



CHAPTER II

ESSAY ON DISSEMINATION OF PUBLIC HEALTH INFORMATION IN DEVELOPING COUNTRIES

2.1 Introduction

The importance of information

Presently, information is essential and plays a vital role in people's daily lives. Information is an important factor in guiding political, social and economic decision. It has an even more crucial role in human resource development. Besides this, information also builds understanding between people and creates a peaceful society.

There are many factors creating information needs of people. Increasing *community size* makes administration more complex. Development of group and class interests creates *social differentiation*. *Technological innovation* produces new products and processes, new occupations and skills, and new communication and information channels, and makes people need inventors. *Social welfare provision* allows people to receive more service from the government or social welfare agencies. *Growth in education* requires teachers, researchers and students to cultivate new ideas and knowledge. The increase in *life expectancy* allows people to have a long life. All these social developments lead to greater information demand.

In broad terms, “every person” needs information relating to home and family, employment, leisure, his/her activity as a consumer, and general community involvement. Home and family needs include information on housing, health care, education, social welfare, private insurance, savings, banks, investment, legal matters, cooking, repairs to the home and the domestic appliances.

Employment information needs relate to jobs, pensions, and income tax. Leisure includes entertainment, hobbies, sports, gardening, holidays and travel generally.

Information on these matters often can be obtained by consulting those who know: housing officers, doctors, teachers, welfare workers, insurance agents, bank managers, solicitors, builders, travel agents, etc.

Chuthima Satchanan (cited in Phantipa Yenkunthos, 1991a) stated that, “information is important for government, commerce, research, academics, and the general population”.

The government needs current information in order to analyze, put into practice, and plan the development of the nation. It also uses information in the decision-making process.

Information is important for completing business on a day -to-day basis. Trench (1997a) stated that “information is a key component in gaining a competitive edge in industrial, scientific and commercial environments”. In the stock exchange market, as

always happens, businessmen are looking forward to hearing an up-to-date stock information from the broker, for making decisions on whether to invest in a new business or expand their products.

For educational fields, information is a resource for students, teachers, and researchers; for example, researchers use recent information supporting their ideas to make research or study more credible and reliable. Information is the foundation for developing understanding, for enhancing expertise in various fields.

In the public health field, information helps us examine the health of the population, the situation of the population, the service of the government, and the knowledge of the public relating to their own health.

Medical and public health personnel, besides using information for their own purposes as described above, still have to use information for their own job responsibilities. For example, physicians, who give people curative treatment, to improve longevity, must be concerned with up-to-date information, whether on new diseases, the best preventive measures and therapeutic strategies, or how to reduce the burden of diseases by applying information and new equipment or technology to his/her job. As Lown (1998a) stated, they need new information that can help to solve health problems.

Phantipa Yenkhunthos (1991b), who studied information use of physicians in regional hospitals in Thailand, found that the most important purpose in information

seeking and information use of physicians is identifying innovative uses of medical science. Then, they use information for disease diagnosis. Information is a treasure trove for developing their professional knowledge not only in Thailand, but worldwide.

As mentioned above, information can be fully integrated into every aspect of work and organization i.e. employment, government, business, educational fields, and public health fields. Information also plays a vital a role in every aspect of people's daily lives.

2.2 Relevance of User, Uses and Information Characteristics in the Context of Public Health Information

Three essential elements generate public health information, namely users, uses and information (Khin, 1986). These elements need to be examined in the context of the requirements of public health personnel in all positions i.e. decision makers and staff responding to peculiarities of local situations.

2.2.1 Users

Yaacob (1995a) identified potential users of information to include those who contribute directly to patient care and treatment (doctors, nurses, laboratory scientists, pharmacists, occupational therapists, speech therapists), persons not directly concerned with patient care but who have a major impact on its delivery (general administrators, computer scientists, medical record officers etc.), and the patients themselves.

In addition, users of health information can be grouped into levels matching the hierarchical levels as they exist in the organisational structure of the Thai health system: the central level, regional level, district level and sub-district level. Users of central level information usually include policy makers, and planners at the Ministry of Public Health who need timely, accurate, relevant, and up-to-date health information for both management and decision making in order to effectively respond to community health problems. After gathering information for use in the policy making process, information and policies are then disseminated to other levels of public health users in Thailand. They will use that information as a guideline or instruction for their practical work, concerning operations at lower levels. It shows that the need of users at different levels will naturally differ in the range of details and job responsibilities.

2.2.2 Uses

The use of information by medical and public health personnel varies from level to level depending on requirements, responsibilities and details of work.

Medical and public health care personnel usually need information in one of the following areas: medical treatment, management and planning, research, patient support, and training of medical and public health personnel.

In the study of information use of medical scientists in Thailand, Pimrumpai Premssmit, (1989) found that information is needed to support decisions and work relating to (i) promoting wellness, preventing illnesses and curing diseases (ii) monitoring, evaluating, controlling and planning health care resources (iii) formulating

health and social services policies and (iv) advancing knowledge through research and dissemination through education.

Accurate and up- to-date information on health is required. This requirement is not only for medical and public health personnel, but includes the entire community; for example, the general public needs to know how to avoid illness and improve longevity, and primary care providers need to know what preventive and therapeutic strategies achieve the best outcomes. Therefore, the value of information will depend upon the use and benefits gained.

2.2.3 Information Characteristics

Public health information can be classified into the following three categories;

1. Health status
 - Morbidity data is collected from outpatients and inpatients in hospitals and other health facilities
 - Epidemiological data is obtained from surveillance reports, which provide prompt information on outbreak of diseases
 - Statistics on births , deaths and causes of death are obtained from a vital registration system
2. Health activities
 - Information about the progress of activities performed by health personnel can be obtained from each level of the health care delivery system

- Health indicators have been established for each program or project and recording and reporting systems are required to facilitate the monitoring and evaluation of the health program or project
3. Health resources
- Information on health resources is also essential for health administration; without knowing what resources are available, health activities could not be carried out smoothly and efficiently.
 - Health resources comprise health managers, health institutions, hospitals and health centers, finances, supplies and equipment

From several of the public health information characteristics, medical and public health personnel have to be more alert in learning about new information in the three categories above that benefit their work because of rapid changes in information including equipment, treatment, health indicators, and prevention of new diseases. Then, public health personnel have to effectively access that information by using high technology in searching for information in order to develop their work capacity.

