the government midwife or hospital delivery services.

Table 20. Number of nearby alternative medical providers, distance to nearest one and whether or not they are considered competition according to the health personnel

	Drugstore (or store selling drugs)	Private clinic of government official	Community Based Family Planning Volunteer (Mechai)	Government "Tambon Doctor"	Traditional doctor	Injection doctor	Granny Midwife	Private Hospital
	n = 102	n = 40	n = 28	n = 88	n = 76	n = 94	n = 78	n = 20
Number nearby	6.0	2.8	3.7	1.1	2.9	6.0	2.9	1.0
Distance to nearest (in km.)	0.6	1.2	1.3	2.2	1.1	1.0	1.4	9.6
Competition (percentage breakdown)								
Much	10.2	1.9	1.9	3.7	0.9	17.6	3.4	6.5
Some	16.6	9.3	7.4	13.9	7.4	20.4	9.3	0.0
None	65.7	26.0	18.5	63.0	61.1	48.1	59.3	10.2
No answer	6.5	63.0	72.2	19.4	29.6	13.9	27.8	83.3

Note: The "n" at the top of the column applies to the first two rows, while for the category "competition" n = 108. The percentages for competition may not equal 100 due to rounding.

Next in popularity of "ever used" sources are the government hospital and Medical Doctor, both around 60%. These two categories fairly closely represent the same phenomenon, as do the next two, the government public health worker (and midwife) and the second class center. Fifty percent of the people have ever gone to private clinics, 40% have visited the traditional doctor and tambon doctor (who sometimes can be the same person), while 37% have ever used the western medicine oriented (but non-degree holding) injection doctor. Other providers have been used by 20% of the households or less and can be found toward the bottom of the list. Several of the above statistics on use with be discussed in detail later in this chapter when we look at reasons for use.

The government health personnel's view of the non-Ministry of Public Health providers around their tambon is seen in Table 20. Although several of these other providers are popular (as seen in Table 19), prevalent, and nearby they were not considered any competition to the local health center by the health worker except in a very few cases. This lack of concern over the other providers seems to indicate that the local government health worker is willing to accept their presence without animosity and that they could work in the same locality without conflict, at least not initiated by the government health personnel.

After questioning the people about whether the households had ever used certain providers, we asked the rather general question of "Where do most people in this area prefer to go when they are sick?" Although this question is not as good as the more specific ones that followed, it did give us a breakdown of where people thought everyone went. Sixty per cent reported use of government facilities, overestimating (see Table 22) the use of amphoe hospitals, health stations and the tambon doctor in particular. Seriously underestimated was the use of drugstores. It is possible that the rural people did not conceive of the drugstore in the same light as other providers and tended to respond to this question answering a provider known for treatment instead of medicine.

Table 21. Response to where most people in this area prefer to go when they are sick

	Percentage	Number of responses
Government hospital in Bangkok	0.0	1
Changwat hospital	17.7	365
Ampheo hospital	14.2	293
Health station	18.8	389
Tambon doctor	9.7	200
Other "government"	0.1	2
Sub-total	60.5	
Private M.D.	3.8	79
Private nurse	0.6	13
Private government midwife/health worker	0.2	4
Private hospital	3.9	114
Private clinic	5.5	54
Sub-total	14.0	
Practitioner "maw"	2.6	54
Injection doctor	9.6	199
Traditional doctor	1.2	25
Buddhist monk doctor	0.2	4
Sub-total	13.6	
Drugstore	11.4	235
Do nothing/take care of self	0.1	3
Others	0.1	3
TOTAL	100.0	n = 2067

Of the most interesting and useful information obtained from the survey was the data on the households' actual behavior in regards to minor and major health problems and family planning. We decided to ask the people where the person most recently in medical need in the household actually went for service. The questions were asked for three distinct types of health needs because people react differently depending upon the urgency of the need and the value of the service. We felt these three different situations best summarized the most important types of health

search behavior in upcountry Thailand today.

For comparative purposes Table 22 lists 24 different categories of health providers in five groupings. The first group of providers is the government facilities including those outside of the Ministry of Public Health. The second group encompasses all private service providers with formal western oriented medical education, and although there service is private the vast majority are actually most likely government health personnel in their private roles.

The third group is the indigenous medical practitioners. These include the injection doctor who, working out of a shop or making home visits, uses western medicines and is either self-taught or previously trained, often as a military medic. They are often quite effective doctors and perform a very needed service in working in the very remote areas where other providers seldom exist. While surveying in the mountainous area of King Amphoe Dan Chang, we came across an injection doctor making a housecall, his black bag open, preparing to give a shot to a young boy gravely ill with malaria. At that time we were over two hours away across a hardly passable mountain road from the nearest government health station and another two hours from a government M.D. To experience the anxious quiet of the people gathered around intently watching the injection doctor was indeed a revealing moment.

A second type of practitioner is the traditional doctor who, unlike the injection doctor, relies on tradition herbal medicines and cures. "Traditional doctors" actually encompass a great number of different types of practitioners such as Buddhist monk doctors and spirit doctors. A third type of practitioner is that which the people simply called "maw" ("doctor"), and is not connected with the government health system. In most likihood this practitioner would generally fall into one of the two above categories if the respondents had further discribed him. As a final note to these descriptions it ought to emphasized that the practitioners are not "quacks" in the Western sense but are often well-read, experienced and successful healers.

The fourth group of health providers is the drugstores, including also the small shops which sell drugs. Lastly, there is a category for "others", including responses such as self-treatment or deciding not to go for treatment.

Table 22. Percentage distibution of health provider gone to for most recent minor illness, family planning, and most recent serious medical problem in the household

Provider	Minor illness	Family planning	Serious medical problem
Government hospital in Bangkok	0.9	5.3	16.7
Changwat hospital	3.3	17.1	32.8
Amphoe hospital	3.8	12.0	7.7
Health station	9.3	27.6	4.5
Tambon doctor	3.9	0.9	2.7
Mobile clinic	0.1	0.2	1.2
Other "government"	0.2	1.5	-
"Government" sub-total	21.5	64.6	65.6
Private Medical Doctor	4.2	9.7	7.5
Private nurse	0.3	-	0.4
Private (government)midwife	0.2	-	0.2
Private hospital in Bangkok	-	0.1	1.7
Private hospital, not in Bangkok	1.9	0.5	5.6
Private clinics (other)	3.7	3.5	3.9
"Private" sub-total	10.3	13.8	19.3
Practitioner "maw"	1.6	1.2	2.3
Injection doctor	5.2	1.5	3.7
Traditional doctor ("maw boran")	1.2	-	1.9
"Traditional" sub-total	8.1	2.8	7.9
Drugstore (1st or 2nd class	57.9	16.0	4.5
Small shop which sells drugs	0.1	1.1	-
"Commercial" sub-total	58.0	17.1	4.5
Do nothing	1.7	N.A.	0.7
Take care of yourself	1.1	-	0.4
"Hospital" (what type not mentioned)	0.2	0.1	1.6
Mechai (CBFP) volunteer	N.A.	0.1	N.A.
Others	0.1	1.3	-
"Other" sub-total	3.1	1.5	2.7
Grand total	100.0	100.0	100.0
	n = 1,778	n = 823	n = 1,044

N.A. = Not applicable

People's actual use of health providers varies greatly according to health need. For minor illnesses and problems, a majority (58.0%) of the households went to the drugstore. The government health facilities accounted for only 21.5%. If we subtract the tambon doctor who is under the Ministry of the Interior and others unrelated to the changwat system under Ministry of Public Health, the figure is reduced to 16.4% usage. Private clinics and hospitals took care of 10.3% and practitioners another 8.1% of minor illness cases. Almost three per cent treated themselves or did nothing. Obviously the large government primary health care sytem with 62 health stations is not contributing much (9.3%) to the treatment of minor illnesses. This role is obviously mainly in the hands of the druggist.

In the case of serious injury or illness, the government takes a more dominant role with 65.6% of the cases. However, the Ministry of Public Health system in the changwat only handles 45% of the serious cases: 16.7% of the people prefered to take the two to three or more hour trip to a government hospital in Bangkok for treatment. Obviously the health services of Bangkok's large hospitals produce a substantial fourth and final level in the national health system hierarchy for Suphanburi residents.

The private clinics and hospitals took care of nearly one out of five serious cases (19.3%). Of these 1.7% were private hospitals in Bangkok. Practitioners treated 7.9% of the cases, interestingly enough about almost the same percentage as for minor illnesses. This figure goes over 10% if we add in the cases handled by the tambon doctors, most of whom could be classified as practitioners. This seems to show that a small, though yet noticeable, part of the population puts their trust in this traditional part of the private health sector which has been ignored for the most part by the Western-oriented medical elite in Thailand. Finally, drugstores also are involved in the treatment of serious cases (4.5%). This figure, though not substantial, is equal to the number of number of serious cases going to the government health stations.

