The Use of Information Technology in Health Promotion of Elderly People

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Abstract

This research aimed to study the use of information technology to promote elders’ health. The qualitative method was used for this research to know the use of information technology for the elders’ health care. The researcher initially conducted the documentary study and interviewed the officers of five agencies whose work related to the care of the elders’ health in Surat Thani Province. These agencies were urban, suburban, and remote agencies. The research results showed that various agencies used different information technologies to promote the elders’ health. As every agency attaches the importance and has the trend to more concretely develop the information technology for the elders care in the future, it has to use the factors of readiness for technological infrastructure, competent staff, and the elders to efficiently promote elders’ health.

Keywords: Information Technology, Elderly People, Use of Information Technology, Information Technology in health care.

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การใช้เทคโนโลยีสารสนเทศในการดูแลสุขภาวะผู้สูงอายุ

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บทคัดย่อ

การวิจัยนี้ มีวัตถุประสงค์เพื่อศึกษาการใช้เทคโนโลยีสารสนเทศมาประยุกต์ในการดูแลสุขภาพของผู้สูงอายุ โดยใช้วิธีการวิจัยเชิงคุณภาพ เพื่อให้ทราบสภาพการใช้งานเทคโนโลยีสารสนเทศ ในการดูแลสุขภาพผู้สูงอายุ โดยเบื้องต้นทำการศึกษา ข้อมูลจากเอกสาร และการสัมภาษณ์เจ้าหน้าที่จากส่วนงานดูแลสุขภาพผู้สูงอายุจาก 5 หน่วยงานในจังหวัดสุราษฎร์ธานี โดยแบ่งเป็นกลุ่มหน่วยงานในเขตเมือง, รอบเมือง และไกลเมือง ผลการวิจัยพบว่าหน่วยงานต่าง ๆ มีการใช้เทคโนโลยีสารสนเทศในการส่งเสริมสุขภาวะของผู้สูงอายุ โดยมีรูปแบบการใช้งานเทคโนโลยีในการส่งเสริมสุขภาวะของผู้สูงอายุ ที่แตกต่างกัน โดยทุกหน่วยงานต่างให้ความสำคัญและมีแนวโน้มที่จะพัฒนาเทคโนโลยีสารสนเทศมาใช้ในงานดูแลผู้สูงอายุ ในอนาคตให้เป็นรูปธรรมมากยิ่งขึ้น โดยจำเป็นต้องอาศัยปัจจัยจากภายนอกได้แก่ ความพร้อมของโครงสร้างพื้นฐานด้านเทคโนโลยี บุคลากรที่มีความรู้ความสามารถ และตัวผู้สูงอายุเอง เพื่อให้การส่งเสริมสุขภาวะของผู้สูงอายุจากการใช้เทคโนโลยีสารสนเทศได้อย่างมีประสิทธิภาพ

คำสำคัญ: เทคโนโลยีสารสนเทศ, ผู้สูงอายุ, การใช้เทคโนโลยีสารสนเทศ, เทคโนโลยีสารสนเทศในการส่งเสริมสุขภาวะ

