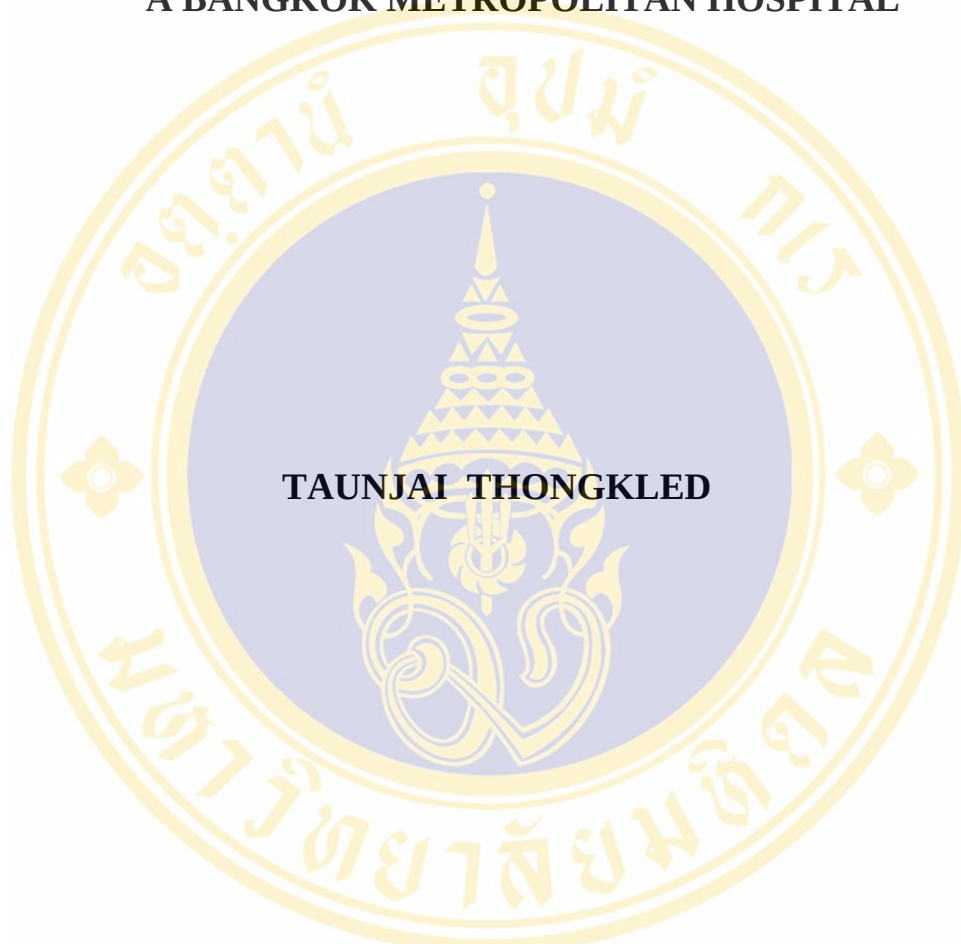


**EVALUATION OF TEACHING PACKAGE FOR SELF-CARE
IN PERSONS WITH DIABETES MELLITUS: A CASE STUDY OF
A BANGKOK METROPOLITAN HOSPITAL**



**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF NURSING SCIENCE
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FACULTY OF GRADUATE STUDIES
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IN PERSONS WITH DIABETES MELLITUS: A CASE STUDY OF
A BANGKOK METROPOLITAN HOSPITAL**

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ABSTRACT

This quasi-experimental study aimed at evaluating a teaching package for self-care in persons with diabetes mellitus. It was a case study conducted at a hospital under the Bangkok Metropolitan Administration. The sample consisted of 60 patients with type 2 diabetes mellitus who received treatment at the diabetes clinic at a BMA hospital. Simple random sampling was used to recruit the subjects of the study. The teaching package for self-care in persons with diabetes mellitus consisted of ten self-care manuals and five video CDs with similar contents. During data collection, the sample was divided into six groups, each composed of ten subjects, and data were collected by means of the diabetes knowledge questionnaire administered before and after the implementation of the teaching package. Also, the subjects' opinions towards the video CDs were elicited after watching them. In addition, the subjects received ten manuals for self-study at home after they watched the video CDs. The researcher conducted a follow-up every week, and an appointment was made with the subjects during the fifth week to distribute the questionnaire on the satisfaction with the manuals and to assess the subjects' knowledge of diabetes mellitus after the implementation of the package. Data were analyzed by means of descriptive statistics and paired t-test.

The findings indicated that the level of knowledge of persons with diabetes after the implementation of the package was higher than that before the implementation with statistical significance ($p < .05$). Moreover, the subjects' satisfaction with the quality of the teaching package was at a very high level.

The findings of the study have led to the conclusion that the quality of the teaching package for self-care in persons with diabetes is acceptable as it increased knowledge of the persons with diabetes and it was also practical. Based on these findings, it is recommended that the teaching package should be implemented in healthcare centers to promote quality of nursing care and service provision.