Patterns of Utilization of Family Planning Providers

In the provision of family planning, the government suppliers were dominant, although not playing as important a role as was previously

thought to be.[2] The rather successful National Family Planning Program is widespread and has received a great deal of publicity as well as government and international support in its efforts to make contraception available to all in need. However, a sizable portion of upcountry family planning is coming from the private sector. Our random sample of the population shows the government sector supplied 64.6% of all family planning methods to "ever users" in our sample (see Table 22) with the Ministry of Public Health's primary care system covering 27.6% of the "ever users". Drugstores played a noticeable role with 17.1% and private clinics, which the National Family Planning Program reported as playing a "neglible" role[3], actually accounted for 13.2% of the total "ever users" in Suphanburi. Lastly, the practitioner doctors, whom the casual observer probably would not suspect as being in the family planning business, took care of 2.8% of the "ever users".

The contribution of the private sector to the total family planning program (about 35% in Suphanburi) has always been somewhat of a question mark in Thailand and we therefore sought to investigate the matter further by cross-tabulating contraceptive method by provider. In Table 23 we can see what part of each contraceptive market belongs to a certain provider.

For the most popular method, the pill (with 46.8% of all "ever users"), the government supplied the majority of the clients (61.1%) with the main contribution coming from health stations (48.9%). The drugstore was the only other provider playing a main role (31.7%). It is somewhat startling to know over 30 per cent of the "ever users" buy pills from the drugstores when they can be obtained for free from a government distribution center. Finally, although operating in two of Suphanburi's nine

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2. For example, *An Evaluation of the Impact of the National Family Program of Thailand on the Rate of Natural Increase* by the Community and Family Study Center, University of Chicago on page 1 reported that "The National Family Planning Program is probably responsible for about ninety per cent of the fertility decline (from 1964 to 1975)."

3. "Their (the private clinics) present role appears neglible" reported on page 25, *Country Statements: Thailand*. Prepared by National Family Planning Programme, Ministry of Public Health for the Bi-Regional Seminar on Physician and Population Change. Bangkok, Thailand 26-30 September 1977.

Table 23. Provider of family planning by most recent method "ever used"

Provider	Pill	IUD	Injection	Condom	Female Sterilization	Male Sterilization	Other Methods
Government hospital in Bangkok	0.0	12.3	-	11.1	16.1	6.4	-
Changwat hospital	1.3	38.5	1.4	22.2	42.6	29.1	16.6
Amphoe hospital	10.4	29.2	8.2	11.1	14.8	6.4	-
Health station	48.9	10.8	28.8	-	3.2	0.7	-
Tambon doctor	0.5	-	4.1	-	-	1.4	-
Mobile clinic	-	1.5	-	-	-	0.7	-
"Government" sub-total	61.1	92.3	42.5	44.4	76.7	44.7	
Private Medical Doctor	1.5	3.1	19.2	-	12.9	26.2	-
Private hospital	0.3	-	-	-	1.9	0.7	-
Private clinic	1.3	-	8.2	11.1	5.2	9.2	-
"Private" sub-total	2.0	3.1	27.4	11.1	20.0	36.1	
Practitioner "maw"	0.8	-	5.5	-	-	2.1	-
Injection doctor	-	-	4.1	-	-	6.4	16.6
"Traditional" sub-total	0.8	0.0	9.6	0.0	0.0	8.5	
Drugstore	29.4	-	12.3	44.4	0.7**	0.7**	16.6
Small shop which sell drugs	2.3	-	-	-	-	-	-
"Commercial" sub-total	31.7	0.0	12.3	44.4	0.7	0.7	-
Others*	2.0	3.1	5.5	-	-	6.4	-
No answer	2.5	1.5	2.7	-	2.6	3.5	50.0
Grand total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n = 844	n = 395	n = 65	n = 73	n = 9	n = 155	n = 141	n = 6
Percentage across	46.8	7.7	8.6	1.1	18.4	16.7	0.7

* Includes Mechai/CBFPS (n = 1), brought to the home (n = 3), hospital (n = 1), others (n = 8), and other government (n = 10).

** Sterilizations, as well as abortions, have been reportedly obtained at drugstores in special cases.

amphoes, the Community-Based Family Planning Services (CBFPS) volunteers were only mentioned as suppliers by one respondent. Possibly the small shops selling drugs were pa't of the CBFPS chain, however, it appears that either people were not aware of who worked under the CBFPS program or that the program is not very active in Suphanburi.

The second and third most widely ever-used contraceptive methods were female and male sterilization. They had a combined total of 35.1% of the most recent method of ever-users, a rather impressive statistic. This is possibly a slight over-statement of the actual percentage of current users 15-45 years old because our sample is a little older than the ones usually used in fertility studies. However, this statistic serves to show the importance of sterilization as a method of birth control both historically and in the present. Although government facilities performed 76.7% of female sterilizations, they performed only 44.7% of the male operations. Private doctors and clinics played an important role doing 20.0 and 36.2 per cent of all female and male operations respectively. Finally, the work of non-liscensed practitioners in vasectomy, which has been of recent interest to the Ministry of Public Health, was reported by 8.5% of the vasectomy cases.

Intra-uterine devices (IUD) appear to be the one method of family planning almost completely in the hands of the government. This fifth most important method (7.7% of the "ever users") is provided by the government to 92.3% of the IUD users. The private sector has not gotten involved in IUD's for several reasons. Firstly, the privately distributed IUD's are relatively expensive; secondly, they require a personal contact between the provider and user; and thirdly, it seems that the government program has promoted IUD's for a long time, but that the people when given a choice (on the private market) are not overanxious to have one inserted. Also it is quite possible that the doctors in their private practice are not encouraging the method.

Finally, the newest major method of family planning, injection, shows the greatest variety of providers. Injections were fourth in popularity with "ever users" with 8.6% of the total. The government provided 42.5% of the injections and, although relatively expensive, the private sector was supplying the rest: private doctor's clinics 27.4%, practitioners

9.6%, drugstores 12.3% and as well as others. Condoms, the final method with more than a few cases, was still too insignificant in number (n = 9) to analyze by provider. For those readers further interested in this data we have cross-tabulated the method by the provider and included it as Table A3 in the appendix. This shows the percentage involvement of each type of provider for the various family planning methods.

CHAPTER 4

FACTORS AFFECTING UTILIZATION

Reasons for Outpatients' Use of Hospitals

In the last chapter we looked at how many people used the government health system and where the people in general went for minor illness, major health problems and family planning. In this chapter we will offer some possible reasons why people go to certain providers. Already we have discussed how certain factors do or do not affect utilization Now we will draw our information together somewhat following the outline of the general model of health search behavior presented in Chapter 1 (and Figure 1) and look at factors affecting the potential health seeker, intervening factors and factors connected to the provider.

This is not an easy task. To present a clear picture of the independent effects of numerous factors on the health care utilization process is beyond the capabilities of this research project. At the present time we do not use a methodology which controls for many factors while singling out the effects of a few main variables. In this sense this final part of the report is preliminary, however, the fine points of the data can be reworked with more sophisicated techniques of analysis in the future. This aside, the data in their present form do provide many valuable insights into the health care search process. The following discussion will look at the effects of different variables on many different providers but will concentrate in the main on the use of government health facilities.

It is first appropriate to look at the reasons people give for using government health facilities. Table 24 gives the reasons from respondents in the "Outpatient Survey" why they went to a particular government hospital. The main reasons are probably not what we would expect:

It seems that familiarity, proximity, and the suggestions of others encourage the users, especially in the case of visits to the amphoe hospital (60.4%) though less so for the changwat hospital (35.2%).[1] Crucial factors that people associate with utilization receive much less mention: "better doctors" only 9%, "better service" only 3.3% and "cheaper cost" only 4.1% for the changwat hospital and 2.6%, 1.3% and 1.3% respectively for the amphoe hospitals. Better medicine (1.6% and 4.0%) seems not important: that can be gotten quicker at the local drugstore. Finally, "bigger place and better equipment" is of little significance at the amphoe hospitals (0.6%) but reasonably so for the changwat hospital (13.1%). A last, and revealing, response of importance is that the patient is a government worker (10.6% and 2.7%) and thus eligible for compensation of costs. This shows a government health service in many ways specializing in taking care of its own, the government workers. More of this will be discussed under the factor of "occupation".

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1 This point is even more convincingly made with data from the Community Health Survey (1975) of the Lampang (DIEDS) Project: 56% of all respondents cited the reason "easy to go for care" for why they went to the first government health provider visited for care.