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Introduction

At present, the population of elderly people tends to increase. Elderly people are more than 10% of all populations (Shryork, 2004). Based on the study of the size and trends of the elderly population from the census it has been found that the aging population is increasing steadily. According to recent Office for National Statistics figures, the number and proportion of elderly people in Thailand has increased rapidly and continuously. In 1994, the number of elderly people accounted for 6.8 percent of the total population and increased to 9.4 percent, 10.7 percent, and 12.2 percent in 2002, 200, and 2011 respectively. The 2014 results show that 14.9 percent of the population is elderly (National Statistics Office, 2014) they had to face negative changes due to their age (Martha, 2005). As elderly people are more considerably at risk of illness due to chronic disease or congenital disease than other age groups, their social roles in living, occupation, emotion, relationships with people in their family and other people in the society decreased and changed due to their behavior of living or self-health care. Severity of disease could lessen if elderly people had properly and correctly received health care. It was necessary to efficiently prepare readiness for a health and social service system to promote elders’ health. At present, information technology is used for helping strengthen elders’ mental and physical health (Milligan and Passe, 2010). Chen Yu (2009) has described the use of social networking in China. It has been found that the use of social networks for the elderly will help to restore the physical condition of elderly people with mental and physical issues. The public authorities and agencies involved should have guidelines and a plan to manage information technology for the health of the elderly. The researchers were, therefore, interested in studying the use of information technology to promote elders’ health. The reason for studying the use of information
technology to support elders’ health, and studying information technology using conditions of the three groups is related to support elderly people in order to promote and develop the use of information technology to promote elders’ health in the future. This study was conducted in Surat Thani province.

**Research Objectives**

1. To study the information technology use of the agencies related to the elders’ health care to promote the elders’ health.
2. To investigate the factors affecting use of the information technology to give care of the elders’ health.

**Literature Review**

The aging process stems from changes of cells in the body, more considerably degenerating cells than creating cells. Functional ability of various organs decreases. These changes in each person are different. Apart from physical change of elders, there are changes in mind, social status, and social role. These changes occur in accordance with the age of each person. If some elderly people knew how to take care of their health, they would be healthier. If they would not take care of their health, their body would more quickly degenerate and they might become ill, making elders decreasingly satisfied with their life and decreasing quality of life. Physical, mental, social, and intellectual healthiness really reflects holistic health which is supported and connected in four dimensions (National Health Council of Thailand, 2007).

**Elderly health**

The elders’ health means persons’ living with physical and mental happiness. This means that, apart from having no diseases, persons are
mentally and physically healthy and happy in the society. The perfect health really reflects the holism of health which supports and connects in four dimensions leading to the vision of Office of Health Promotion Foundation “Thai people have sustainable health” which mean that Thai people have physical, mental, social, and intellectual health as follows:

1. Physical health means physical healthiness, sufficient economy, good environment, and no accident. The elders mostly face health problems and have physical and cerebral diseases.

2. Mental health means feeling happy, relaxed, kind, conscious, and having concentration. As children do not sufficiently take care of the elders, the elders feel lonely and worried. For example, they feel worried that their children and siblings abandon them. They feel worried about death. They are emotional. For example, they feel sad and self-indulgent. Importantly, the researchers feel worried about the social and cultural changes in the Thai society. In the past, family relationships were very good. At present, as children work in the urban zone, their parents feel lonely because their children do not take care of them (Wichien Chutimasakun et al. 2014).

3. Social health means happy coexistence in family, community, workplace, society, and the world, good social services, and peace. The economic and social changes make the juveniles have less gratitude to their parents and teachers. The elders are not given care so they have to stay in the Social Welfare Development Center for the Elders. If the elders are poor, are not given care, may not have incomes or do not have enough incomes, they suffer difficulty. The elders who used to be the high-level officials may feel failure about their former power and position. Intellectual health means the greatest happiness to lead to nirvana, the god or goodness depends on the difference of each person. The elders may not have the opportunities to develop themselves in the changing age and society.
If the elders face various problems as mentioned above, they do not live happily. People concerned should, therefore, find solutions to the problems to enable the elders to have good quality of life and well-being.

**The elders and technology**

According to the research of Dr. Samarn Loifa (2011), information technology is beneficial to the elders as follows: The changes in the elders cause various problems. The elders cannot live happily so they want various things. To meet needs of the elders, people concerned should find solutions to the problems to develop the quality of life of the elders. Information technology is a method which is able to develop the quality of life of the elders.