KEY WORDS: VIDEO CD / BOOKLETS / KNOWLEDGE / DIABETES
MELLITUS / SELF-CARE

การประเมินสื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวาน : กรณีศึกษาเฉพาะโรงพยาบาลแห่งหนึ่งสังกัด กรุงเทพมหานคร (EVALUATION OF TEACHING PACKAGE FOR SELF-CARE IN PERSONS WITH DIABETES MELLITUS: A CASE STUDY OF A BANGKOK METROPOLITAN HOSPITAL)

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บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อประเมินสื่อสำหรับการดูแลตนเองในผู้เป็นเบาหวาน ซึ่งเป็นการวิจัยแบบกรณีศึกษาเฉพาะในผู้เป็นเบาหวานประเภทที่ 2 ที่มารับการรักษาที่แผนกผู้ป่วยนอกคลินิกเฉพาะโรคเบาหวาน วิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล คัดเลือกกลุ่มตัวอย่างโดยสุ่มแบบง่ายจำนวน 60 คน สื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวานประกอบด้วยคู่มือการดูแลตนเอง 10 เล่ม และวิดีโอ 5 เรื่องที่มีเนื้อหาเหมือนกัน รูปแบบการประเมินสื่อโดยจัดกลุ่มตัวอย่างเป็น 6 กลุ่ม กลุ่มละ 10 ราย รวบรวมข้อมูลโดยใช้แบบวัดความรู้ในผู้เป็นเบาหวาน แบบประเมินคุณภาพสื่อวิดีโอ และแบบประเมินคุณภาพหนังสือคู่มือ ผู้วิจัยให้กลุ่มตัวอย่างทำแบบวัดความรู้เรื่องการดูแลตนเองก่อนการใช้สื่อ (pre-test) หลังจากวัดความรู้แล้วให้กลุ่มตัวอย่างดูวิดีโอเสร็จแล้วทำแบบประเมินคุณภาพวิดีโอ หลังจากนั้นกลุ่มตัวอย่างได้รับหนังสือคู่มือจำนวน 10 เล่มเพื่อกลับไปอ่านที่บ้าน ผู้วิจัยโทรศัพท์ติดตามทุกสัปดาห์ เป็นเวลา 4 สัปดาห์เพื่อกระตุ้นให้กลุ่มตัวอย่างอ่านหนังสือและทำแบบประเมินคุณภาพหนังสือคู่มือให้ครบทั้ง 10 เล่ม และนัดพบกลุ่มตัวอย่างอีกครั้งในสัปดาห์ที่ 5 เพื่อทำแบบวัดความรู้เรื่องการดูแลตนเอง (post-test) และรวบรวมแบบประเมินสื่อหนังสือคู่มือวิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และ Paired t-test

ผลการศึกษาพบว่า ความรู้เรื่องเบาหวานของกลุ่มตัวอย่าง หลังจากใช้สื่อเพื่อการดูแลตนเองสูงกว่าก่อนใช้สื่ออย่างมีนัยสำคัญทางสถิติ ($p < .05$) และกลุ่มตัวอย่างมีความพึงพอใจต่อคุณภาพสื่อเพื่อการดูแลตนเองทุกข้อคำถามอยู่ในระดับดีมาก

ผลการวิจัยนี้ชี้ให้เห็นว่า สื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวานมีคุณภาพเป็นที่ยอมรับในการส่งเสริมให้ผู้เป็นเบาหวานมีความรู้เพิ่มขึ้น และสามารถนำไปปฏิบัติได้จริง ผลการวิจัยเสนอแนะให้นำสื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวานไปประยุกต์ใช้ในสถานบริการสุขภาพ เพื่อส่งเสริมคุณภาพการพยาบาล

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CHAPTER 1

INTRODUCTION

Background and Rationale

In the past decade, the number of chronic disease such as diabetes mellitus has been increasing. According to the World Health Organization, it is estimated that the number of Thai people with diabetes mellitus will have doubled by the year 2030, totaling up to almost two million. The figure is higher than those of Vietnam and neighboring countries such as Singapore and Malaysia, whose estimates are lower than that of Thailand (Petch Rodari, B.E.2545: 7; Department of Medical Services, B.E.2542: 35). This group of patients are mostly able to perform regular activities by themselves and have the capability to perform self-care; however, they still need to learn to change and adapt their lifestyle that is appropriate for maintaining a considerably good life in the presence of the disease that needs to be controlled. Persons with diabetes have the responsibility to themselves to seek information, support, and effective consultation from health experts.

According to a study carried out to determine the perception and skills of diabetic prevention (Department of Medical Services, B.E.2540: 61), it is found that Thai people generally still lack sufficient knowledge and understanding about the disease and its association with other risk factors such as coronary artery disease, stroke-related disease, and many more. It is also found that they lack skills to control the disease condition, thus causing inefficiency in the general control of the disease in the population as a whole. The Ministry of Public Health, therefore, should communicate with the people and provide the knowledge in order to help them control the disease as well as provide them with assistance regarding correct analysis of the situation and communication channels so that adaptation of appropriate behaviors and habits can be done accordingly. Furthermore, the goal should also include establishing prevention of complications in those who have already developed diabetes mellitus. This can be done through creation of habits rather than coping behaviors only when

the problems have actually arisen. Both public and private organizations and institutions should also take part in establishing health clubs or communities for persons with diabetes mellitus to enable them to interact with one another whereby knowledge dispersion is supported actively and consistently. Finally, online resources on the Internet, namely websites that are related to diabetes mellitus, should be made available to the concerned parties so that they are provided with help and consultation regarding diabetic diets, medication intake, and monitoring and management of diabetic complications.

Boonthip Siritarungsri (B.E.2543) conducted a study on conditions of knowledge dispersion among persons with diabetes mellitus in Thailand. The study covered 1,016 public and private health institutions in the country. The findings showed that most hospitals do not possess systematic channels of knowledge to provide helpful information of diabetic care to patients. In general, health education is done by word-of-mouth instructions from doctors and nurses with focus only on critical issues such as insulin injection, medication intake, diabetic diets, and management during hypoglycemia.