Table 24. Reason for going to that hospital by type of hospital

Reason	Changwat hospital	Amphoe hospital
Recommended (referred)	4.9	6.7
Suggested by friends/relatives	9.1	5.4
Good reputation	3.3	7.4
"Suggested" sub-total	12.3	19.5
Familiar with this place	17.2	20.8
Convenient	1.6	4.0
Near	16.4	35.6
"Familiar/near" sub-total	35.2	60.4
"Good-hearted" doctor	0.0	1.3
Better doctors	9.0	1.3
"Doctors" sub-total	9.0	2.6
Better and quicker service	3.3	1.3
Cheaper	4.1	1.3
Better medicine	1.6	4.0
Bigger place/better equipment	13.0	0.6
"Better/bigger/cheaper" sub-total	22.1	7.2
Respondent is government official	10.6	2.7
Others	9.8	7.4
No answer	0.8	0.0
Total	100.0	100.0
	n = 122	n = 149

Chi square is significant at .001

Another important way to understand why people might not go to the different government health facilities is to look at what people want changed in the government health facility closest to their home. We discussed this in Chapter Two (Table 9) in relation to what the health personnel thought his facility's main deficiences were, but it deserves reiteration here. Three concerns were utmost in the people's minds: need for more and more skilled personnel, better and more respectful service, and better accessibility to the health facility. (Also of importance were access to better medicine, cheaper costs, and better facilities and

equipment.) This probably best sums up the underutilization of the public health facilities: the people want more skilled personnel nearby because the health worker does not and is not allowed to treat the majority of health problems: they want someone who can cure well at a reasonable cost. They usually mention a Medical Doctor, and because it is not only an impossibility but also a waste of resources for the government to assign doctors to primary health care, some sort of paramedic seems called for. Secondly, if the government health officials treat the people with more respect, more as equals, and develop more rapport, their clientele should noticeably increase. Thirdly, if the health station is a reasonable distance away the time to get there will not be as much a deterrant, and the people will not have to go so far for cases which need immediate attention or would cause suffering with a long bumpy ride. Better and more respectful curing service closer to home is what is needed for increased utilization.

With this general overview in mind let us start examining specific factors affecting utilization by comparing rates of ever-using a certain provider by different socio-economic, geographical, health and other variables. In Table 19 we have already compared the percentages of the sample using a certain provider; now we attempt to show if our data dring to light certain relationships between different variables and ever-use of providers. Within this examination we will also include previous comments and relationships as well as step by step look at the following variables: sex of patient, age, children-ever-born, occupation of head of household, urban/rural place of residence, electricity, literacy status, mobility, travel time to health facility, location of health facility, and perception of cost of service.

Sex of patient. Table 25 shows that women go for health cure more often than men. This was especially true in the sample of outpatients where 60.7% at the changwat hospital and 65.1% at the amphoe hospitals were female. This information is reinforced by the people's survey which reported 56.9% of the persons who last had a minor sickness were female. However, for major illnesses or injuries, the numbers of men and women reported are approximately equal, as might be expected. Nonetheless, it is interesting to speculate why women are going for (and perceived as having) more minor illness cases. Possibly women have more time or are

more willing to go. Maybe they are going more often for "women's diseases" or gynecological problems. Also maybe, as in certain western cultures, the man tends to ignore minor health problems because of his masculine image which implies he should tolerate minor discomforts or hardships. Another possibility could simply be that providers cater more to women.

Table 25. Percentage distribution of sex of patient by type of facility visited and the last person in household reported with minor and major health problems

	Type of facility		Last person in household with:	
	Hospital	Amphoe hospital	Minor illness	Major illness
Male	39.3	34.9	43.1	50.2
Female	60 7	65.1	56.9	49.8
	100.0	100.0	100.0	100.0
	(n = 122)	(n = 149)	(n = 1777)	(n = 1056)

Data sources the "Outpatient Survey" for type of facility and the "People's Survey" for the last person in the household with minor and major health problems

To more closely examine this sex differential, in Table 26 we tabulated the sex ratio for the most recently reported person with minor/major health problems by age. For minor cases women are reported more often for all ages after ten years For major cases females only predominate between the ages of 20-49 and the very oldest ages These differences are in part caused by the age-sex structure of the population (that is, a higher per cent of males than females at birth progressively decreasing with age until the oldest age groups have noticeably higher percentages of women) but other differences could be due to real reported age-sex differences in the incidence of disease Obviously this phenomenon needs further thought and study, but nonetheless still carries possible specific and general implications for health planning.

Table 26. Sex ratio of person reported as last ill in the household by age and degree of seriousness of health problem

Age	Minor illness	Major illness
0-2	119.8	153.2
3-5	92.7	110.5
6-9	102.4	91.2
10-14	86.9	124.2
15-19	70.9	133.1
20-29	49.7	90.8
30-39	54.8	71.8
40-49	58.2	83.8
50-59	55.0	164.6
60-69	90.8	110.1
70-85	49.9	89.4
Total (all ages)	75.7	100.6
	(n = 1757)	(n = 1033)

Note: a sex ratio is calculated by the number of males divided by the number of females multiplied by 100. When males and females are equal, the sex ratio = 100. When there are more males reported than females, the ratio will be greater than 100. With more females than males the ratio will be less than 100.

Age. The last section showed that age, when combined with the sex of the user, helps show age-sex differences in both reported illnesses and health facility use. However, in general, the variable "age of head of household" shows little relationship to ever-use, except in one case. Among older age-groups, the percentage use of the granny midwife was higher. Usage rates started from 52.7% for families with head of household aged 20-24 and progressively increased up to 81.0% for those aged 65-69. We obviously should expect use of the granny midwife to increase with the age of couple, for age is highly correlated with number of births. However, the differences between the middle age groups and older ones are revealing: although the granny midwife is still a very popular practitioner (second only to the drugstore in ever-use), she is obviously losing some of that popularity and quite possibly will be less used in the future. Finally, the drop in ever-use rates of the 70-85 year-group is an anomaly probably

caused by the small sample size of this group in which only a few childless couples would unreasonably affect the rates.

Table 27. Percentage of respondents ever using a granny midwife by age of head of household

	Age											
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-85
Ever-used granny midwife	30.8	52.7	51.5	57.3	67.1	66.6	71.5	74.9	78.8	75.4	81.0	57.9

Chi square significant at .001

Children-ever-born. Table 28 shows the relationship between the children-ever-born and two providers closely related to child delivery and maternal and child health care the granny midwife and government health station. As in Table 27 for age shown above, the percentage of ever-use of the granny midwife increases significantly with number of children-ever-born. However, for ever-use of the health station, the percentages rise only slightly between none or one child-ever-born to two or more children-ever-born and are not statistically significant. This in many ways might be expected because, while the granny midwife mostly confines her work to child delivery, the health station's service is more varied and many other conflicting factors influence the rates of ever-use. However, we might speculate that the government midwives are probably doing little to attract families of women with higher parity (children-ever-born). These facilies, who are also somewhat older, are probably more prone to use the granny midwife for child delivery.

Table 28. Percentage of respondents ever using a provider by number of children-ever-born

Provider	Children-ever-born					
	0	1	2	3-4	5-7	8-18
Granny midwife***	25.4	54.1	56.1	66.9	76.1	78.7
Government health station	52.9	53.9	62.4	58.5	57.8	59.2

*** Chi square significant at .001

Occupation of head of household. The occupational breakdown for the families of outpatients coming to the changwat and amphoe hospitals are given in Table 29. These statistics are of interest for they show how different occupations are proportionately under or ever-represented in using government hospitals. We therefore can compare them with the actual percentage distribution of occupations in Changwat Suphanburi from our random sample of households. Most of the occupations of the outpatient's family do not differ much from the expected distribution of occupations. However, two occupation groups do greatly differ from what we would expect of them on the basis of their share of the population of the changwat. These are farming, with a smaller percentage than expected and skilled services, with a much larger percentage usage than we would expect. Farmers especially "underuse" the changwat hospital, while skilled service workers' families, who make up only 5.4% of the actual occupations, account for 31.1% and 12.8% of the outpatients at the changwat and amphoe hospitals respectively. The skilled service category is mostly all made up of government workers. They more frequently use hospital services because their costs are compensated, they usually live close to the hospitals, and as a group they have more institutionalized, "modern" health search behavior. However, this cannot justify the government taking care of its own to the neglect of the general rural populace.