Despite continuous development of technologies, most users are adolescents, children, and working people. The elders have less opportunity to use technologies due to age and experience. According to the information on the families using information and communication technology as surveyed by the National Statistical Office (2012), in 2015, 76.8% of people aged 15 - 24 most considerably used the internet. 60.1% of people aged 25 - 34 used the internet. 58.0% of people aged 6-14 used the internet. 31.8% of people aged 35.49 used the internet. 9.6% of people aged over 50 used the internet. Details are shown in table 1.
Table 1 Percent of people aged over 6 using the internet as classified by age during 2011 – 2015.

<table>
<thead>
<tr>
<th>Year</th>
<th>6 -14</th>
<th>15 - 24</th>
<th>25 - 34</th>
<th>35 - 49</th>
<th>50 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>38.3</td>
<td>51.9</td>
<td>26.6</td>
<td>14.3</td>
<td>5.5</td>
</tr>
<tr>
<td>2012</td>
<td>46.5</td>
<td>54.8</td>
<td>29.7</td>
<td>17.1</td>
<td>6.2</td>
</tr>
<tr>
<td>2013</td>
<td>54.1</td>
<td>58.4</td>
<td>33.5</td>
<td>18.7</td>
<td>6.6</td>
</tr>
<tr>
<td>2014</td>
<td>58.2</td>
<td>69.7</td>
<td>48.5</td>
<td>25.9</td>
<td>8.4</td>
</tr>
<tr>
<td>2015</td>
<td>58.0</td>
<td>76.8</td>
<td>60.1</td>
<td>31.8</td>
<td>9.6</td>
</tr>
</tbody>
</table>

General Information technology can be used for the elderly society from (Wichien Chutimasakun et al. 2014) such as:
- Internet such as the health website for the elders
- Mobile telephone and wireless network technology
- The technology for connection such as Video Conferencing which is used for the telemedicine system and enables the elders living in the remote area to ask for health advice from the doctors.
- Health Applications and electronics

In the past, the elders were not interested in technologies because they thought that they were old. In fact, the elders are also able to access social media. Technologies are beneficial to the elders as follows:

1. Various types of technologies such as smartphone, iPad, tablet, and computer help enable the elders to have more knowledge and perspective. If the elders want to know any issues, they are able to find the information from these technologies. For example, they are able to use the internet to learn how to make dessert.
2. Technology use helps create pleasure. The elders can use technologies to see movies, listen to songs, read various issues so they feel happier.

3. Technology use helps develop the brain and prevent the elders from having Alzheimer, enabling the elders to adapt themselves to the society and feel that they are not out of date.

4. Technology use helps enable families to feel closer. Online social media enables the elders to talk with their children living in the remote area by using Skype, Facetime and Chat. Technology use enables the elders to do more activities, have pleasure, and develop their brains in their free time.

**Information technology use and elders’ health care**

Technology cannot be presently ignored because it involves every part of people’s lives (Smarn Loifa, 2010).

**Quality of life**

1. Technology helped improve and promote quality of life and helped solve problems. It enabled people to more quickly and easily access information such as information on health care. Elderly people who did not use computers and internet could not use information resources to develop quality of life like people who had opportunities to use computers and internet.

2. Technology helped encourage elders to feel that they were efficient and would decreasingly depend on other people. If elderly people could take care of their health at home, their quality of life would be better and expenditures of family and the government to take care of elderly people would also decrease.

3. Technology allowed elderly people with limited movement to do various activities by themselves such as communication, use of public services, e-commerce activities, entertainment, and other services to enable elders to more efficiently move their hands while working with keyboard and mouse.
Learning

1. Technology helped stimulate ability to think, learn, read, and understanding what they read and decelerated Alzheimer’s symptoms.

2. Technology helped elderly people have lifelong learning ability, have more educational opportunities, and do useful things in their free time.

3. Technology helped make elderly people aware of values and benefits of the use of computers.

Communication and society

1. Technology helped facilitate communication. Elderly people were able to more conveniently contact their families, relatives and friends such as using e-mail, and more. Elderly people interacted with the society and had the opportunity to communicate with the society again, and this is linked to generation gap.