Giving health education to patients is considered a very important role that nurses must play. This can be done liberally by the nurses in accordance with their own judgment and personal discretion. According to the National Health Reform B.E.2545, one of the nurses' duties is to provide health education to the patients via various means. Thus, nurses themselves are responsible for promoting skillful media and publication processes and demonstrating efficient utilization of such processes in order to enhance the role of a nurse as a health professional. Previous studies on the effectiveness of a program to promote self-care in persons with diabetes mellitus including a one-day workshop, videos, and self-help manuals revealed that the program can help up to 50% of the persons with diabetes who have not been able to control their blood sugar level for three months to keep their blood sugar level under control (Apiradee Plodnaimuang, B.E.2542; Wariya Boonchaay, B.E.2544, Watchara Muangkae, B.E.2544; Buntana Phumleng, B.E.2545). Such findings reflect the effectiveness of a teaching program to create skills and encourage the targeted patients to adapt their behaviors and habits in order to perform quality self-care when suffering from diabetes. Production and appropriate selection of media, therefore, will help

patients to carry out self-studies effectively, and knowledge of diabetic care can help the patients to use such knowledge to make informed decisions and perform self-care activities to control their blood sugar level.

Self-management for diabetic control is a complex activity. Therefore, health education media can help persons with diabetes to learn how to take care of themselves. These media consist of brochures, slides, or videos that can be commonly found, and they are considered very important as they can readily attract the attention of the population and are easily understood. Some media provide visuals and sounds, and use attractive colors that can be entertaining. For example, videos can stimulate the target audience to learn through seeing and listening, and these two sensory perceptions account for as much as 88% of all information perceived by all five senses at any given moment (Sawanee Sikabundit, B.E.2532: 152). Furthermore, it has also been found that the use of videos is more effective in disseminating knowledge on diabetic care than individual teaching without health education media (Jintawadi Pumsiri, B.E.2532; Pilart Kuamee, B.E.2535). It also creates a higher level of audience satisfaction. Brochures and document manuals are also appropriate because the patients can pick them up and bring them home to share with family members. This means that transferring of information is practically possible (Teerawat Valaisatean, B.E.2536; Wanida Wirakul, B.E.2542).

However, in order for the promotion or provision of health education among the patients to be successful, many factors other than media and transferring of information also need to be considered the educator, the teacher or the giver of the knowledge and the receiver of the knowledge, the environment of learning, as well as utilization of media. As previously discussed, good media will decrease the time-consumption for the target audience to understand the points in the teaching and assist with the imagination of them as well. Unfortunately, although improvement in production of media within a health center in order to meet the standard had been aimed since the 7th Health Development Plan and is now published in the 9th, it is found that production of media remains fragmented in different divisions, and the policy planning of each media involves complex procedures. For example, it is often unclear which media have been provided. This is due to the lack of public relations of

the institution responsible for provision of media (Pornpimol Kitiwongwisut, B.E.2541).

Even though the Department of Health, Ministry of Public Health, has published various types of informational media in a wide selection, they have not been commonly used. In other words, media in healthcare have been published repeatedly but non-continuously. Furthermore, there is the lack of quality media that can be a channel for transferring knowledge to the target patients. Besides, media or sources of information should be evaluated on their quality and effectiveness before being published. In this way, quality assurance will ensure that the patients have their knowledge increased.

Although there is a considerable amount of media and information sources regarding studies of diabetes in the form of booklets, personal booklets or diaries, and videos, they are in the form of a review of literature that have been checked by experts. Therefore, the media should be evaluated to ensure their effectiveness before they are distributed to the patients. Furthermore, new knowledge and findings from health studies as the information source are not included in the media. It is accepted that processing of knowledge and improvement of information with effectiveness evaluation will cause the media to achieve a good standard. Therefore, the videos and booklets of diabetic self-care management were developed by Hanucharurnkul and colleagues. To ensure convenience of users, the content of diabetic self-care management in the videos and booklets were made similar. The aims of the development of the videos and booklets were to motivate the patients to initiate self-care for themselves as well as to provide knowledge and information regarding appropriate diabetic care among health personnel in communities and health centers. Additionally, health scholars and professional nurses can apply the knowledge transferred from these media to develop the skills of patients and their families.

In the present study, the researcher aimed to evaluate the effectiveness of the videos and booklets of diabetic self-care management which were developed by Hanucharurnkul and colleagues in 2003. Emphases were placed on the media's quality and appropriateness to serve the targeted audience. The study focused on determining what the patients could learn from such media, the area for improvement, and the opinions on how they should be presented. This was because improvement

could subsequently be made until the media would be ready to be published widely to effectively build efficiency in the self-care capability of persons with diabetes and their families. The researcher was well aware that each publication media or video had their limitations and advantages specific to their nature. Blending of both media with the focus on minimizing the disadvantages and utilizing their strength and testing their quality could be a great way to improve their efficiency, therefore.

Conceptual Framework of the Study

There is no clear cut answer to what is the most effective media of information. A 'medium' may not be able to create optimum understanding but 'use of a medium' may be the most important factor in determining a quality of a medium. Every diabetic patient has the natural tendency to be able to learn. Therefore, the theory of adult learning had been applied in transferring information and developing individuals' knowledge to such groups. The system of learning of adults is different from that of youths' as adults have more background, freedom, and experience than the younger learners. Adults are life-centered (or task-centered or problem-centered) in their orientation to learning, and adults are motivated to devote energy to learn something to the extent that they perceive that it will help them perform tasks or deal with problems that they confront in their life situations. Furthermore, they learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of application to real-life situations (Knowles, 1984: 59). By the same token, persons with diabetes are different, and they learn and develop in different ways at varying rates. Healthcare providers would then deceive themselves if they think that all of them will learn the same materials in the same amounts of time. In addition, technology offers them diversity and self-paced learning, allowing them to progress at an appropriate rate in a non-threatening environment. Learning of persons is through information processing and experience that are influenced by a variety of internal and external factors such as health beliefs, education, age, readiness, peers, and others. When the persons with diabetes are exposed to the information, listen to/hear the message and comprehend it, accept and retain the information, then they can put the knowledge into action (Piskor, 1989; Heady & Hooper 2002: 249). According to Morrison (2001: 24), adults learn best in the following conditions:

1. when others respect and acknowledge them and their past experience and personal knowledge;
2. when they can assess their own learning needs, goals, and directions for change;
3. when they are in a learning environment free from threat and supportive of personal change;
4. when they have an opportunity in the learning process to talk about and share experiences;
5. when learning activities support opportunities to organize, understand, and integrate new knowledge into existing knowledge; and,
6. when feedback is provided immediately, or as soon after the behavior is displayed as possible.