Table 29. Percentage distribution of outpatient's family by occupation and type of hospital visited, compared to the actual occupational distribution in Changwat Suphanburi

Occupation	Changwat hospital	Amphoe hospital	Actual occupational distribution*
Farming:	45.1	70.4	77.5
Rice	32.8	59.7	58.6
Other (than rice)	9.8	8.7	16.7
Farm labor	2.5	2.0	2.2
Skilled labor	3.3	1.3	1.9
Unskilled labor	4.9	4.0	3.6
Sales	9.0	5.3	7.6
Skilled services:	31.1	12.8	5.4
Government administrator	6.6	4.0	1.3
Teacher	13.9	5.4	1.7
Policeman/fireman	3.3	0.7	0.1
Skilled office worker	1.6	0.7	0.2
Office worker for government	4.9	2.0	1.1
Entertainer/business	0.8	0.0	1.0
Unskilled services	1.6	3.3	2.5
Other/Unemphoyed	4.9	2.7	1.4
	100.0	100.0	100.0
	n = 122	n = 149	n = 2,110

* The actual percentage distribution of occupation of heads of households according to our random sample (n- 2,110) of the population in Suphanburi

Cross tabulation of the percentage of respondents ever using different providers by the occupation of the head of household produced highly statistically significant relationships. These relationships, however, mainly reflect a dichotomy which shows up in many of our variables: those occupations associated with the "modern" urban sector tend towards using the providers connected to their same sector. That is, the more "modern" urban people tend to use the last five providers on our list: the Medical Doctor, amphoe hospital, private clinic, private hospital and government hospital. On the other hand those occupations associated with the more "traditional" rural sector tend more towards providers located in their own area, that is, the first six providers on our list: the

traditional doctor, spirit doctor, granny midwife, injection doctor, tambon doctor, and government health worker. Intuitively these relationships make obvious sense. However, they also reflect the extent of differences in government health facility usage and therefore indicate inequalities in use of government health service. Especially, we will further examine different variables to see which associate most strongly with the modern urban sector or the traditional rural sector, and which providers are most closely linked to each sector.

The cross-tabulations of respondents ever using a provider by their occupation are shown in Table A4 in the appendix. The non-farming occupations tend to have higher rates of usage for those providers associated with urban areas. This is especially true for people with skilled service occupations who are consistantly the highest relative users of these providers. This fact further reinforces their much greater than expected use of the government hospitals previously pointed out. On the other hand the farming occupations show higher relative use of the more rural-based providers: this is especially true in their high relative use of the granny midwife and injection doctor. However, this does not hold true for the government health worker who has relatively higher ever-use rates from the non-farm respondents.

Urban/rural place of residence. The largest differentials in use of providers were found between rural and urban residents. Table 30 present data for three classifications of "urbaness" besides the urban municipality: 1) nearby the urban area (within five kilometers by road to an urban place), 2) the sanitary districts ("sukapiban" or semi-urban towns), and 3) villages contiguous or very close to the sanitary districts. These three semi-urban classes do not show the clear differences that the strict urban and rural data do, though they still display less "ruralness" in their health use patterns.

Of more interest is to compare the strict "urban" and "rural" data. The urban residents have much higher ever-use rates for the private clinics, the changwat hospital, and Medical Doctors, while the rural residents have higher ever-use rates of all the others, the differentials being quite noticeable for the granny midwife, injection doctor, tambon doctor, government health worker and amphoe hospital. (However, the amphoe hospital

draws more from the sanitary districts.) This table has further interesting details, however rather than to go into more depth, it might suffice to take note of the strong predictive value of health search behavior through the urban/rural variable. This leads us towards the conclusion that there seem to be at least two basic health use patterns, one conforming to the more urban sector and the other the rural sector. It seems these patterns are especially accentuated by two factors: proximity to the health providers and previous use or familiarity with, and attitudes towards the providers.

Table 30. Percentage of respondents ever using a provider by urban/rural status

"Ever used" provider	Total	Urban/rural status				
		Urban	Nearby urban	Sanitary district	Nearby sanitary district	Rural
Drugstore**	97.5	91.4	95.7	96.2	98.3	97.9
Traditional doctor	40.3	31.4	38.6	33.5	44.2	41.1
Spirit doctor ("maw pi")	7.3	5.7	2.9	5.8	5.8	7.8
Granny midwife***	66.5	37.1	55.7	52.6	63.3	69.7
Injection doctor***	37.7	18.6	18.8	27.3	23.5	41.3
Tambon doctor***	40.0	11.6	41.4	38.1	28.3	42.1
Government health worker***	57.5	24.3	25.7	64.1	55.9	59.8
Meidcal doctor***	60.7	95.7	42.9	68.4	54.6	59.7
Amphoc hospital***	20.3	2.9	5.7	29.0	7.5	21.7
Private clinic***	51.1	82.9	62.9	60.9	53.3	48.2
Private hospital***	13.9	(13.0)	(1.4)	18.1	(3.4)	14.8
Changwat hospital***	62.0	75.4	75.7	62.3	74.2	60.0
Approximate number of cases for each column cell		100	70	160	120	1660

Chi square significant at .01**, and .001***

Sample size varies from 2,040 to 2,096 for each row.

Electricity. To further elucidate this modern urban/traditional rural dichotomy, the variable of "electricity in the home" can be used as a indicator of "modernity" and thus represent the "modern urban" phenomenon. "Electricity" fits this definition well because obtaining electricity in the home requires some weath, a somewhat modern outlook, and a home in a

not too remote place (for the government electrification program has mostly reached the more accessible areas).

In Table 31 we find that the percentages of ever using seven of the eleven providers by home availability of electricity are statistically significant. Although this is not as impressive as the urban/rural variable, "electricity in the home" reinforces the same patterns for five providers, that is, a very close association of ever-use of the changwat hospital, private clinic, and Medical Doctor with electricity, and the granny midwife and injection doctor with no electricity. This may again strike the reader as an obvious truth, but its importance is more than meets the eye and should not be discounted. If we look at the ever-use of the government health worker by electricity, we see that this health provider's service area does not reach the non-electrified homes (almost 3/4, of our respondents) much more than the electified homes. Although the health worker is definately rural-based (see the highly significant relationship with urban/rural status in Table 30), he is doing little extra to provide health care in the very rural areas. This relationship also seems to hold true for the tambon doctor, with both the health worker and he having a wide geographic spread throughout the changwat but tending to be located in the relatively more modernized rural area and not particularity penetrating the very rural areas. Service in the remote areas is more the domain of the injection doctor and granny midwife.

Table 31. Percentage of respondents ever using a provider by whether or not there is electricity in the home

"Ever Used" Provider	Total	Electricity in the home: Electricity	No electricity
Traditional doctor	40.4	38.8	41.0
Spirit doctor ("maw pi")*	7.4	5.5	8.1
Granny midwife***	66.7	51.5	72.6
Injection doctor***	37.8	25.5	42.6
Tambon doctor	40.1	38.0	40.9
Government health worker	57.4	54.9	58.3
Medical Doctor***	61.0	67.6	58.4
Amphoe hospitals**	24.3	24.4	18.7
Private clinic***	51.3	62.6	46.8
Private hospital	14.0	16.4	13.0
Changwat hospital***	62.2	73.1	57.9
Approximate number of cases for each column cell		(n = 590)	(n = 1495)

Chi square significant at .05*, .01**, and .001***

Total sample size varies from 2,029 to 2,085 for each row.

Literacy status. Although data was collected for number of years of formal education, it was felt that to represent education/communication/literacy status that the number of times the respondent read the newspaper in a month would be a better approximation. The high level of statistical significance of the percentages of the respondents ever using a provider and "newspaper reading" seems to justify this choice. "Newspaper reading" differentiates more greatly within our sample while with formal education most respondents (over 90%) cluster in the categories of four years or less.

All eleven providers have statistically significant differences in percentages of ever-use by our "frequency of newspaper reading" variable (which we will call the literacy/communication factor). In general, negagive associations are strong with the granny midwife and injection doctor. That is, the less frequent newspaper readers have "ever used" these two rural practitioners more often. On the other hand "literacy/communication" has a strong positive association with ever-use of the Medical Doctor and changwat hospital, and to a lesser extent the private clinic. These three

providers have been "ever used" more by the better read and more educated, in short, the more modern urban people.

The relationship of the health worker is again interesting in relationship to our literacy/communication factor, because use of the health worker exhibits a tendancy noted before: although he is ever used by the rural people it is not particularily the "very rural" people. People who might be considered the most "traditional rural", those who do not read the newspaper, have "ever used" the health worker relatively less. Those who read the newspapers sometimes or often are more likely to have used the health worker's services. However, the most literate group has "ever-used" the health worker neither relatively more or less. Put more simply, the health worker is shown again to be used relatively more by the more modernized people of the rural sector.

Lastly, a most distinctive category of this variable are the everyday newspaper readers. These people very strongly are related to higher "ever use" of all urban-based providers and lower "ever-use" of all rural-based providers with one exception: the government rural health worker. This again shows the government rural health worker not really characteristic of the urban sector, but also not particularly identified with the rural sector either.

Table 32. Percentage of respondents ever using a provider by the number of times/month respondent reads the newspaper

"Ever used" provider	TOTAL	Times/month the respondent reads the newspaper			
		Do not read	Sometimes (1-6 times)	Often (7-25 times)	Everyday
Traditional doctor*	40.3	40.4	43.0	33.0	33.6
Spirit doctor ("maw pi")*	7.3	9.1	5.7	2.4	6.2
Granny midwife***	66.4	69.4	69.9	58.3	47.5
Injection doctor***	37.7	38.2	41.5	32.5	26.8
Tambon doctor**	40.0	42.1	40.3	42.2	29.8
Government health worker*	57.5	54.3	61.1	65.5	57.7
Medical doctor***	60.7	45.8	63.6	71.1	72.9
Amphoe hospital**	20.2	19.5	17.8	28.6	27.0
Private clinic***	51.1	45.0	55.3	53.6	62.8
Private hospital**	13.9	14.1	12.4	12.9	18.0
Changwat hospital***	61.9	55.9	63.1	78.8	77.0
Approximate sample size for the cells in each column		(n = 1,030)	(n = 720)	(n = 85)	(n = 259)

Chi square significant at .05*, .01**, .001***

Total sample size for rows varies from 2,037 to 2,094.