2. Technology helped encourage elderly people to be equal members in the society, increasingly do social activities, and be good and enthusiastic citizens.

Psychology and mental health

1. Technology helped make elders understand themselves and the society and more efficiently make decisions. Moreover, it encouraged elderly people to have power and self-confidence.

2. Technology helped lessen elders’ depression and helped make elderly people have more confidence. As they contacted their friends on the Internet, they were happier, less depressed, and may not think about suicide.

Research methodology

Qualitative research was used to study the use of information technology by responsible agencies to take care of elders’ health. The research used study processes, literature review, and in-depth interviews.
The scope of research

1. The scope of populations. The researcher studied the populations in Surat Thani Province.

2. The scope of content. This research specifically studied use of the information technology to promote the elders’ well-being in various issues as follows: the information technology use of related agencies, the study of the factors affecting the information technology for the care of the elders’ health.

3. The scope of area. The research was done in three area groups in Surat Thani Province as follows:
   1) Urban districts involving all Muang Surat Thani Districts.
   2) Suburban districts not over 50 kilometers distance from Muang Surat Thani District.
   3) Rural districts over 50 kilometers distance from Muang Surat Thani District.

Populations and sample groups

As for the qualitative research, the researcher collected data by conducting the in-depth interview with the officers responsible for the care of the elders in Surat Thani Province. The 3 sample groups (12 persons) selected by the purposive random sampling were chosen from the agencies receiving the awards for elders’ care or being recognized as the model agencies on the care of the elders’ health in Surat Thani Province from: (1) urban agencies consisted of Surat Thani Hospital and Surat Thani Provincial Administrative Organization Hospital, (2) suburban agencies consisted of Nasan Hospital and Phun Phin Hospital, and (3) rural agencies consisted of Khirirat Nikhom Hospital. The size of the sample of this research was chosen because it is an in-depth interview where the number of interviewees depends on the key factors is the adequacy and consistency of the information obtained from interviewees. That is, when an interviewee begins to provide similar information.
The questionnaire was used with the same approach. The researcher was able to discontinue the collection. (Kitipat Nontatamudit, 2011) when the number of samples used in this research was 12 examples.

**Research Tools**

The research tool was the unstructured interview. The researcher determined the main questions but did not ask the questions in order. Sometimes, the researcher asked other questions within the scope of the research. The researcher interviewed the sample groups about six issues as follows: the information on the implementation methods and the responsible areas of the agencies on the elders care, use of the technology to promote the elders’ health, the reasons for using the information technology to promote the elders’ health, the problems of using the technology to promote the elders’ health, the trend in using the technology for the care of the elders’ health, and the factors affecting use of the information technology to promote the elders’ health.

**Data collection**

The researcher collected data by conducting the in-depth interviews. The unstructured interview was used for the information and the opinions about use of the information technology to promote the elders’ health in Surat Thani Province.

**Data analysis**

After completely collecting data, the researcher conducted the descriptive analysis and content analysis and used analytic induction in a summary analysis of interviews or descriptive records. (Aumporn Lincharearn, 2012) The researcher concluded data on analysis according to the following steps:
1. Organizing the information
2. Reading for the main idea
3. Organizing the group and classifying the information
4. Analyzing, interpreting, and defining.
5. Concluding and examining reliability.

**Conclusion**

The researchers analyzed data and their results were as follows:

Introduction to operational characteristics and the area of responsibility of the elderly care agency. Summarized as follows:

**Urban agencies**

The sample groups took care of elderly people in Muang District, Surat Thani Province. In Surat Thani Hospital there were four Primary Care Units and 13 Sub - districts to Health Promotion Hospitals. Elderly people in each area were divided according to district and sub - district. Each sub-district has an elder’s club. The suburban agencies provided the service of checking elders’ health at least once a month, providing knowledge of public health, and organizing various projects and activities to take care and promote elders’ health.