Thus, learning becomes effective only when the persons with diabetes are receptive, i.e., when they feel the need to learn about diabetes and to develop appropriate skills. The professional nurses should be able to provide health information and help the patients gain access to such needed information. Health information provided in the forms of booklets and video CDs of diabetic self-care management is believed to help the patients to participate in the learning process by emphasizing self-learning without direct lectures or demonstration, but instead, through the use of booklets or video CDs. In this way, whenever the patients need to know a point of information, slow or fast-learners alike, they will be able to learn by themselves.

In the present study, persons with diabetes who were adults were able to access information provided in the forms of information booklets and video CDs of diabetic self-care management which could be studied at home by themselves. After self-study was conducted, knowledge of diabetic self-care management will then be evaluated in order to measure the effectiveness of the media. The quality of the media such as content, time required, and utilization in a clinical practice will be evaluated by the patients. The conceptual framework of the study is presented in Figure 1 below.

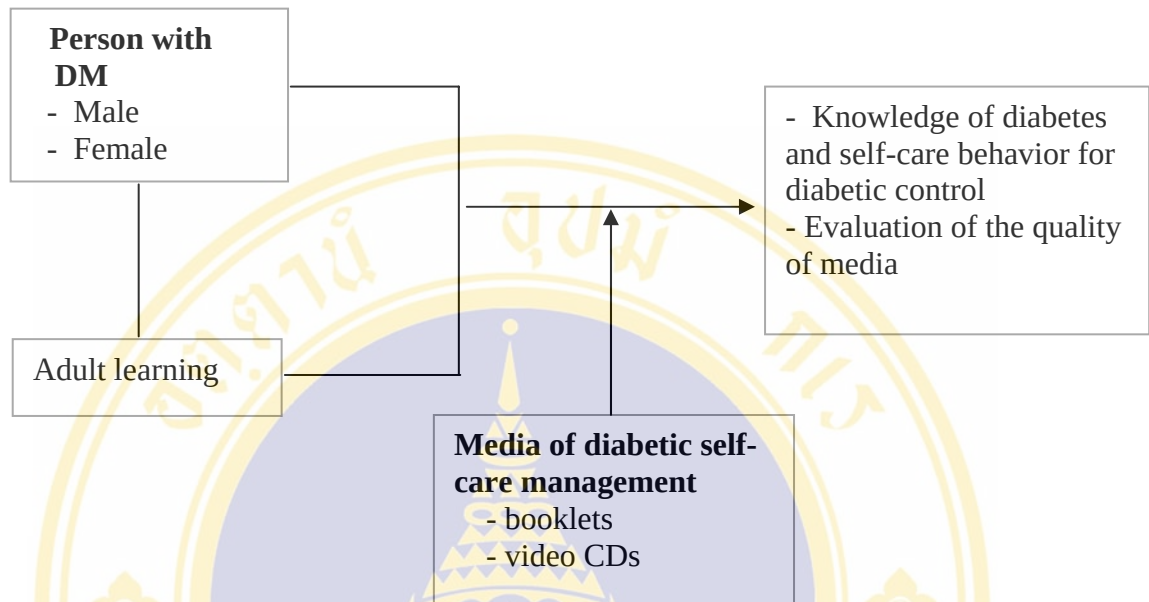


Figure 1 Conceptual Framework of the Study

Purpose of the Study

To evaluate the effectiveness of the teaching package for self-care in persons with diabetes.

Research Questions

1. Does the knowledge of diabetes self-care management in persons with diabetes increase after studying the contents of the teaching package consisting of booklets and video CDs?
2. What are the attitudes of persons with diabetes after using the teaching package?

Scope of the Study

This study aimed at exploring the knowledge and opinions of the persons with diabetes after studying the teaching package consisting of booklets and video CDs on diabetes self-care management developed by Professor Dr. Somchit Hanucharurnkul

and colleagues in 2003. The participants in the study were the persons with diabetes who received treatment at the diabetic clinic of a Bangkok Metropolitan Hospital.

Expected Outcomes and Benefits

1. The findings of the study could provide the information about the effectiveness of the media used to educate the persons with diabetes regarding self-care by means of evaluation of their knowledge level.
2. The study findings could lead to the development of standardized educational media in the forms of booklets and video CDs that could be applied to promote self-care efficacy and skills among the persons with diabetes as well as their families.
3. The findings would also provide a basis for subsequent productions of media or publication with respect to increasing the capability of chronic patients to perform self-care.

Definition of Terms

Quality of the media is the characteristic of the media in educating the persons with diabetes to achieve the level of knowledge, with the criterion set at 80%. In this study, a questionnaire was used to elicit not only the level of knowledge but also the attitudes towards the quality of the media. The participants were asked to rate each dimension of the media as very satisfactory, satisfactory, fair, and dissatisfactory. If the participants rated the media as very satisfactory and satisfactory for more than 80% of the total dimensions, it meant that the media were appropriate to disseminate knowledge about self-care among persons with diabetes.

Teaching package is the object in which information and knowledge are contained. It acts as a medium for the teachers and the learners to interact with comprehension, thereby, reaching the objective of changing the target audience to adopt a positive habit. In the present study, the teaching package consisted of ten booklets and five video CDs regarding diabetes self-care management.