Increasing knowledge by application of information is still essential to medical and public health personnel no matter what their positions are in an organization.

Yaacob (1995b) supported the idea that “the advent of electronic technology in searching for public health information in such that currently electronic technology has changed the ways in which information is produced and made available and has

provided doctors with more efficient systems for diagnostic assistance". Thus, it is important for medical and public health personnel to know how to find information when needed by using technological devices. In addition, it has also enabled medical and public health personnel to make use of improved information retrieval skills to cope with rapid changes in medical knowledge.

The types of public health information can be classified in to three categories as follows (Yaacob, 1995c):

1. Published literature: research papers, textbooks, government reports, newspaper articles, statistical documents
2. Documents generated from health care institutions: committee papers, reports to managers, procedural guidelines for both management and clinical decision making
3. Electronic documents: databases, CD-ROM, sounds etc.

Presently, electronic documents are a very popular form for which demand is growing. Electronic information can be easily sent and received via e-mail, online and Internet. These will include CD-ROMs service and other IT based services.

The Center for Disease Control and Prevention (CDC), located in Atlanta, Georgia, USA, is an agency of the Department of Health and Human Services, which has the responsibilities of preventing and controlling emerging and reemerging diseases, and to supervising the health care system. CDC provides menu-driven access to computer mainframe 24 hours a day and provides information on mortalities, acquired

immunodeficiency syndromes, notifiable diseases, etc. Each database has on-line documentation in full text form (Friede, Reid and Ory, 1993).

Besides, public health information is also available in vocal format by telephone service. Users can use this information any time. There is evidence that restructuring of the computing and communications infrastructure as a result of the availability and use of electronic information is occurring (McClure, 1996). This also has a fundamental impact on every organization, especially health organizations and related-health institution and then increasingly on established network systems.

According to the establishment networks, information/ resource sharing and document delivery is scientifically affordable. The SatelLife, a Boston-based non-profit organization, was founded in 1987 to provide communication links among physicians and health workers in the developing world and to constitute a source of relevant information (Lown, 1998b) in order to effectively tackle health problems. SatelLife also gives training for health professionals in information technology.

2.3 Communication Theory

The dissemination system will not be formulated without communication theory. Vickery (1987) talked about communication theory which can be represented by the following interconnection:

Source → **Channel** → **Recipient**

Sources of information: information comes to a recipient from an informant that may be both a person and an organization. A person may be the true source of the information that produces the original message. But the information is from an organization, which has the responsibility of taking charge of the production process.

Channel: after a message carrying information is formulated by sources, it may be presented face-to-face with a recipient. Alternatively, message transfer may be via publication, audio-visual means, and information technology; all represent the communication path over which the signal is transmitted to the receiver.

Recipient: in any social situation, whether communication takes place and what information is absorbed may depend on the information needs of the recipient, his/her willingness to accept information, his/her access to a channel, and his/her ability to absorb the information. It also depends on his/her occupation.

It means that dissemination will be the channel in communication from which a recipient will get information.

2.4 Public Health Information Dissemination (Situation) in

Developing Countries

Dissemination of information is a method of knowledge transfer. (Charas Suwanwela, 1997). The selected and processed information can be disseminated to the

users in many ways and in many forms, both conventional and nonconventional. The dissemination can be in the form of products generated by the information center, or through request services offered by the information center or by its involvement in direct technology transfer activities. Dissemination methods have been subdivided into five methods: (i.) publications (ii.) audio-visual tools (iii.) reprographic services (iv.) reference and referral services; and (v.) direct technology transfer activities (Valls, 1983a).

Therefore, disseminating information efficiently requires much creativity and adaptability especially in developing countries where the vast majority of the users are rural poor. Valls (1983b) also stated about the fullest meaning the word of “*dissemination*” is not simply to have a piece of information physically present in many locations. The ideal of the full meaning of the term “*disseminate*” is to see that this piece of information should be accurate and be effectively utilized at the locations it reaches.

In developing countries, doctors and other public health professionals are missing out on relevant information about health. A lot of information they need is available in developed countries, and those who have it are happy to share it with them. It is difficult to transfer information from one place to another for solving the problem of a lack of information because the information might not be perfect, or might be the inaccurate and irrelevant for certain place. Then, the value of information will be of little use.

Some principles of dissemination have to be described, before going in to the details of the problem of public health information. “*The right information to the right person at the right time in the right format and of the right quality*” (Trench, 1997b) is a key principle or concept in dissemination services. Though, before disseminating information to users or publicity publishing worldwide, there are some rules which are worth reproducing and discussing as follow:

- Information must be useful to the needs of users or organizations to which it is sent.
- The information has to be timely. It is of no use producing a high quality product if the information is out of date. So, it is important to establish the frequency of updates needed by users to avoid this situation.
- The quality of information is a key. It is necessary to verify or check with subject specialists, or reliable sources about the content before dissemination, as to the validity of information.
- A large quantity of information should not be mistaken for quality services; sometimes the most relevant information is contained in one figure, one line or one article (Trench, 1997c).
- The format and presentation of the information is important and may have to vary depending on the users or organizations, i.e. some organizations can not access on-line searching or Internet, then hard-copy material may be preferred.
- The cost of providing a dissemination service should be equal to its usefulness and will need to be constantly assessed.

- It is essential to reassess constantly what is provided as the interests of users and organizations change with time.
- A monitoring and evaluating system should be used after disseminating information. It can be a tool in identifying quality of information provided and the dissemination service as a whole.

The problems which occur in public health information dissemination in developing countries can be described as follows:

2.4.1 What is the Problem?

2.4.1.1 Gross inequalities exist in the availability of health information in the developing and developed worlds.

Paucity of relevant information is a chronic feature of health care in developing countries. As a result, many health professionals in this country (Thailand) have gradually been misled into believing that they can go about their jobs without new information. The position in developed world is quite the reverse. Most doctors are deluged every week with information. Too much irrelevant information is also not helpful.