**Suburban agencies**

The sample groups took care of elderly people in Ban Na San District, Surat Thani Province. There were 11 Sub - district Health Promotion Hospitals. They took care of elderly people in the long term by supporting and coordinating work of the Elders’ Club in each area of Sub-district Health Promotion Hospitals such as supporting tools, buildings, budget on organizing various activities for promoting elders’ health. The Elders’ Club had to organize
activities or projects by itself.

**Rural agencies**

The sample groups took care of elders in the long term in every sub-district of Khirirat Nikhom District, Surat Thani Province. There were eight Sub - district Health Promotion Hospitals and a community health center. They developed elders’ health care system and coordinated work with the Elders’ Club so that elders could do various activities by themselves. The work was done in the form of a network. There was the establishment of a District Public Health Administration Commission divided into four workgroups as follows:

1. Model Sub - district Work on taking care of elders in the long term,
2. Quality Elder’s Club Implementation Work,
3. Elder’s Clinic Work,
4. Creation of strong network.

As for the conclusion of the interview, the researchers analyzed data in accordance with the research framework and concluded various issues as follows:

1. As for the use of the information technology to promote the elders’ health that the present time, the researchers found that the agencies directly encourage the elders to use the information technology. The elders in the urban zone use the information technology by themselves. The elders who do not live in the urban zone use the information technology to communicate through the broadcast radio only. The elders in the remote zone use the information technology to give care of the elders’ health. For example, the activities of promoting use of the information technology to enhance brain development supported by the agencies and implemented by the officers are good activities. The related agencies in other areas should see the importance of the mentioned activities as the model practice.
The purpose of using information technology of each unit is shown in Table 1.

**Table 1** The use of information technology to promote the elders’ health

<table>
<thead>
<tr>
<th>The use information technology to promote the elders’ health</th>
<th>Result of research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>1. The information technology is used for the implementation on elders such as elders database system, treatment history record.</td>
<td>✓</td>
</tr>
<tr>
<td>2. The information technology is used for communicating with related elders network and the elders (community radio, social media).</td>
<td></td>
</tr>
<tr>
<td>3. The information technology is used for promoting the elders’ well-being such as the activities of promoting use of the information technology to enhance brain development (video, karaoke, games).</td>
<td></td>
</tr>
</tbody>
</table>

According to Table 1, most of the agencies have different objectives of using the information technology for the elders’ care. The rural agencies use the information technology to promote the elders’ health by allowing the elders to use the information technology by themselves.

After interviewing the sample groups, the researcher found that the factors affecting use of the information technology for the care of the elders’ health are public policy, budget, agency policy, and elders’ personal behavior as shown in Table 2.
**Table 2** Factors affecting the use of information technology for the health care of the elderly.

<table>
<thead>
<tr>
<th>Factors affecting the use of information technology</th>
<th>Result of research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td>Public policy</td>
<td>√</td>
</tr>
<tr>
<td>Agency policy</td>
<td>√</td>
</tr>
<tr>
<td>Officers or staffs</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>√</td>
</tr>
<tr>
<td>Elders’ personal behavior</td>
<td></td>
</tr>
<tr>
<td>Responsible network</td>
<td></td>
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</tbody>
</table>

2. The agencies have the objectives to use the information technology to promote the elders’ health and more efficiently develop the agency implementation such as analysis of data and collection of data of the elders in the responsible areas. Use of the information technology in communication brings about fast coordination between the agencies and the elders.

3. The agencies want to use the technology to develop and support the work process and promote the elders’ health but do not have enough staff with the knowledge of use of the information technology.