Booklets are small-sized books with contents regarding diabetes self-care management categorized into ten topics as follows:

1. Diabetes can be prevented.
2. What is diabetes mellitus?
3. Control of diabetes and its complications
4. Diabetes food
5. Diabetes medications
6. Exercise
7. Diabetes self-monitoring
8. Diabetes and foot care
9. Self-care management in special occasions: sickness management, traveling, eating out, etc.
10. Questions about diabetes

Video CDs are motion pictures equipped with sound produced by Professor Dr. Somchit Hanucharunkul and colleagues. The content of the video CDs encompassed the topics covered by all ten booklets, but they were categorized into five topics as follows:

1. What diabetes is
2. Living with diabetes with a good quality of life
3. Diabetes food
4. Exercise
5. Diabetes and foot care

Diabetes knowledge refers to the ability of persons with diabetes to understand and remember an amount of information concerning various aspects of diabetes including dietary control, exercise, taking medicines, general healthcare and foot care, and self-monitoring. In this study, the knowledge of diabetes was measured by means of the diabetes knowledge questionnaires of persons with diabetes developed by Keeratiyutawong (2004).

CHAPTER II

LITERATURE REVIEW

In this chapter, existing documents, literature, and publications with relevance to diabetes are reviewed in the following topics:

1. A nurses's role in media production and usage to provide knowledge of the diabetes
2. Principles of media used to provide health information
 - 2.1 Meanings of media
 - 2.2 Types of media
 - 2.3 Values of the media
 - 2.4 Methods of selecting appropriate media
3. Production of media to provide knowledge of diabetes
4. Evaluating the effectiveness of media
5. Related theories of learning
6. Related research

A Nurses's Role in Media Production and Usage to Provide Knowledge of the Diabetes

Teaching or delivering health information is one of the ways to achieve development of individuals' ability to ensure self-care for themselves (Somchit Hanucharunkul, B.E.2537: 44). It is also an important role of nurses who are personnel that can appropriately teach the patients since they are informed of the diagnosis results, treatment, prognosis of the disease, and since they are close to the patients. These characteristics of the nurses enable them to make the patients accept them and are willing to put the teachings into practice. The roles of the nurses, in addition to teaching, include planning lessons, selecting teaching materials and methods, conducting demonstrations, and performing evaluation (Sudapa Khumsuchart, B.E.2536: 71; Chalermchai Limwattana, B.E.2539: 77-78; Surinda

Jangsawang, B.E.2535: 59). These roles are to be in accordance with the professional development scheme of the 21st Century which specifies that nurses must integrate the usage of various technological media in their treatments of the patients through provision of information technology tools in their teaching agenda prepared of the patients (Curry & Cullen, 1990, cited in Panarak Natilate, B.E.2541: 4).

In revolutionizing the healthcare system which recognizes the importance of standardized healthcare services, nurses should be ready to change or improvise in order to adjust to the conformity of the aforementioned principles. In addition to the nurses' skills to select an appropriate method, they are to possess capability or knowledge in publishing each type of media to stimulate the interest of the patients to perform self-study. This includes publication of media in the forms of videos, websites, slide shows, or documents on healthcare and wellbeing such as pamphlets or manuals. Apart from prescribing medicines to control symptoms and alleviate condition of illness, the future of healthcare should also include providing video tapes or compact disks regarding information on the illness for the patients to review and apply the information to take care of themselves. In so doing, the healthcare evolution's systematic focus on the importance of individuals' self-responsibility, self-reliance, and self-efficacy to be in charge of their wellbeing and health benefits will be fulfilled (Knanokporn Moopayak, B.E.2543: 212-214; Sa-nguan Nitayarumpong, B.E.2541: 17-28).

Production of each type of media requires the nurses to understand the publication process regardless of whether the nurses are part of the production or not. Nurses must be familiar with all the processes including gathering of information and relevant knowledge through analytical frameworks, as well as selection of appropriate media for the lifestyle and situations of the target audience. Nurses can also take part in writing dialogues in accordance to the prepared content. The content to be presented must also be in accordance with the technical theory as well as up-to-date with appropriate use of media. Furthermore, feedback and evaluation processes are to be followed through so that the arising problems and effectiveness in the production process can be clearly addressed. The common belief that these roles are the role of technicians causes the nurse participation to be below a satisfying level. The technician is aware of an obstacle in producing an effective media; that is, the

limitation in the knowledge level of the demanded content or the lack of expertise in that field. This reflects the lack of cooperative skills in the production of media (Supada Kumsuchart, B.E.2536: 35, 71-72; Pornpimol Kitiwongwisut, B.E.2542: 71-73; Chukiat Jitwongwai, B.E.2541: 43-44).

In general, the current care for persons with diabetes is given as an external division in a hospital. The patients are only admitted into the hospital when they have complications. Training the patients to be able to take care of themselves and take part in diabetes control will enable the patients to learn about their capability and empower them to do so. Therefore, fewer patients should be admitted or booked to the emergency unit, lessening the burden of the hospital (Rosenquist, 1992, cited in Vittaya Sridama, B.E.2543: 307). Improving the tendency of the population to participate in being responsible for their own health is regarded as preventing the problem before it happens. According to the guideline of the Western Pacific IDF, the importance of physical activities is recognized. This includes avoiding activities such as sitting in front of T.V., consuming fast foods, etc. There have been suggestions on more beneficial activities such as exercising even for patients with big body-size as their limitations. What they must do everyday is using stairs rather than the elevator. These habits require readjustment of lifestyle as they imply both primary and secondary prevention (Diabetes Prevention Program Research Group, 2002: 393; Whittemore et al., 2002: 18-19).