Mobility. Several questions asked to the respondents provided information on mobility and while much of this proved valuable we will only describe the statistical relationship of one such variable. By mobility we mean the propensity for people to travel outside of their community in respect to "how often" and "how far". In this sense we are talking about geographic mobility; the opposite concept is isolation. This concept ought to tie in closely with our modern urban/traditional rural dichotomy: people who are more mobile should exhibit more "modern urban" behavior.

Several variables were examined to test how they reflected the geographic mobility of the population. Some examples included trips to the main local market per month, kilometers and travel time to the main local market, trips to the changwat capital and other changwat capitals in the last year, trips to Bangkok in the last five years, a detailed series of questions on market travel behavior, as well as several other questions

pertinent to travel and movement behavior. These show the major emphasis of the research and have already been included in parts of this report, however, we cannot go further into all these various aspects of mobility because the information is too detailed and voluminous to be of specific use to the present commentary, and second of all, the interactions of several of these variables are complex and require further and more sophisticated analysis. It will suffice to go into one indicator of mobility here which shows interesting associations with ever of the different providers.

The variable, trips to the changwat capital in the last year, shows statistical significance for nine of the eleven health providers we have examined. Again, among the rural providers we see distinct negative relationships between the respondent ever using the granny midwife or injection doctor and the number of trips to the changwat capital. That is the more mobile a person, the less likely he is to use the granny midwife or injection doctor. This same relationship for mobility also holds for the government health worker, and to a lesser extent for the traditional doctor and spirit doctor.

A strong positive relationship, that is, the percentage of respondents ever using a provider increasing with increased mobility, is clearly evident for the changwat hospital. This confirms our intuitive thoughts that those people who more frequently travel to the changwat capital should also have more likely used the changwat hospital. A similar association, though not so clear, can be seen in the case of the private clinic. The amphoe hospital and medical doctor, for which we might expect similar results as the changwat hospital, show no clear directional relationships but rather more complex ones that are probably safer not venturing any explanations for.

Also of note in Table 33 are the two extreme categories for the variable, "number of trips to the changwat capital in the last year." It seems both those respondents who never go or go very often to the changwat capital have lower rates of ever using all providers in general. This, in turn, is distorting any associations we may see in the data. These lower percentages of ever use in general can be probably be attributed to extreme remoteness or lack of mobility on the part of those respondents who never go to the changwat capital. However, the lower ever-use rates of the respondents who very frequently go to the changwat capital is more difficult to explain. Perhaps a partial explanation is that these people, being

quite mobile, might tend to use the Bangkok government health facilities more often.

Table 33. Percentage of respondents ever using a provider by the number of trips to the changwat capital in the previous year

"Ever used" provider	Total	Trips to changwat capital in previous year								
		0	1	2	3	4-5	7-10	11-14	25-27	Very often
Traditional doctor**	40.0	38.8	42.0	43.1	42.3	44.5	47.6	36.6	29.1	28.3
Spirit doctor ("maw pi")*	7.4	9.4	7.8	9.0	8.8	4.3	7.9	4.0	5.1	2.3
Granny midwife***	67.6	71.6	74.3	72.0	72.8	67.8	61.6	59.4	57.7	47.1
Injection doctor	38.9	38.5	44.1	44.7	41.5	39.8	40.0	33.3	26.9	27.3
Tambon doctor	41.4	39.2	41.5	39.3	44.6	40.6	40.0	43.6	46.2	46.5
Government health worker***	59.0	57.7	68.3	65.6	59.7	62.3	60.7	52.0	46.8	43.2
Medical Doctor***	59.2	52.3	64.3	55.0	65.6	63.4	69.6	55.2	70.5	54.2
Amphoe hospital**	20.6	20.3	23.0	25.5	23.3	19.2	23.0	23.3	15.4	8.7
Private clinic***	49.3	40.5	49.6	42.0	51.5	54.3	57.8	60.4	68.4	55.2
Private hospital	14.0	16.4	16.8	14.4	13.3	14.4	11.6	10.0	2.8	7.0
Changwat hospital***	61.1	47.9	56.4	55.8	64.2	66.7	78.9	69.0	75.9	78.0
Approximate sample size of each cell in the column		544	257	246	196	211	166	101	79	173

Note: Chi square statistically significant at .05*, .01**, and .001***

Sample total for rows ranges from 1,918-1,973 respondents.

People actually living in the changwat capital are excluded from this table.

Travel time to Health Facility. In keeping with the main focal point of this research, ever use of the three levels of the government health hierarchy were examined to look for the effects of distance. If distance plays an important role, we should expect ever-use rates to drop off continually with increasing distance away from the health facility.

When we examine the effects of distance, as measured through travel time (in Table 34), on ever use of the government health system, three different patterns emerge. For the changwat hospital, ever-use rates

are highest for respondents living 6-20 minutes away, after which the rates gradually and continually decrease. Interestingly, those respondents closest to the hospital do not have the highest rates. This same basic pattern describes the amphoe hospital except that the highest ever-use rates come at a short distance, 6-10 minutes away, and the rates decrease more rapidly.

Table 34. Percentage of respondents ever using government health facilities by travel time to nearest health facility

Travel time in minutes	Per cent of "ever users"		
	Second class health center***	Amphoe hospital***	Changwat hospital***
1-5 minutes	72.9	57.4	76.7
6-10 minutes	66.1	62.7	84.9
12-15 minutes	62.0	57.7	78.7
20 minutes	53.4	43.8	84.3
25-35 minutes	60.8	39.9	68.2
40-50 minutes	61.1	37.5	66.0
1 hour	61.8	37.8	62.6
75 minutes-2 hours	23.1[a]	20.2	60.0
140 minutes-6 hours	-	17.4	56.1
5-7 hours	-	-	51.6
Do not know	46.9	27.5	44.8
Total[b]	62.6(53.5)	40.0(20.3)	62.6(62.0)
	n = 1,541(2,091)	n = 838(2,083)	n = 1,924(2,074)

*** Chi square significant at .001

a For 75-180 minutes

b Based on the number of users who actually responded to the travel time question; Ever-use rates and sample size for total sample are in parentheses

For the health stations the pattern is distinctly different. Ever-use rates are the highest closest to health station and then drop off as travel time reaches 20 minutes. After that, all the ever-use rates level off at a higher percentage until one hours travel time. The few following cases show a distinct drop. This all seems to point out the effects of distance are important only within a short range for ever-use

of health stations whereafter a certain portion of the people will come to the facility regardless of the distance if it is within a reasonable range.

To check these conclusions for validity, ever-use of the health stations was tabulated by distance in kilometers to the nearest health center. This distance was estimated by both the respondent and research team, the latter being more accurately determined by detailed maps. Although ever-use rates drop continually as the respondents' estimate of distance increases, the researchers' calculations show an upturn in the rates between 10 and 20 kilometers. This second observation gives reinforcement though not validation, to the earlier argument that distance is of minor importance within a sizable intermediate range. Finally, considering the strength of all the relationships in this section we might judge the effects of distance to be most important in use of the amphoe hospitals, of next importance in use of the hospitals, and of relatively least importance to the health stations. The health station's problems at this stage of development of the health system are more basic: it seems that lack of attractive service contributes much more to their present underuse.

Table 35. Percentage of respondents ever using the second class health center by distance to that center

Kilometers to the nearest health station	Percentages when distance determined by	
	Respondent***	Researcher***
0-1	73.0	71.4
2-3	63.9	56.8
4-5	63.3	49.1
6-10	49.5	39.1
11-20	45.8	49.3
21+	(62.5)	30.0
Do not know	63.5	-

*** Chi square significant at .001

Location of health facility. In Chapter Two we described the actual locations of the health facilities and the reasons for choosing these locations. Here we would like to see if there is any relationship between ever using a second class health center and its location in a market. At

present, approximately one third of the primary and intermediate health facilities are located in or near a major market area. Our hypothesis was simply that those locations in the markets where the respondent most frequently shops will be the most "ever-used". To examine this idea we asked "Is the health center nearest to your home in the same place where you usually go to market?" and arranged the answers according to the importance of the market area to the respondent. This can be seen in Table 36 below.