2.4.1.2 Inappropriate materials have been sent to the wrong place.

The obstacles of inappropriate materials being sent or potentially useful information ending up in the wrong place is one factor of public health information dissemination. Pakenham (1997) reported that in meeting the information needs of health workers in developing countries, information flows developing countries-

developing countries are often much more relevant than information that flows developed countries-developing countries.

2.4.1.3 Transferring information.

Transferring all available information from the developed countries to developing ones is obviously not going to meet the health information needs of the developing world. The reason is that the investment in the infrastructure, especially in the electronic mode of communication, is usually the key problem in the capacity of developing countries. Another problem is the high operating costs for establishing hi-technology. Therefore, transferring and disseminating information is evolving slowly compared with developed countries. The result of this is that sometimes up-to-date and current information might not reach the target place on time.

2.4.1.4 No access to up-to-date information

Health workers in many countries, particularly in sub-Saharan Africa, have almost no access to up-to-date information. Patrikios from the University of Zimbabwe Medical Library (1994) stated that “The shelves in our libraries are full of outdated books, most of them 15 to 30 years old”. Economic crisis has affected the library. Books and journals are more expensive. It also has affected others in Africa. However, the low quality of this library is still better than other libraries because it is based in a medical college that was once well funded.

One consequence of the outdated health information is that health workers get used to practicing without keeping up to date. This has also happened in

India; only 15% of doctors in India regularly read a journal. A similar pattern is seen in many other countries for example, Mexico, where good journals have been hard to come by (Kale, 1994a). Valls (1983c) has written this problem always happens in information dissemination in developing countries, because of shortages of modern equipment, sources, insufficient and inadequate infrastructure, particularly the lack of an information superhighway.

Consequently information flows are seriously impeded. Besides, lack of human cooperation can also be an obstacle in terms of lack of cooperation with other organizations and resources. Public health workers or library staffs are not well adapted to new technology application. Many of them play a passive role.

2.4.1.5 What information do they really need?

The fact that health workers have lacked information is one factor that makes it hard to determine what information they really need. Gobor Kapocs, (1994) a neurologist from Hungary, also thought that it was impossible to know people's need, and he emphasized that different groups, i.e. doctors, nurses, other health professionals, administrators and government bodies will need different information which depends on individual needs and responsibilities. Hence, sending information might not meet their needs.

Therefore, looking for the ways to improve the dissemination of health information to the developing countries is significant.

The information needs of public health workers in developing countries are urgent and should be met quickly. It is important to make health information available to doctors in the developing world at minimal cost, and provide easy access to that information in order to reduce the problem of distribution as a whole. The following questions on information dissemination must be clarified: How can relevant and useful information be transferred to doctors and health professionals and others in the developing world at minimal cost? How can we know which kinds of materials are wanted? How best can this be done? And how can the dissemination of information be improved?

2.4.2 Ways to improve the dissemination of health information to the developing countries.

Because of the gross inequalities in accessing to information worldwide, the developed world must find ways of making useful, reliable, and appropriate information available to the developing world. Why should the developed world be the leader for solving this problem? One reason to support the developing world is the developed world has more resources, networking and high technology which makes it easy to collaborate with other organizations.

The possible solutions for each problem mentioned above will be discussed as follows;

2.4.2.1 Information flow to developing countries should be not only from developed countries but also from any country in the world with successful public health programs. Medical and

public health databases which are called Medline, have been popular during the past decade; more than half of the information on public health was from Britain and the United States. Only 1.7% of the information was from Japan and 0.01% from Iceland both of which are countries that have the highest life expectancies (WHO, 1996). This indicates the unsuccessful production of information does not represent an obstacle to accessing information from other sources and realizing good public health.

2.4.2.2 Distribution systems have to allow people in developing countries to select materials themselves by follow up and evaluation forms. People in developing countries must make the determination of what information they really need. Some suggestions from Kale (1994c), that might help to improve the appropriateness of the information sent indicated that:

“Ask people what materials they want, and let them know what materials are available. Use core library catalogues that have been identified by the WHO and others. Encourage recipients to be constructively critical. They may be afraid to criticize the quality of materials for fear of being thought rude or that donations may stop. Establish personal contacts and use carefully phrased evaluation forms. Consider offering training in critical appraisal to donors and recipients" (Kale, 1994c)

That is one possible way to efficiently disseminate information, and achieve the ideal of “right information to the right person at the right time in the right format and of the right quality” (Trench, 1997d, p.285)

2.4.2.3 Electronic dissemination system is the fast channel of communication and dissemination. Warren (1994), one attendant of the health information for developing countries workshops, has stated that “electronic publishing and distribution could solve information dissemination problems”.

For this point, a prompt allocation of organizational resources i.e. budget, human, information technology, is a major factor to coordinating the best outcome of electronic dissemination system.

The following items are example applications, which are well known and accepted by users. They are all high technology and attractive devices for accessing & disseminating up- to-date information.

2.4.2.3.1 Computerized databases. The pattern of provision of electronic information is very different from printed information. Vickery (1987a) said, “the logic of print on paper is local availability through multiple outlets of multiple copies of a particular document. The logic of the new information technology is quite different. It is that of multiple access via a telecommunications network to a single copy of a document to help remotely in machine-readable form”, which is supplemented by

interlending networks giving access to remote stores, and local forms of electronic stores are becoming available.

The number of publicly accessible databases is increasing all the time. An analysis of the situation in 1982 showed that from Euronet Diane News, there were over 1000 databases internationally available and in 1984 there were 2450 databases (Vickery, 1987b). A high proportion of published information is now in machine-readable form and much of it is publicly accessible online. It means that the volume of printed information, whatever textbook, article, journal, on any subject, will be converted to machine-readable. It is believed that eventually electronic information will replace the printed version. This indicates that the electronic databases will dramatically increase. And the number of producers will also grow in both commercial organizations and non-commercial organizations. The following examples are of the service providers that produced computerized databases for free access and for subscription.