Research on self-care in diabetic patients has pointed out that media have been published to facilitate and promote knowledge for the audience such as pamphlets, manuals, pictorials, personal diaries, videos, slideshows, etc. These tools have been tested by experts and undergone functional improvement before actual use. The results of the research reflect the efficiency of the formats and methods through the knowledge level of the patients and their capability to control their disease (Pawana Keeratiyutawong, B.E.2537; Wilawan Ponploy, B.E.2538; Poonsiri Arunnate, B.E.2541; Apiradee Plodnaimuang, B.E.2542; Wariya Boonchuay, 2001; Boontana Poomleng, 2002). However, there is no evaluation of the effectiveness of the media among the patients. Such evaluation will help reveal the appropriateness of the media and whether it is effective to the target audience (Chukeat Jitwongwai, B.E.2541: 47).

It can help promote the method's objectives and transform the style of research to be more efficient, thereby yielding benefits for the researchers.

Principles of Media Used to Provide Health Information

Meaning of media

Media are a channel that acts as a link for the sender of information and the receiver to interact with one another in the manner in which the communication reaches its objective (Taweesak Yarnprateep et al., B.E.2534: 539; Narong Sompong, B.E.2535: 31; Kidanan Malitong, B.E.2540: 79). Media for self-care are thus an appropriate method to disperse information that has positive impact upon an individual, family, and community. Also, the adaptation, learning process, knowledge augmentation, attitude, and health behavior will follow through in a favorable direction (Boonyong Keawkarnka, B.E.2542: 379; Orasa Pankhao, B.E.2541: 672).

Types of Media

Media that have been used to channel knowledge and health information are categorized into personal media, audio-visual media, printed media, and publication (Orasa Pankhao, B.E.2544: 644-652; Bussaba Suteetorn, B.E.2535: 39-41; Somsong Rukpaow & Sarongot Duangkumsawud, B.E.2540: 70-76).

Personal media refer to individuals who have the role of transposing information regarding health. These individuals can then be classified into nurses, physicians, etc. Furthermore, communal personal media may include family, friends, relatives, or leaders of a community. Personnel in a health center may be classified between the two categories as persons that have been trained and assigned a role to fulfill the health objectives such as village health volunteers and health communicators. The aforementioned personal media are considered to be an important factor and they are necessary in the process of promoting health and self-care of patients. Many research results show that personal media have the most significant effects on the target audience to follow the ideas and directions on how to behave or change their habits than other means of media, especially if the personal media are personnel of a healthcare institution (Putsorn Limanon, et al., B.E.2534), field researchers, philanthropists, and those who interact closely with the public.

The biggest advantage of personal media is that they can act as a two-way channel, providing feedback while creating mutual understanding between the sender and the receiver of the information. However, the disadvantage is that the media can cover only a limited amount of target audience (Kanjana Kaewthep, B.E.2543: 159-170). Another type of media is the local media which are a format of interaction between individuals or a group of individuals passing onto one another accounts of events, cultures, or lifestyles of the local unit or community. Such interactive media are usually in the form of entertainment, attractive of attention. Therefore, such characters could be adopted for healthcare communication use. However, there are some limitations because local individuals living in a particular community must be trained in order to be able to act as such media (Pannee Banchornhuthakit, B.E.2543: 17-18).

Audio-visual media is a type of media wherein the receivers of the content are provided with visuals and/or audio according to two types of format which are tools or materials. Various forms of such media are slideshows, audio-cassettes, videos, transparencies, and video-recorders.

Printed media are media that have been produced or published with the objective of dispersing information and understanding of the contents through various forms such as posters, pamphlets, booklets, and pictorials which has the efficiency in enhancing the knowledge of the target audience. The advantage points of this type of media are the ease in production and possibility for repetitive uses. Moreover, they are mobile and can be carried to be used at different places. Mass production can also be conveniently done. However, the disadvantage is that this type of media can only reach the audience groups that are able to read and write. Furthermore, the contents permanently published may have the tendency to be out of date (Kanjana Kaewthep, B.E.2543: 311, 313; Narong Sompong, B.E.2535: 128).

Mass media of the current days have great importance and impact on the social values and norms. These types of media include radio, television, newspaper, etc., which can reach the audience in mass amounts. In particular, radio and television can also reach those who cannot read or write. Therefore, such type of media has good potential in educating public healthcare information (Ludda Prapunpongchai, B.E.2535; Wanida Virakul et al., B.E.2542: 25).

Specific media are media developed to support a specific activity with a certain type of audience group to be targeted. Compared to the mass media, this type of media will have a more narrowed and specific content to be delivered to the receivers. This type of media may take the form of a news hall in a local community, a mobile unit announcing current information, or an event fair. The tools used may be such as printed media, electronic devices, models, or personal media which play a significant role in disseminating health information (Bussakorn Suteetorn, B.E.2535: 39-41; Benjamas Suramitmaitree et al., B.E.2542: 15-16).

Values of media

Processing work in the area of health promotion requires a clear method of transferring contents and information with which media can help. The media can act as a means to promote participation in the activity and understanding of the complex information. Examples are diabetic patients participating in a conference, a seminar, and a discussion and watching videos of model activities which promote awareness of self-care knowledge. Blood sugar control and prevention of potential complications will naturally transpire (Pawana Keeratiyutawong, B.E.2537; Apiradee Plodnaimuang, B.E.2542; Paralee Opananun, B.E.2542; Buntana Phumleng, 2002). Good selection of media will stimulate and create interests among the target audience. For example, cartoon media can be used with village health volunteers to promote information about urinary calculi prevention with depiction of human body anatomy which may otherwise seems complex if presented with real pictures. Such cartoon concept helps with understanding and at the same time creates humor which lightens the learning environment (Sothinuch Karutangka, B.E.2534). Furthermore, musical media such as traditional music or country music in the form of videos or cassette tapes may be of good use for the primary school students, women, pregnant women, housemaids, or common citizens. In the Ten Commandments of National Health of the North Eastern Region, such forms of media can be used in the prevention campaign to control parasites and HIV infection and promote iodine supplementation, breastfeeding, vitamin A intake, and iron intake. Put another way, such media can be effectively used to motivate the target audience to be aware of health issues and to promote the wellbeing for themselves and families (Pannee Banchornhatakit et al., B.E.2543; Sanun Sonthisumpun, B.E.2540: 39; Kwanchai Muncom, B.E.2542: 42).