Table 36. Percentage of respondents ever using the nearest health centers by the description of the location of the market

Location of health center	Nearest health center	
	Second class	Do not know the class
Usual market	77.8(356)	63.0(73)
Second most usual market	72.0(182)	57.7(104)
Sometimes shops	69.4(72)	50.0(16)
Usual market but I rarely go	57.5(73)	52.4(21)
In a city where I never go shopping	64.0(25)	53.3(15)
Not near any market	54.7(464)	47.7(104)
Others	55.3(41)	59.1(22)
Total	65.1	53.1

*** Chi square significant at .001

Size of sample in parentheses

For both respondents ever using the second class center or a government health facility of which they were not sure of the class, there is a definite relationship of ever-use rates and location of the health center in a market more frequently used. Rates are highest for ever-use in the respondent's usual market and lowest in those locations not near any market. This seems to indicate that a location near the market will help attract more customers to the health centers. However, this finding should not be interpreted as all health centers will be better off in a market place, because such might not be true in certain specific cases.

Perception of cost of service. Outpatients at the changwat hospital estimated on the average that the cost of their treatment would be about

100 baht. Outpatients at the amphoe hospital on the other hand estimated about 37 baht When asked if they thought this was cheap or expensive, they gave a wide variety of responses. There seems to be little differentiation between the two types of places except the amphoe hospitals are considered not so expensive When asked if they could receive better treatment somewhere else for the same price, 13 1% of the changwat hospital respondents and only 4% of those at the amphoe hospital mentioned a place All these seem to point out that the price of service at the government hospitals is not overly objected to by the people However, these statistics are for people actually using the hospitals, and are limited in that they do not indicate how much the cost of service deters people who have not yet decided to go for treatment In our random sample people were concerned but less concerned about cost of government health treatment than other aspects and deficiencies of the health facilities. (See Table 9)

Table 37 Perception of service costs by patients at hospitals

Place of service	Cheap	Reasonable	Expensive	No idea
Changwat hospital	33.6(41)	25.4(31)	17.2(21)	23.8(29)
Amphoe hospitals	33.2(48)	35.6(53)	5.4(8)	26 8(40)

Other factors affecting ever-use In analyzing the ever-use of facilities, we might take into account still other factors which were previously discussed in this report Friends' and relatives' opinions, as well as the general reputat on of the health provider have already been pointed out as quite important. Also quite significant are the rapport and personality of the provider, as well as service rendered

Factors of importance that we have data for but have yet left unanalyzed because of time and methodological constraints are the "localness" of the provider, time when the symptoms of the disease were first experienced, and the detailed description of types of disease experienced Factors previously described as having little influence on ever-use are that a person lives within the political boundaries of a government-defined administrative unit and the number of personnel presently at a specific type of health facility. Finally, although hours officially open were similarly reported by government health personnel, when the health worker is actually available

and the actual working hours are suspected to be of importance as judge by the informal complaints of the local people.

However, possibly a better approach to the whole question of ever-use is to find out why the drugstore has such a high percentage of ever-use relative to all other providers. Drugstores are widespread, but certainly not as widespread as the government primary health system. It seems that they supply effective enough medicine at regular hours where the patient can be assured of quick service and some advice without institutional formalities. In short, there is adequate service with convenience. However, the reasons for the wide range of service (drugstores have even been known to take care of abortions and sterizations too) and universal appeal of the drugstores remains a topic for further much more in-depth research.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

As there have been many concerned comments in the last few years on the underutilization of the Ministry of Public Health's rural health system, this project was undertaken to review the situation and suggest possible reasons and remedies for deficiencies. In attempting such an ambitious task the researchers searched the problem from various perspectives looking at the entire health system of the predominantly rural Changwat Suphanburi Detailed performance statistics were collected from all government health facilities, 271 outpatients coming to the amphoe and changwat hospitals were interviewed, 108 government health personnel, at least one from every facility, recorded their background and opinions, and, finally, a large random sample survey of 2,110 households was conducted to find out the ideas, characteristics, and health search behavior of the potential users of the health system

In that the present changwat health system of the Ministry of Public Health appears to have been designed to offer different degrees of specialization on different levels, we examined use of the government health facilities of Changwat Suphanburi with the descriptive framework of a three-tiered hierarchy in mind. At the base level, the primary health care network should treat common and immediate health problems, as well as be involved in preventive medical work. For medical problems in need of an M.D., local people should be referred on to an amphoe hospital. At the top of the hierarchy, the changwat hospital should have responsibility for the most serious and specialized cases. However, the actual health system does not work systematically or on distinct levels.

Government outpatient statistics show that the changwat hospital treats about the same number of outpatients as all the primary health care centers in the changwat together.[1] Except for two locations, the amphoe hospital network remains incomplete and/or little used and does not remove much of the outpatient load from the changwat hospital. About 10% of the outpatients going to the changwat or amphoe hospitals are referred cases, much more often ill persons rely on the advice of friends or relatives, or go under their own volition. In looking at the government system altogether, it appears that the changwat hospital has taken over the treatment responsibilities of the primary health care system, most likely by default. This over-utilization of the changwat hospital results in misappropriation of doctors' time at the top lovel and at the same time wastes the investment in infrastructure for the primary health care network, which, for the most part, lies idle.

The random sample survey of the population examined the roles of both the private and public health sectors. When people were asked about which health providers they ever used, the drugstore stood out by itself as being the only universal provider of health treatment. The next most-ever used was the granny midwife (65.8%), followed by the changwat hospital (61.3%), medical doctor (58 7%) the government health worker (56 2%) and the second class health center (53.0%). Others of importance were private clinics, traditional doctors, tambon doctors, and injection doctors.

To specifically discern the use of different providers, the households were questioned about three distinct types of health search behavior for: minor illness, major medical problems, and family planning. Although minor health care ought to be a main concern of the government primary health care system, that very extensive system actually only cared for 9.3% of the minor cases. The majority (58%) went to the drugstore to obtain treatment. For serious medical problems the largest number of cases are taken care of by the changwat hospital (32.8%), though many people (16.7%) bypassed it to go to the more extensive government facilities in Bangkok. For serious medical problems the private sector plays a noticeable role in servicing almost 35% of the cases of the upcountry population. In family planning the government is the dominant supplier, though

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1 There were statistics for over 50 government primary health care centers.

not as important as thought to be.[2] The Ministry of Public Health supplied about 62% of the family planning users, while private clinics (13.8%) and drugstores (17 1%) played active roles. The private sector was particularly important in providing about one half of all vasectomies and contraceptive injections The drugstores alone also supplied over 30% of the pills. The government dominated in the insertion of IUD's (92%).

The role of traditional and, especially, injection doctors in curing, although not large (about 8 0% for both minor and major medical problems) is noteworthy because of their work in the very remote areas where other health providers seldom are When analysing the frequency of ever-use of various practitioners, it was found that injection doctors, as well as granny midwives drew a large proportion of their clientele from the most remote areas.

The search for explanations of differential use of providers showed that the factor of "urban/rural" as measured by place of client residence, electricity in the home, literacy/communication, and other social variables indicated important differences in ever-use alone Health providers could be classified into the categories of "urban modern" or "rural traditional" Consistently and most closely connected to the "urban modern" category were the liscensed physician and the changwat hospital, while the "rural traditionel", were in most contact with injection doctors and granny midwives The government primary health care network, although definitely rural-based, does not necessarily draw patients from the very rural areas but is patronized more by rural people with characteristics similar to the "urban/modern" sector.

Location near a market was shown to be important because those health facilities in markets were more frequently visited and used. Increasing distance between patients and a facility was associated with decreasing use. Although this relationship was strong with all three tiers of the government system, the effects of distance were most important for the amphoe hospital, somewhat less for the changwat hospital, and least important for the primary health centers. This reflects the low usage and attraction of local-level health centers in general. The present system

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2 For specific references see footnotes on page 62.

of primary health centers is probably widespread enough to accomodate the people (at least in the eastern part of Suphanburi). In other words, most of the potential users of the primary health care system are within the drawing range of a facility: the problem seems to be that the health centers are not attracting many of the local people. Distance at the primary level is less important than the people's familiarity with the local health provider in determining whether they use a place or not, however, the rural people repeatly expressed a preference for a convenient health provider nearby. Nevertheless, if the health provider was not satisfactory or if the medical need was urgent, the health searcher would go to a provider further away. With greater seriousness of the medical need, distance to a suitable provider becomes less of a deterrant to use. However, with the present data, it cannot be estimated how many people will do nothing or wait for too long a time before going for treatment because of the long distance to the health provider.

In terms of actual outpatient services, the present changwat health system can be characterized as having high or over-utilization at the top level (the changwat hospital), extreme underutilization at the primary level and few effective intermediate level service facilities. This overutilization is probably a result of the long existence (and hence familiarity of people) and extensive services of the changwat hospital, while the underutilization is due in part to the relative newness and lack of drawing power of the primary health centers However, whatever the cause, steps should be taken to rectify this situation which results in the misallocation of doctors' time and little use of a large and costly physical infrastructure.