SilverPlatter Company provides complete access to many collections including more than 200 bibliographic and full-text databases offering global coverage of corporate trends and strategies, economic, finance, information management, investment, legal, and medical and pharmaceutical issues and much more (Silverplatter Company, 2000).

The company offers the finest collection of professionals and scholarly databases in the world of medicine. The Medical & Pharmaceutical Collection provides

full-text access to research, clinical findings, policy issues, current medical news, drug research, treatment methodologies, healthcare, nursing and other medical topics. The SilverPlatter Medical & Pharmaceutical Collection includes titles from the most highly regarded publishers worldwide, including the U.S. National Library of Medicine and the American Psychological Association etc. SilverPlatter medical databases are essential resources for healthcare and pharmaceutical professionals, educators, researchers, scientists, medical schools, hospitals, and research institutes. Primary medical databases in the company collection include MEDLINE, EMBASE CINHAL, Drug Information Fulltext, and numerous other databases in related medical fields. All these databases are available for searching via Internet, Intranet, or on CD-ROM.

MEDLINE database is a very popular database providing comprehensive information on every aspect of medicine and health care. It contains over 10 million citations and abstracts of articles from international biomedical journals published in 70 countries. Medline includes all citations published in Index Medicus, and corresponds in part to the International Nursing Index and the Index to Dental Literature.

The Center for Disease Control and Prevention (CDC), converted printed information into machine readable data which users can easily access at any time. For example, at CDC, the computer mainframe provides menu-driven access 24 hours a day with information on mortalities, hospitals, acquired immunodeficiency syndromes, noticeable diseases, etc. Each database has online documentation in full text form. It also provides public health information in vocal format by serving through telephone. Users can use this information any time. In addition, there are many

databases related to the fields of medicine, health and public health such as AIDSLINE, MEDLINE, STATISTICAL DATA, POPLINE and other secondary sources that are recorded in the CD-ROM.

The International Network for the Availability of Scientific Publication (INASP) is a non-profit organization. Founded in 1991 by the International Council of Scientific Unions, INASP is a cooperative network of providers and recipients of science information, promoting the exchange of quality information, both printed and electronic, between and within the developed and developing world. It has realized the obstacle or problem of inappropriate materials being sent or potentially useful information ending up in the wrong place. Therefore, the network has created several **computerized databases**, which provide current information on existing programs of support or activity in the provision of information. The network also offers advisory service that helps in publication. It also produces a useful directory of subjects specific to supporting organizations.

In Thailand, medical and public health workers can also link with computerized databases and follow procedures by using the on-line system and the Internet of the Computer Center of the *Ministry of Public Health*, which has provided an enormous amount of information to users. There is complete information on health, AIDS in Asia, AIDS Info, Malaria, Polio Update, EID, ACT Malaria databases. Most information is from the latest news, and frequently asked questions (FAQ) topics. If users want to ask the question or discuss via this service, they can directly e-mail the provider.

2.4.2.3.2 Internet. The simplest way to describe the Internet is with one word “Communication” (Plucauskas, 1994). The Internet is often called a network of networks. Internet provides a vehicle for networks of all kinds and individual stand-alone computers to intertwine to form a global network, which connects over 30 million users in over 40 countries. From observing many of the published surveys over the last two years, the number of people online throughout the world is 359.8 million. In the Asia/Pacific region, the number is 89.43 million (Nua Ltd, 2000). For Thailand, the Thai Farmers Research Center estimates the number of users with access to the Internet is growing and totaled 1.4 million in 2000 (Man, 2000). Internet contains a collection of multimedia resources including graphics and sounds. This storehouse of information contains not only books and papers but raw scientific data, menus, meeting minutes, advertisements, video and audio recordings, and transcripts of interactive conversations. The ephemeral mixes everywhere with works of lasting importance (Lynch, 1997). There are also many excellent publications that provide in-depth descriptions.

This service will be beneficial to medical and public health workers when they want to be members in groups of their field, and especially in emergencies and when distance is an obstacle. They can use the Internet application for resource sharing, to hold discussions, and ask questions in their groups. Besides, they can search for information from any source related to medical and public health fields by using Internet tools. It can distribute information in a way that is infinitely more flexible and more timely. It can provide an innovative solution for meeting a variety of communications needs within the public health community.

There are many different ways to send and receive information across the Internet as follow;

- **World Wide Web (WWW)** is the most widely used service. It provides the linkage to information via hypertext. Hypertext provides the linkage to other information sources through selection, or highlighted words within a text. A person simply chooses the highlighted word to get the facts on the topic of interest. Various types of information will be displayed, i.e. news, full text, abstract, announcement etc. It also allows users to incorporate graphics, sounds, and full motion videos into a document. There are 2.25 million web sites in the world (Duangchan Payakaphan, 2000). It is particularly useful for accessing medical & public health subjects provided by related organizations, i.e. academic institutes, associations, or publishers etc.

Medical and public health workers in Thailand can use the WWW applications of the Ministry of Public Health by using WWW.moph.go.th location. The Ministry has provided information such as (i) the Ministry news; Health & Public Health Personal news, newsletter, weekly news and news for mass communications, (ii) Health IT (Health Information Technology); Databases (Medline CD-ROM), Telemedicine, (iii) Data & Statistics; the information on epidemiology, weekly report on disease surveillance, Public Health Statistics and so on.

- **Electronic mail (E-mail)** is the major service of the Internet. It allows users to send and receive messages from around the world. Protti (1997) stated

that E-mail is based on the fundamental concept of storing and forwarding technology which is used to transfer text, program files, spreadsheets and even photographic images. Messages can be sent and received within hours or minutes. It is also used to join electronic mailing lists on specific topics of interests for discussion, i.e. software & computers, sports, arts, culture or medical and public health etc.

- **Telnet** provides a tool by which users can log on to other computers around the world. Through Telnet, a person can access other computer sites using his/her own computer as a terminal. This is also particularly useful for accessing medical libraries and other medical and public health care database systems that are linked to the Internet.