Furthermore, an appropriate media will help the target audience to have common understanding of and experience with the content in a natural manner, thereby lessening the burden upon the health personnel. For instance, video tapes can be used to teach patients and their families about cancer and treatment methods, thereby alleviating the worried feelings and creating understanding between them and the health physicians (Cassileth et al., 1982: 54-59; Jirapun Tongsuchote, B.E.2535: 71). Another example is dispersing knowledge regarding diarrhea in infants and patients in a healthcare center around Bangkok through video media instead of using healthcare personnel (Jintawadi Poomsiri, B.E.2532: 107).

Methods of Selecting Appropriate Media

Each type of media has its good qualities and weak points. Therefore, in using media, appropriate ones must be chosen carefully. The media must be in accordance with the objectives of knowledge transfer and possess ease in understanding. If the target audiences are familiar with a certain type of media, find it easily accessible and convenient for use as it may be part of their favorite activities such as watching TV, listening to the radio, or reading books, using such particular media may help with the audience interest and engage the audience to understand the content more easily. Individual patients vary in their health conditions, educational background, financial status, preparedness, beliefs, and personal values. These differences cause the difference in the appropriateness of using different types of media with different types of audiences (Bussaba Suteetorn, B.E.2531: 53-58; Prapapen Suwan & Sawing Suwan, B.E.2536: 95-96; Vitchayaporn Suwuntan, B.E.2541: 53).

In order to create acceptance, particular media chosen for use must have accuracy and contain updated contents suitable for the present condition of the target audience. For instance, Rajamangala Institute of Technology conducted a study on the media used in an AIDS prevention campaign. It was found that students could gain the largest amount of information from fair events as they deemed fair events the most interesting, possessing content of interests and varied (Kietisak Punlumjeak, B.E.2536: 132-133). On the other hand, it has been reported that disseminating information among prostitutes in Chumporn Province was most successful when it was conducted via television because they often watched TV while they were waiting for their

customers (Pinai Rujopakarn, B.E.2535, cited in Kietisak Punlumjeak, B.E.2536: 47-48).

Furthermore, when selecting media, the differences in age, knowledge level, experience, and the capability to learn as well as specific limitations must be taken into consideration. For example, a study on teaching of self-care for the handicapped of Sirindorn Rehabilitation Institute in order to lessen the burden to their families and the society revealed that video tapes were the most effective means of knowledge dissemination (Kasemanee Saithipwadee, B.E.2538: 90). This was because the patients were able to bring the contents back home to review and study, thereby enhancing their confidence and creating positive attitudes towards being self-reliant.

The size of the target audience is also an important factor to take into account when selecting appropriate media apart from the technical touch that can impress the viewers and the correct timing. A study of personal health education among 184 Grade 4 students in Ratchburi Province (Department of Health, B.E.2542) who were divided into five groups and were exposed to slide shows and video tapes showed that showing slides on a big screen was more preferable among the subjects as it looked as if they were watching movies in a cinema. Such media activated the students to be more enthusiastic and engaged in education, thereby creating awareness in the need to take care of themselves and their families. This was consistent with the conception of Somchit Supunnatad (B.E.2543: 274-280) that when there is an appropriate arousal, individuals will express certain behaviors in accordance with the objectives of such arousal.

Production of Media to Provide Knowledge of Diabetes

In order for the persons with diabetes to develop appropriate skills to maintain health and wellbeing, knowledge is important in creating understanding and motivation for the patients to perform daily living tasks and activities. Educating this particular group of patients can be done with various methods such as individual teaching or group teaching, both of which have different learning effects (Rickheim et al., 2002: 272-273). There may be an assistant teacher or the learners can learn by themselves about the needs to serve their own specific problems. In teaching patients one-on-one, in real-life situations, nurses have to teach each of the patients who seek

treatment, and in some cases they have to teach the same patients repetitively if the patients have limited learning capability, which can be very time-consuming. Sometimes nurses have to perform other tasks which have more urgency, and this may prevent the patients from reaching complete understanding as planned. As a result, the patients will not have gained enough knowledge to select, make decisions, and eventually take care of themselves in accordance with their illness condition. Therefore, nurses are responsible for improving the teaching of patients to make it practical and applicable in actual situations while at the same time promoting self-study by planning how such self-study can be done and with what appropriate media.

Nowadays, the objectives of diabetes treatment are to control the blood sugar level at or near the normal level and to prevent or eliminate complications that may arise (King, 1999: 954; Rattanasarn, 2002: 27; Sompong Suwunwalaikorn, B.E.2545: 9). The International Diabetes Federation (IDF) has recommended that after a patient has been diagnosed, the first thing to be done is to give advice on the nutrition and exercise scheme. If patients are unable to control their blood sugar level, then medication will be taken into account. However, complications pose an important problem as most patients tend to have suffered from some forms of complications. For instance, approximately 20% of diabetic patients also have retinopathy, more than 50% develop coronary artery disease, and about half or more are believed to be hidden under the Iceberg. Therefore, it is essential to make the patient aware of the need to stop smoking, lower blood cholesterol level, control blood pressure, and control blood sugar level. Also, patients have to be educated on the use of aspirin to prevent vascular complications which result from not being able to control the aforementioned basic conditions which leads to metabolic syndromes including hypertension, obesity, high cholesterol, dysfunction of platelet, the last of which has become more commonly found as the cause of Atherosclerosis in the heart artery and brain blood vessel, an important cause of death among people with the aforementioned conditions (Savage, 1998: 131-138).