At the primary health care level, the objection is sometimes made that curing is only a small part of a health station's activities. Clearly this is not the case if we recall (see table 7) that out of 108 respondents, curing was mentioned as a strong point of the health station's services by 50 health personnel, family planning by 54 and maternal and child/family health by another 17 respondents.[3] Over 80% of the responses on facilities' strong points included curing or family planning according to the health personnel themselves. This being the case, we offer in the

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3 Some health personnel responded more than once, making a total of 152 responses.

remainder of this chapter some recommendations, some substantiated through facts and statistics of this report and others through personal experience and inference from the data. The recommendations are put under two listings: the first, general suggestions for improving the method of locating new facilities and second, specific points to increase usage of the primary health care system and therefore to provide better service to the local people

Recommendations for Planning Locations of Health Facilities

The method for properly locating a new health facility is probably best made through the advice of the local people with the coordination and overall planning of the changwat and national health officials It is, however, to the second group, Ministry decision-makers, that these comments mainly are addressed

First of all, location decisions should not be made on the basis of political and administrative criteria, but rather on the population density of the potential area to be served General threshold distances that people will travel should be estimated for various services, whether family planning, minor illness, major illness, or innoculations, to determine the number of potential users Facilities also should be located taking distance to the nearest existing or planned center of the same level into account Facilities are more greatly utilized in central locations and market centers where people can become more familar with them and visit them on multi-purpose trips.

Roads and available transport determine not only how fast but how comfortably a patient can make a trip to a provider. This stresses the fact that service threshold distances and areas should be calculated in time, rather than kilometers, because road and travel conditions vary widely in upcountry Thailand.

Also when making a location decision, one should view the health system as a hierarchy containing networks on different levels. Tambon location decisions should be coordinated with all the nearby tambon. Amphoe hospitals ought to be located while considering distances to nearby changwat and amphoe hospitals, *whether or not they are in the same changwat.* National level programs for new building need not be apportioned to each region or changwat but might better be concentrated in certain areas of pressing

need if so determined by national comparative analysis.

Finally, planning for location of health facilities should be made with the view that the health service system is not just those facilities of the Ministry of Public Health, but also all other facilities of the government and private sectors. This includes state enterprise health facilities, the large military hospital system, the tambon doctors and municipal health centers under the Ministry of the Interior, as well as the local private services available.

For example, in southern Suphanburi the Kamphaengsaen Air Force Base Hospital is popular and enjoys a good reputation with the people. The question is why the Ministry of Public Health has built a large amphoe hospital in Amphoe Song Phi Nong and has another planned for Bang Len geographically nearby in Changwat Nakorn Pathom?

A final note is that new amphoe hospitals need not be located in the "tua amphoe". Although this is usually the case, they may be better placed in another location which is further away from existing amphoe hospitals and less accessible to the changwat hospital. In Suphanburi potential locations might be in north central U-Thong or mid-western Sam Chuk. Also, in planning changwat health systems, priorities should be given to those amphoes most in need. In Suphanburi the amphoe farthest removed from a government Medical Doctor is King Amphoe Dan Chang, the amphoe last scheduled for an amphoe hospital in the whole changwat.

Recommendations to Improve Delivery of Health Care to the Local Population

Involvement of the local community. Real success of the primary health care network lies in more involvement with the community. Several smaller scale projects, such as the army's health volunteer program in the Northeast and the Lampang (DEIDS) Project, are experimenting with different approaches to integrating the local population into the health delivery process. Hopefully, the Ministry's efforts will stay pointed in that direction and the successes and failures of the various pilot projects can serve as a model for "grass roots" involvement in government health care.

The present policy of selecting local people to train to be government health personnel in their local areas is commendable as long

as there are no stipulations (such as parent's donation of a building) put on the person chosen. We feel as an extension to this policy the future government health worker should be chosen by the local people, probably best done through a village health committee This committee also might be given control over whether to hire or remove the local health worker. This type of local control, although inimical to the present centralized health (and government) system in Thailand, would certainly make the local health personnel more responsive to the community. If the government health worker is not liked or approved of by the local community, the chances are that he is not used by them either.

As mentioned in Chapter Two many of the local health personnel do not see eye to eye with the local people in respect to needed improvements in their local health center. Many health workers seemed to feel a lack of equipment was the main deficiency in their health facility, indicating a western-oriented faith in and reliance on more advanced technology to improve the medical system. On the other hand the local people were more "down-to-earth" in stressing a need for more skilled personnel, more respectful service and better accessibility to the local health station It seems that it would be more prudent to receive more input from the local people, for they know what they want and why they will or will not use the local health facilities. In this way we can possibly help increase the attractiveness of the health station.

Less emphasis on infrastructure and physical facilities. The Ministry's usual policy of building an extensive health station with living quarters before sending a health worker in is possibly counter-productive. This allows the health worker to set himself off from the local populace right away, and possibly increases the "social distance" between the health personnel and the people. The smaller or more rural the community, the more forbiding and affluent the government health station can appear. Possibly by sending the health worker into his community before building his "castle" (health station), he will get out to the people more often. Also the time before construction of the health station might be used to see if the health worker is of value to the community and wanted by them. If he is not used or wanted in the community he could be withdrawn and the Ministry could save 340,000 baht on a

health station that would be lying idle. (A number of them do lie empty while waiting for personnel to fill them.)

However, to suggest this policy is to confront the present trend. "Castles" are nice for they fit well into the government's centralized bureaucracy. They have visability: they look impressive. They have standardization: they can be easily inspected. They are acceptable to foreign granting agencies and countries they are tangible monuments.

This all is not to imply that health stations should not be constructed. Surely a certain amount of equipment and office space can be helpful. However, the Ministry is possibly running too fast if it is establishing buildings in the local community before the health personnel. It seems that more investment in manpower and medicine might be better initially: the injection doctors and granny midwives do not work out of an office.

Encouragement of referrals Chapter Two spent some time discussing the use of referrals to help increase the use of all three levels of the changwat health system in a more ordered and efficient way. Only about 10% of the patients at the changwat and amphoe hospitals were referred, and it seems, even with that low figure, there are primary health care workers referring cases on to the changwat hospital which could have been handled by an amphoe hospital We believe referrals should be encouraged as well as "backward referrals" that is, patients who come to the changwat hospital unnecessarily when there is another sufficient place nearer their home should be persuaded to go to the local amphoe hospital or health station the next time. Possibly this sort of advice is fruitless, for people will go where they choose, but it could help to lighten the outpatient work load of the changwat hospital.

Use of trained paramedics in health stations. A comment often repeated during our upcountry survey was "if we have an illness or injury which is somewhat serious the local health personnel at the government station does not want to see us." The lack of training and official permission to treat important health concerns of the people contributes to both the lack of people's faith in and use of the local health stations. It seems the use of trained paramedics in the health stations or retraining the present health personnel in this capacity would greatly increase use of the health

stations: what the people want is a skilled person nearby who can treat them when needed. More on this subject will be discussed in the following section.

The health station as a drugstore. One does not have to be a trained pharmacist to comprehend the impact of drugstores upcountry. Our statistics showed that drugstores are the only universally "ever-used" health provider (97% of all households) and that they provide treatment of 58% of minor problems, supply over 30% of family-planning pills in the changwat and provide treatment for about 5% of the serious medical cases. We also know people will pass by the local health station to go to the drugstore.

We suggested in Chapter Two that possibly the way to provide an important convenience to the local people while increasing utilization of the health station would be to open up the health stations as market competitive (with government price controls) drug suppliers with a reasonable rate of profit going to the health station personnel. Eighty to 90 percent of the local people and health personnel surveyed would be agreeable to this sort of set-up Different ways of approaching this could possibly be tried in a pilot project first to check if this sort of health station activity is feasible

However, the above suggestions on "the health station as a drugstore" or "the health worker as a paramedic" are greatly complicated by the fact that, although health personnel are limited in treating and dispensing medicines in their official roles, in their private roles a great many run drugstores and private clinics treating with high quality and powerful drugs. It is in this somewhat inadvertant way that the Ministry of Public Health has brought needed medical services to the rural people.

The situation that brought this about is a distressing example of the government setting up conflicting policies. The conscientious rural health worker, upon taking his assignment in the local area, finds himself with many medical requests and opportunities that he cannot and is not allowed to fill as an official government health worker. He either has to tell the people he cannot treat them and send them away, or he must treat them in a private capacity by procuring potent drugs, easily available through commercial outlets (which are not restricted by government policy.) Working in private not only allows him to fulfill his role as

a "maw" (doctor) but also provides him with a lucrative side profession. Often the private practice become so financially rewarding that his official job as a government health worker is neglected.

Therefore the policy changes were have suggested are only in many ways bringing the rural health worker's private practice back into his role as a government health official. This also might discourage new health workers from going into private practice as soon as they get into their jobs.