4. Various agencies are unable to use the information technology to promote the elders’ health because they do not receive the technological support for the connection between the organizational work systems. They do not receive the support from the administrators and they do not have enough budgets to develop the information technology. The elders work group is not the main group of the agency implementation. The agencies excessively use the information technology without connection. For example, use of the software to collect data in different work groups causes contradictory information which
cannot be used in time. Moreover, the elders do not have information technology equipment and technological knowledge. Some elders do not continuously use the information technology after learning or using according to the recommendations of the officers. The above-mentioned problems cause the unsuccessful implementation on use of the information technology to promote the elders’ health. As for the trend in using the information technology to give care of the elders’ health, the responsible work groups annually promote and support use of the information technology to the agency administrators in the meeting. The government and administrators encourage the agencies to increasingly use the information technology in the agency implementation, bringing about the trend in increasingly developing the technology for the elders.

5. According to the results of analyzing data on the agencies and related agencies, the researchers found that the factors affecting use of the information technology to promote the elders’ health consist of officers or staff, budget, social mechanism, living characteristics, personal behavior of elders, public policy or the policy of related agencies and administrators, and the responsible network.

Discussion

Use of information technology to promote elders’ health

Use of information technology to promote elders’ health was divided into two aspects as follows: 1. Officers in the agencies used information technology to manage basic data of elders and exchange data between related agencies. 2. Information technology was directly used with elders and it was used for exchanging data between agencies and elderly people. The information technology is used for helping create and promote various activities which strengthen the elders’ health. The research results are consistent with the
research of Wichien Chutimasakun et al. (2014) who found that the elders’ use of the information technology enabled the elders to have a better quality of life and mental health and stimulate the learning capability.

**Causes of using information technology to promote elders’ health**

Use of information technology for implementation helped make data management and coordination of related parties more convenient and faster as shown by previous research by the Parichat Pornsawatchai (2008) Study. Moreover, information technology helped make elders learn by themselves via various media for creating and supporting activities which promoted elders’ health. This was consistent with the research results of Smarn Loifa (2013) who found that the technology use of elders was beneficial to taking care of their health. In addition, some agencies have adopted information technology as a means of helping to restore awareness and retention of the elderly consistent with the results of Wichien Chutimasakun et al. (2014). Technology can help train the elderly brain. Learning to use technology helpfully trains the memory, helps brain development and prevents dementia as well.

**Problems which made people unable to use information technology to promote elders’ health**

1. There were several work systems in the organization managing data on elders but there was inconsistency of data such as elders’ basic information and treatment history.

2. There was no administration policy of agency executives supporting implementation and budget on use of information technology in elders work. The result is consistent with the findings of Aree Mayoungpong (2013) that the elders wanted the government sector to promote the information technology such as supporting the information technology equipment, organizing the training in the use of information technology for the elders or providing the
public computer in every elderly community to enable the elders to learn by themselves.

3. Elders were not prepared to perceive and learn information technology. The result is consistent with the findings of Zoe et al. (2010) who discussed that the use of technology is difficult for the elderly and they did not have enough money to buy various Information technology equipment.

Factors which affected use and need to use information technology to promote elders’ health

1. Administration policy of agencies. Executives should be aware of the importance of using information technology to take care of elders’ health and should allocate a support budget.

2. Officers and cooperation of various agencies to take care of elders. The research results are consistent with the research of Kaweephong Lertwatchara and et al (2013) who explain that the government sector should focus on promoting use of technology by the increasing number of elders to develop the creative community

3. Knowledge, understanding, and capability of elders to use information technology and be aware of benefits of using information technology to take care of their health.

Suggestion

Regarding the future tendency of using information technology to take care of elders’ health, various agencies such as family medicine group, community hospital and local government organizations, etc., were aware of the development of a model of taking care of elders’ health which used information technology to help implementation. This was a guideline which should be encouraged by executives and related agencies in the future. Some agencies
used the policy on taking care of elders as the main mission. Due to changes of social mechanism in the future, elders began developing their knowledge and increasingly used information technology. Other related agencies are able to use the research results to cooperate in planning and the policy for developing and promoting the elders’ well-being to bring about consistent management in every aspect and efficiently support the aging society.

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