2.4.2.3.3 Organizational support. As we know, dissemination of information or knowledge is an important means for better health, not only for the developing countries, but also for the whole world. Thus, there is a need for proactive planning and actions for an improvement of knowledge dissemination. International cooperation is needed because a single country cannot do it alone. Cooperative programs with appropriate contributions from all partners must be devised.

- **World Health Organization (WHO)**. Dissemination of health information is a major function of the World Health Organization (Kale, 1994c). Its publication program produces books and information prepared specifically for the developing countries. Every year, it publishes books in 3 languages: English, French and Spanish. Most of its publications are distributed for free. The WHO still supports

other programs in collaboration with other organizations i.e. the World Health Organization Reproductive Health Library project where the WHO collaborates with the Cochrane Collaboration. (WHO; Letters, 1997). This collaboration serves to help health workers in developing countries that face lack of access to reliable, up-to-date information on effective treatments, which is one of the most important problems faced by health workers.

- **International Network for the Availability of Scientific Publication (INASP).** Besides providing computerized databases as previously described, INASP is also a provider and recipient of science information, promoting the exchange of quality information in both printed and electronic materials between and within the developed and developing world. Meeting the information needs of health workers in developing countries in 1997, the INASP serves three main functions. *Firstly*, it provides a referral and advisory service for information providers and potential recipients; for example, institutions seeking health information can approach INASP directly and be put in touch with the organizations most likely to help. INASP acts as a catalyst for new collaborations and initiatives and will soon be launching a dedicated e-mail discussion list to facilitate cooperation and debate. *Secondly*, INASP aims to build a global picture of health information priorities in the developing world and the most appropriate way of addressing them. It is developing a specialized database of need assessments, evaluations of cost effectiveness, and other materials related to the provision of health information. These data will be made freely available to plan and set up new programs, to provide support for funding applications and to help develop future strategies. *The third function* of INASP is advocacy, both at

specific and general levels. It works with organizations such as the Association for Health Information and Libraries in Africa to promote their needs to a wider audience and assist in negotiation with publishers. Besides that, it works increasingly with international organizations like the World Health Organization and World Medical Association and with government funding agencies to promote the development of cost effective strategies and to strengthen political and financial commitments.

- **The Pacific Public Health Surveillance Network (PPHSN)** aims to present and control epidemic diseases using new communication tools like e-mail and the Internet (Perkins, 1999). PPHSN also provides an e-mail listserver called PACNET, which mainly functions as an early warning system, sharing timely information on outbreaks in the region. This system uses e-mail to network approximately 250 health professionals, national ministries of health, and international agencies (UNICEF, WHO, and the Pacific Community). Besides, it produces the publication of timely and accurate information in form of bulletins and articles publicizing the work of the network members, monographs etc. Moreover, PACNET gives its members access to diagnostic facilities not always available in a country, and help countries mobilize appropriate resources for outbreak prevention.

- **Book Aid International from London** started a project on book dissemination in the 1950s. It now disseminates medical books by two experts selecting the books, which recently replaced outdated editions before them and sends these out as donations. Book Aid International annually sends about half a million books, periodicals, and other printed information to 65 countries worldwide.

Information needs of health workers in developing countries showed that the overall impact of improving health information would be enhanced by increased coordination, analysis, and funding. It is found that introducing any electronic system for health workers to acquire materials electronically changes their behaviors and learning culture as well.

Therefore, a new program for training to acquire information successfully, which is needed to supply and receive information and to build a global picture of all activities and needs, should be implemented.

2.5 Public Health Information Dissemination at the College of Public Health, Chulalongkorn University

Providing access to reliable health information for health workers in developing countries is potentially the single most cost effective and achievable strategy for sustainable improvement in health care: being cost effective because the amounts of money required are little compared with the total invested in health care services, and being achievable because providers of health information have the will and commitment to make it happen, and because information technology provides exciting new opportunities to complement conventional methods of dissemination.

The purpose of this part is to convey the present situation of information dissemination at the Information Center of the College of Public Health, which

functions as a transmitter. One of the objectives of the College indicates such a function: (College of Public Health [CPH], 1993, p.21)

“To establish a strong College of Public Health with a special strength in mobilizing an information base, as well as education and training to help reduce health needs and improve the quality of life of the people in Thailand, the Southeast Asia Region and the world at large”.