The private sector or "status quo" alternative. Finally if the Ministry feels adverse to the above recommendations, then we would suggest a very cautious, much slower building program concentrating on the amphoe hospital program in general with selective sitings of midwifery or second class health centers in very needy and remote areas. More importantly, the government might encourage the spread of drugstores throughout the countryside, as well as make training available for their clerks. The private capitalist enterprise system has shown itself to be an effective and well-accepted provider of health services. Last but not least, a very important way to increase the choice of health care alternatives (outside the hands of the Ministry) is to encourage expansion and improvement of the rural road system thus making it easier and take less time for local people to get to the health provider of their choice. Needless to emphasize, improvement of rural roads will also bring general social and economic benefits in addition to health.

In closing we would like say that this project, involving a great amount of research manpower and time, was undertaken with the hope of more clearly understanding utilization of the public and private health sectors and recommending possible avenues towards improving the present government health system so to be of greater benefit to the peoples of the countryside. Much is left to be done. both in research and evaluation, and policy and program implementation but we hope the present project will contribute in a constructive sense to further clarifying while yet encouraging further debate and improvement of the public health/family planning service system.

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APPENDIX I

GLOSSERY OF THAI TERMS USED IN THE REPORT

1) Geographic terms:

Changwat (จังหวัด) - Province, or primary administrative unit

Amphoe (อำเภอ) - District, the secondary administrative unit

King Amphoe (กิ่งอำเภอ)- A district, but of lesser status than an "amphoe", usually located in remote areas and/or with a small population, administratively treated as part of the amphoe from which it is sub-divided.

Tambon (ตำบล) - Commune or township, the tertiary administrative unit consisting of a cluster of villages.

Muban (หมู่บ้าน) - "Village", the smallest government administrative, though better translated as village area, for "muban" boundaries encompass much land which are not a part of the dwelling area of the rural people. The government numbered muban are, sometimes changed or subdivided, usually inclusive of all territory, and generally not greater than 2,000 population.

Tua Changwat (ตัวจังหวัด)-The administrative urban center of the province, usually translated "provincial center" or "provincial capital"

Tua Amphoe (ตัวอำเภอ)- The district seat, where all of the administrative offices of the district are located.

Sukapiban (สุขาภิบาล) - "Sartitary District"; a semi-urban designated area, administered by an appropriate commission.

2) Political administrative terms:

Nai Amphoe (นายอำเภอ)- Head administrative officer of the district; a civil servant assigned by central government (Ministry of Interior)

Amphoe Health Officer (อนามัยอำเภอ) - The Ministry of Public Health administrative officer for the district

Kamnan (กำนัน) - Locally-elected head of the commune

Puyai Ban (ผู้ใหญ่บ้าน) - Locally-elected village headman

APPENDIX II

Table A1. Suphanburi by Amphoe: General and Family Planning Statistics

AMPHOE (code)	TOTAL POPULATION (1974)	WOMEN, AGE 15-44 (1974)	NUMBER OF TAMBON (1977)	NUMBER OF VILLAGES (1976)	AREA(KM^2)*	RURAL DENSITY (Pop/Km^2) (1974)	RESIDENTIAL ELECTRICITY-1975 (in 1,000 kw-HRS.)	NEW FAMILY PLANNING ACCEPTORS - 1975	TOTAL PILL USERS - 1975 (Q YEARS OF PILL USE)
(01) MUANG	151,739	32,669	18	97	517	236	3091	1314	532
(07) SONG PHI NONG	105,204	21,396	14	103	730	131	902	179	392
(04) BANG PLA MA	82,620	16,945	13	108	496	167	350	437	488
(08) U THONG	87,128	18,541	11	76	641	156	196	648	570
(06) SAM CHUK	89,138	19,405	11	81	620	144	675	934	116[illegible]
(03) DOEMBANG	68,735	15,300	12	96	431	160	435	697	955
(05) SI PRACHAN	61,113	13,243	9	56	251	243	469	580	650
(02) DON CHEDI	34,878	7,324	5	29	320	109	310	769	39[illegible]
(09) K. DAN CHANG	11,531	2,455	4	30	1243	09.3	PRIVATE SOURCE	75	101
CHANGWAT TOTAL	692,086	147,280	97	674	5249	126	6428	5633	5248

* AREA DATA CALCULATED FROM AIR PHOTO MAPS

Table A2. Suphanburi by Amphoe: Health Statistics, 1977

	# OF DOCTOR	# OF NURSES	# OF NURSES' AIDES	# OF MIDWIVES	# OF MALE HEALTH WORKERS	TOTAL PERSONNEL	# OF AMPHOE HOSPITALS	# OF 2nd CLASS HEALTH CENTERS	# OF MIDWIFERY CENTERS	# OF SITES WITH ACTIVE HEALTH FACILITIES	# OF 1st CLASS DRUGSTORES (1976)	# OF 2nd CLASS DRUGSTORES (1976)	DISTANCE TO NEAREST DOCTOR (km)	DISTANCE TO NEAREST BIG HOSPITAL (1 = closest, 5 = farthest)
(01) MUANG	11	41	54	8	7	121	0*	8	1	10	7	24	9	1
(07) SONG PHI NONG	2	2	3	5	8	22	1(1)**	6	0	8	3	13	16	3
(04) BANG PLAMA	1	1	2	11	11	26	1	7	0	8	0	9	10	2
(08) U THONG	0	1	0	9	10	20	0	10(1)[a]	0	10	5	6	26	2
(06) SAM CHUK	1	2	4	9	10	26	1	7(1)[a]	1	9	0	14	15	3
(03) DOEM BANG	0	1	2	10	10	23	1	7	0	8	0	9	12	4
(05) SI PRACHAN	0	1	1	12	9	23	0	9	0	9	1	14	15	2
(02) DON CHEDI	1	2	1	6	7	17	1	3	0	4	0	8	6	2
(09) K. DAN CHANG	0	0	0	2	4	6	0	3(1)[a]	0	3	0	10	53	5
CHANGWAT TOTAL	16	51	67	72	76	284	5(1)	60(3)[a]	2	70	16	107	162	2 2/3

* SITE OF CHANGWAT HOSPITAL

** INCLUDES MUNICIPAL HEALTH CENTER

a INCLUDES UNSTAFFED HEALTH CENTERS

Table A3. Percentage distribution of most recent method of family planning ever used by provider

Method	Government hospital in Bangkok	Changwat hospital	Amphoe hospital	Health station	Tambon doctor	Mobile clinic	Private Medical Doctor	Private hospital	Private clinic	Practitioner "maw"	Injection doctor	Drugstore	Small shop which sells drugs
Pill	-	3.6	41.4	85.0	28.6	-	7.6	20.0	3.5	30.0	-	88.6	100.0
IUD	18.6	17.7	19.2	3.1	-	50.0	2.5	-	-	-	-	-	-
Injection	-	0.7	6.1	9.3	42.9	-	17.7	-	20.7	40.0	23.1	6.9	-
Condom	2.3	1.4	1.0	-	-	-	-	-	3.5	-	-	3.1	-
Female sterilization	58.1	46.8	23.0	2.2	-	-	25.3	60.0	27.6	-	-	0.8	-
Male sterilization	20.9	29.1	9.1	0.4	28.6	50.0	46.8	20.0	44.8	30.0	69.2	0.8	-
Others	-	0.7	-	-	-	-	-	-	-	-	7.7	0.8	-
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total n for columns	43	141	99	227	7	2	79	5	29	10	13	131	9

Total n = 844

Table A4: Percentage of respondents ever using a provider by the occupation of head of household

"Ever used" provider	Total	Occupation							
		Rice farming	Other farming	Farm labor	Skilled labor	Unskilled labor	Sales	Skilled services	Unskilled services
Traditional doctor	40.2	42.4	41.5	28.3	32.5	36.8	35.5	34.8	27.5
Spirit doctor ("maw pi")	7.5	7.2	9.1	4.3	17.5	6.7	5.3	10.7	3.9
Granny midwife***	66.6	70.3	75.8	80.9	52.5	57.3	40.8	43.8	56.9
Injection doctor***	38.0	39.9	44.5	57.4	25.0	37.3	21.3	24.1	23.5
Tambon doctor***	40.1	44.6	33.1	53.2	37.5	32.0	25.7	33.0	37.3
Government health worker**	57.8	56.2	63.9	50.0	69.2	66.2	48.7	58.6	68.0
Medical Doctor***	60.8	56.9	61.8	55.6	74.4	68.9	67.8	79.3	68.0
Amphoe hospital*	20.4	20.9	16.7	4.3	25.0	24.0	20.0	30.1	17.3
Private clinic***	50.9	46.8	55.8	30.4	60.0	46.8	64.1	69.0	54.9
Private hospital***	14.2	12.3	18.2	2.2	12.5	12.0	78.5	25.2	14.0
Changwat hospital**	62.0	59.3	62.7	61.7	74.4	64.5	64.5	78.4	64.7

Chi-square significant at .05*, .01**, and .001***

Sample size varies from 1985 to 2042 for each row.