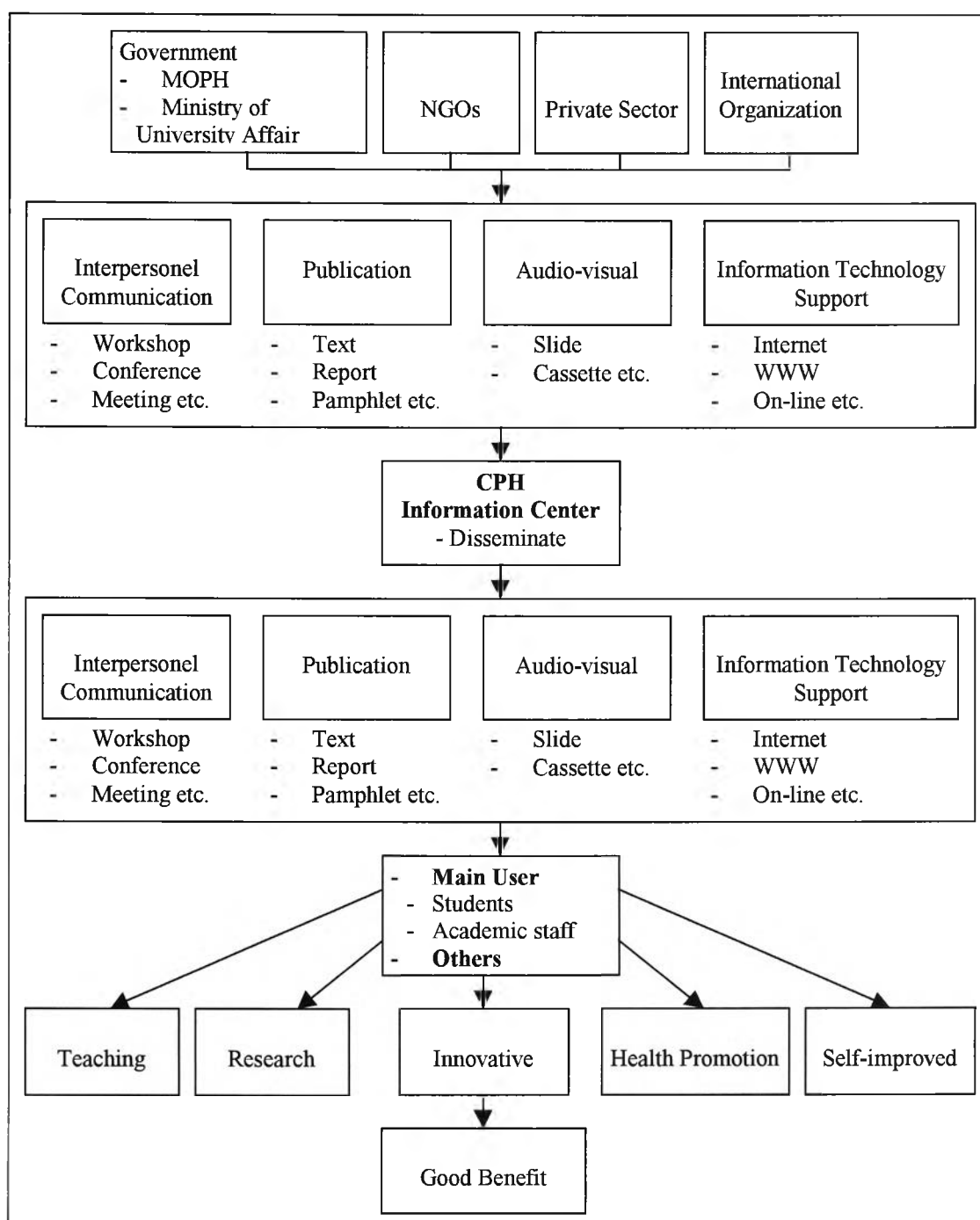
2.5.1 Current Analysis

The College of Public Health was established at Chulalongorn University to address local, national and international issues regarding the preservation and improvement of such conditions. The College provides high quality instruction for individuals with potential to excel in education, research and public health practice. This education addresses current and future health problems at all levels, in many dimensions and environments. At a minimum, it provides opportunities for individuals interested in public health and relevant subjects, in research areas vital to a better understanding of health and disease, and in service careers that facilitate dissemination and application of public health knowledge, skills and experiences. Three main functions are considered to be successful or not depending on Information Center. It indicates the quality of especially education and research.

In accordance with those parts, the current situation of an information of disseminating theory is conducted in this writing. As Fred cited in Fogg (1994, p.130) “it’s hard to solve a problem when you don’t even know it exists”.

The following figure presents the overall picture of the current situation of the information dissemination at the Information Center and then will be used to identify the gap or problems in order to formulate a program to fill the gap or solve related problems.

Figure 2.1 Current Situation of Information Dissemination at the Information Center, The College of Public Health, Chulalongkorn University



This figure describes dissemination that happens in the Information Center. Dissemination system is a part of communication theory, consisting of five elements (Shannon cited in Protti, 1997):

- (i) **Information Source or Producer** *such as the government sector, non-government organization (NGO), private sector and the international organization which produce the original message*
- (ii) **Transmitter or Disseminator** *such as the Information Center, operates on the message to transform it into an electronic form, which can be transmitted over the communication channel*
- (iii) **Channel** *such as interpersonal communication, publication, audio-visual, and information technology; the communication path over which the signal is transmitted to the receiver*
- (iv) **Receiver** *such as main users of the College, comprising students and academic staff, and*
- (v) **Destination or result** *as they appropriately use the information for their activities; teaching, research, innovation, health promotion and self-improvement. The first 2 activities are the major concerns of the college. That is the appropriate way to support life-long learning or continuing education.*

2.5.2 What is the Dissemination Gap at the Information Center?

The Information Center of the College of Public Health, which functions as educational support center, realized that dissemination information supporting

teaching, research and service is significant for the College user. The first 2 activities; teaching and research are the major concerns of the college.

The College launched a distant education program call “Learning at the Workplace Program (LWP)” in 6 provinces; Chonburi, Ayuttaya, Phayoa, Khonkaen Roi-et and Yasothorn which functioning rather far away from the College, parallel with the conventional program (In-house program). Therefore, the obstacle of information dissemination for LWP students is the distance.

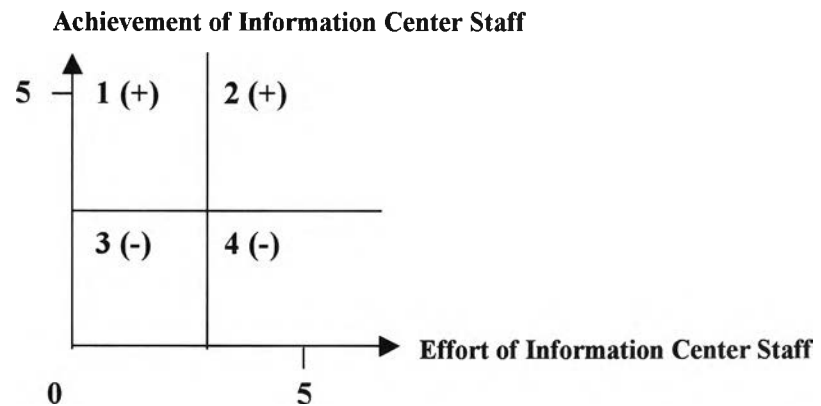
LWP program is self-study, and learning by doing with actual work situations that involve the use of innovation materials and technologies such as computer-mediated communication (CMC), Internet and CD-ROM. Eventhough library has provided all technologies for LWP students to search, they still have no time to use it. Some LWP students are not familiar with searching on computer. Thus, the computer skills on searching are also requiring for LWP students. A difficult task is finding related information, learning sources and accessing information to support their study. Those can keep the students from having sufficient information to argue his/her study.

Moreover, the recent internal evaluations and discussions of stakeholders at the College showed that the curriculum for LWP has relied heavily on Internet and library-based facilities, but it is deficient to regard the situation in rural areas where theses health officers who are CPH students work (Chitr Sitthi-amorn, 1999). Therefore, that information and library-based facilities have used various media can disseminate crucial information for LWP students.

From the description of the dissemination gap above, besides that the Standard for Academic Health Sciences Library which modified by Association of American Medical Colleges and the Council on Medical of the American Medical Association is also used as the master pattern in library service and library administration. This Standard will be used as a guideline when looking for the indicators of information dissemination. It contains the following criteria (i) *a well-maintained and catalogued library & sufficient size* (ii) *has the leading medical journals* (iii) *accessibility to academic resources* (iv) *permits the students to experience self-instruction devices* (v) *provision user instruction* (Stinson, 1982). The standard was adapted using both qualitative and quantitative criteria in order to analyze current situation and find out problems. The degree of achievement and satisfaction level was also adapted to find out the indicator for an appropriate dissemination. The process is to modify the formula as the following:

$$\text{GAP} = (\text{Ideal Situation} - \text{Current Situation}) \times \text{Concern}$$

Figure 2.2 A Degree of Achievement versus Effort



A degree of achievement versus effort approach is divided into 4 clusters.

- Cluster 1 = Positive level. It means *high achievement – low effort*, in terms of the use of *good methodology* to achieve the objective
- Cluster 2 = Positive level. It means *high effort – high achievement*
- Cluster 3 = Negative level; *low effort – low achievement*
- Cluster 4 = Negative level because of *high effort*, but *low achievement*.

This is the result from problem identification in dissemination. Based on the above, to figure the degree of achievement and satisfaction level one must complete the data exercise. This was done in 1998-1999, and it was found that achievement of information dissemination is in the satisfaction level in cluster 2 (*high achievement – high effort*) which is an appropriate service and appropriate investment and effort. It also registered satisfaction in dissemination for the performance of Information Center staff. The results still found that distance is the major obstacle in accessing information

for learning at the workplace students of the College (data exercise chapter III). This result makes the Information Center concerned that information dissemination for the students should be the first priority for continuous improvement; however, even the current information dissemination methodology in the data exercise part has been in the positive level.

Continuous study to find out the various methodologies of information dissemination to reduce obstacles in accessing information caused by distance is interesting and should proceed.

2.6 Possible channel for public health information dissemination by the Information Center of the College

Information technology and the communication system of the country will be alternative channels for transmitting public health information to students. The alternative channels are CD-ROM, INTERNET and the Communications Authority of Thailand (CAT) System (by using the domestic mail system).

Adopting these alternative channels with the service delivery approach will improve information dissemination.

In this part, media and techniques that can be used to disseminate public health information are discussed. Suggestions are given for developing and using each

approach. Only three channels were selected for the study; these are considered appropriate ways to provide public health information for the College as follows;

- (i) CD-ROM
- (ii) INTERNET and
- (iii) Domestic mail delivery system.

Table 2.3 Strengths & Weakness in Terms of Cost Benefit of Channel

Channels	Strengths	Weakness
Services delivery 1.1 CD-ROM	<ol style="list-style-type: none"> 1. Portable and convenient 2. Low cost 3. Longevity 4. Ease of access 	<ol style="list-style-type: none"> 1. Not up-to-date information 2. The limitation of disk density 3. The quality of disk 4. Not interactive media
1.2 INTERNET	<ol style="list-style-type: none"> 1. Able to link related information immediately 2. The capacity of storing and presenting multiple types of information i.e. text, sound, graphic, animation etc. 3. Infinite amount of information 4. Empower user to pay more attention 5. Sophisticated technology for disseminating information 	<ol style="list-style-type: none"> 1. Difficult access to network system 2. High cost for implementation 3. The limitation of hardware and software capacity 4. Organization policy 5. Recruitment of IT personnel can be difficult
1.3 Mail	<ol style="list-style-type: none"> 1. Low cost 2. Post office is available in every province 	<ol style="list-style-type: none"> 1. Risk of delivery (lost during delivery) 2. Not interactive media 3. Delay

From the table, comparing the strengths and weaknesses for each channel, of the 3 channels will be the best channel for disseminating public health information for the LWP students of the College.

The first is the *CD-ROM* method that is portable and affordable. The computer itself and CD-ROM reader, which is actually already built in the computer, are the necessary hardware for implementation. It requires little time for loading the information in CD-ROM. But, the major limitation of this channel is still in terms of not being stimulating media.

The second is the *INTERNET* method, which is sophisticated for accessing, retrieving, and disseminating information and a very popular channel. There is no doubt that the Internet is going to spread and play an important role in the information center in the future. But it has a lot of limitations in overcoming the problem of distance where organizations do not have the appropriate technology. If you are going to be providing access to the Internet you will have to choose how to provide this access. Firstly, to equip each machine with its own modem and telephone line connected to external modems is difficult to do and a waste of time. However, all these things would not happen if the organization policy does not support them. Therefore, before selecting this channel, ensure that the policy about the Internet development has been written.

Accessing the Internet also needs to be fast and efficient, so the acquisition of machines with a lot of memory, a lot of hard disk space, a good video card, sound card

and speakers has to be emphasized. This requires spending more money to establish a state-of-the-art system which is a high cost.

The third, the *domestic mail system* is a very common method for disseminating information and cheapest among the channels indicated.

It was found that, INTERNET is the most interesting channel (as described above) especially when one considers its capacity of stimulating the students to use the system and learn more owing to the high capacity of storing and presenting multiple types of information, no matter what type of text, graphic, sound, animation and interactive system.

However, the limitation shown for some organizations include policy, cost, and human resources (who have a good understanding of the Internet system) which may be scarce or restricted. The serious point of this is cost benefit that include initial high cost when compared with other channels.

The appropriate way for disseminating public health information is CD-ROM. It might be not the best hi-technology for disseminating public health information of the Information Center, but for alleviating the distance problem and starting as a pilot project for development of a public health information dissemination system, it is the best choice at the moment for the reason discussed above.

CD-ROM technology has been very useful in providing supportive and inexpensive materials for education (Farina, 1995). On behalf of the educational institutes, it is certain that the College of Public Health can support the dissemination public health information on CD-ROM project. These are the reasons :

- (1). The College has human resources of content staff and technical staff to proceed with the project.
- (2). The College has a budget to support learning and teaching tools for dissemination of public health information.
- (3). The Information Center has a more effective function as disseminator and supporter of learning and teaching.
- (4). The CD-ROM project will assist the Information Center to solve the student's problem of accessing information.

2.7 Conclusions

In conclusion, there are many factors affecting public health information dissemination in developing countries. The limitation of inequalities exists in the unavailability of health information, inappropriate materials which have been sent to the wrong place, transferred information from developed countries not meeting the health information needs of the developing countries, up-to-date information and current information not reaching the target place on time, lack of access to up to date information and types of information really needed. These are a few of problem that occur.

For the College itself, before knowing the problem, a needs assessment study was used to identify the situation. Finding, accessing and disseminating information is the first priority for supporting more effective learning, but distance is the major problem for LWP students. It limits their time for learning and using all services provided.

Consequently, learning is restricted. Strengths and weaknesses of various channels must be studied to find an appropriate way of finding a useful, reliable solution to this problem. The appropriate way for disseminating information is CD-ROM. It is suitable (for the situation, time, place, access and cost) when compared with other alternatives. The important thing is what happens when the information reaches the students it is aimed at. If they try to follow the instructions, and give some information back, effective dissemination has taken place.

Information dissemination by itself will not change one's learning behavior. It also depends on the student's willingness to learn.

REFERENCES

- Charas Suwanwela. (1997). **Health knowledges: needs for global cooperation**. Paper presented at Short Course for Policy Makers, Managers and Senior Strategists competencies in International Health Functions at the College of Public Health, Chulalongkorn University, 3-23 May 1999.
- College of Public Health [CPH]. (1993). **Attributes and threshold capacities of public health graduates**. Bangkok : Chulalongkorn University.
- Duangchan Payakaphan. (2000). **Web-based service: Sciences and Technology**. Chulalongkorn University Library Bulletin. 16,2: 11-19.
- Farina, R. (1995). CD-ROM Options in classroom. **Media & Methods**. 32, S3. [Online]. Abstract from: ERIC
- Friede, A., Reid, J., & Ory, H. (1993). CDC WONDER : a comprehensive on-line public health information system of the Centers for Disease Control and Prevention. **American Journal of Public Health** 83: 1284-1294.
- Fogg, C. D. (1994). **Team-based strategic planning: a complete guide to structuring facilitating, and implementative the process**. New York : Amcom.
- Health workers need information from countries with better health indicators than Britain and the US. (1997). **BMJ**. 314, 1418. [Letters]
- Kale, R. (1994). Health information for developing world. **BMJ**. 309: 939-942.
- Khin, M.M. (1986). **Health manpower information system**. (WHO Project: SE ICP HMD 014).
- Lown, B., Bukachi, F., & Xavier, R. (1998). Health information in the developing world. **Lancet**. 175, SII34-SII38.
- Lynch, C. (1997). Searching the internet. **Scientific American** 276, 3: 44-48.
- McClure, C.R., & Lopata, C. (1996). Assessing the Academic Networked Environment. **The Journal of Academic Librarianship** 22: 285-289.
- Man, C. (2000). What's hot?. **Computer Toady**. 10, 41.
- Nua Ltd., (2000, August 24). **How many online?** Available from: <http://www.nua.com>
- Pakenham-Walsh, N., Priestley, C., & Smith, R. (1997). Meeting the information needs of health workers in developing countries. **BMJ**. 314: 90.

- Perkins, M. (1999). **Public health information and a diverse population**. Paper presented at 65th IFLA Council and General Conference at Bangkok International Trade and Exhibition Centre-BITEC, 20-28 August 1999.
- Phantipa Yenkhuntos. (1991). **Information seeking behavior and information use of physicians in regional hospitals**. Master's thesis, Faculty of Arts, Chulalongkorn University.
- Pimrumpai Premssmit. (1989). **Information needs of academic medical scientists at Chulalongkorn University**. Field Research (D.A.) Simmons College. Graduate School of Library and Information Science.
- Protti, D.J. (1997). The application of information science, information technology, and information management to public health. In Roger Detels, Walter W. Holland, James McEwen & Gilbert S. Omenn (Eds.), **Oxford textbook of public health**, pp. 419-434. New York : Oxford University Press.
- Plucauskas, M. (1994). Internet and medicine part II: hooking up and using Internet. **Canadian Medical Informatics** 1,3: 28-30.
- Silverplatter Company. (2000, September 4). **Silverplatter Information**. Available URL:<http://www.silverplatter.com>
- Smith, R. & Gibbs, M. (1994). **Navigating the Internet**. SAMS Publishing. Indiana.
- Stinson, R. (1982). Standards for health sciences libraries. **Library Trends**. Summer, 125-137.
- Trench, S. (1997). Dissemination of information. In Alison Scammell (Ed.), **Handbook of special librarianship and information work**, pp.285-302. London : Aslib.
- Valls, J. (1983). **Information services for developing countries**. Bangkok: Asian Institute of Technology.
- Vickery, B.C. & Vickerly, A. (1987). **Information science in the theory and practice**. London : Bowker-saur.
- WHO is producing a reproductive health library for developing countries. (1997). **BMJ**. 314, 1695. [Letters]
- World Health Organization [WHO]. (1996). **The world health report 1996: fighting disease And fostering development**. Geneva : WHO.
- Yaacob, A.R. & Seman, N.A, (1995). The importance of health information services: a new opportunities in Malaysia. **Asian Libraries**. June: 72-82.