High blood sugar level has different effects on the persons with diabetes than normal people. For example, the blood pressure of the kidneys will start to increase even in the first stage of diabetes even though the overall blood pressure has not increased. At a later stage when the blood pressure increases, the function of the

kidneys will become worsened. The study by UKPDS has found that a slight decrease in blood pressure in patients with diabetes by degrees of millimeters can alleviate the danger and the tendency of problems in the brain vessels and capillaries by a notable magnitude (UKPDS Group, 1998: 837-853). Controlling cholesterol in persons with diabetes is done through determining the appropriate cholesterol level for each particular stage of the disease by controlling LDL-C to be less than 100 ml. as well as increase the HDL-C level through various methods (A.D.A., 2002: S40).

Performing self-care regarding behavioral adjustment is one of the significant problems among the persons with diabetes who fail to control their blood sugar level (Brown & Hedges, 1994; Suwalee Chukeat, B.E.2541; Alberti, 2001). Knowledge about self-care is thus the basic and fundamental element of controlling blood sugar level. The researcher was well aware of the main objective in educating patients with diabetes; that is, to enable them to understand the goal of the treatment, alleviation of symptoms, promotion of quality of life, prevention of acute and chronic complications, reduction in mortality rate, and treatment of co-morbidity. All of these are aimed at enabling the patients to adjust their behaviors and to perform appropriate self-care to control blood sugar level (Thai Society of Endocrinology, B.E. 2543: 6; WHO, 1985: 83; ADA, 2002: S50; Clark, 1999: 324-325).

The knowledge necessary for persons with diabetes covers seven main issues ; that is, appropriate food intake, exercise, use of medication, symptom management, monitoring of blood sugar level, decreasing risk factors, and psychological self-care (Peeples, Mulcahy, Tomky, & Weaver, 2001: 552). All of these can be done with the use of media as means of knowledge transfer. If such media are effective, they can have profound impact on the attitudes, beliefs, and behaviors of the patients. However, it is worth noting here that such media should be assessed whether they are beneficial, and the assessment can be done in three levels. Knowledge assessment may be conducted either before or after the teaching, or review of knowledge may be carried out after each teaching session. Most importantly, the patients should be monitored to see if they are able to practice as taught. Also, long-term follow-ups should also be conducted by means of measurement of blood sugar level, eating habits, and health behaviors to see if there is any significant change and how (Task Force to Revise the National Standard, 1995: 100-106).

Media to educate persons with diabetes

Media that are widely used to disseminate knowledge among persons with diabetes are printed media, videos, models or real tools, and computer media.

Printed Media

Brochures, periodicals, books, personal diaries, and manuals are examples of printed media used to disseminate knowledge about a certain topic. They can be in-house materials, and they can be produced economically, attractively, and conveniently to be user-friendly. They are by the far the most popular media. The topics and the contents are appealing and make the readers want to continue to read to get information such as ‘how can you know that you have diabetes?’ or ‘can diabetes be completely cured?’ There are a number of advantages and disadvantages of printed media (Parinyaporn Varangrat, B.E.2544: 48-50, 74-77; Penporn Torsakulkaew, B.E.2541: 22-25; Kanjana Kaewthep, B.E.2543: 311, 318). The first advantage is the ease of production. Also, they can be used repetitively, and they are long-lasting and easy to carry around. They are cheap to produce as well. On the other hand, high quality media require a high cost of production, and the target audience must be literate. Printed media in the form of manuals can be used as the primary source of information or as supplementary teaching materials. They enable patients with diabetes to study by themselves, and the more often they read, the better they will understand the information conveyed to them. For this reason, printed media are popularly used to promote self-study of the patients (Chitapa Sukplum, B.E.2536; Kasaree Lertprapai, B.E.2539; Wilawan Ponploy, B.E.2539; Nantana Baineam, B.E.2541).

Periodicals or personal diaries for persons with diabetes have become increasingly popular. Periodicals are usually published monthly or on a trimester basis. Copies are distributed among members. In the case of a small number of members, newsletters are generally preferred. In countries such as the United States of America, there are many various discussion groups or clubs for diabetes patients. There are distributions of health periodicals among members such as Diabetes Forecast, Diabetes Self-Management, etc. The contents cover general knowledge with emphasis on how to behave in different stages of the illness, a new body of knowledge, new medical advancements about diabetes, recipes for diabetes, etc. They also act as a

medium of communication among diabetic patients including announcement about selling of personal properties or donation of equipment necessary for persons with diabetes. Furthermore, personal diaries specially made for persons with diabetes are popular as well.

Personal diaries of persons with diabetes are an important personal belonging that each patient must keep handy. In general, a personal diary is used to record meal intake, blood or urine sugar level, and other diagnosis results. Apart from recording information, a personal diary can also be used to store information such as treatment procedures, food for diabetes, and methods of measuring blood and urine sugar levels.

Video media

Media in the form of videotapes or videos with motion pictures are very popularly used due to many reasons. They can deliver both pictures and sounds simultaneously and contain movements that can be beneficial for understanding. Generally, 75% of human learning takes place through vision, 13% through hearing, 6% through touches, 3% through smell, and another 3% through taste (Sawanee Sikhabundit, B.E.2544: 239). Videos are convenient to use and can be used to depict steps of certain knowledge in detail. Moreover, they can be viewed repeatedly and help learners perceive information completely and consistently. Using videos as a means of teaching is then providing the learners with the experience that most resembles the actual situation, thus promoting effective learning (Pongpun Untarikanon, B.E.2539: 31). Teaching patients through the use of videos will generate knowledge and stimulate practice. Videos can be used for different teaching purposes. For example, they can teach children with heart defects to take care of their dental hygiene, create knowledge and awareness among the patients with diabetes to perform foot care, teach patients about anesthesia before undergoing surgical operations, and disseminate knowledge about cancer and its treatment among patients and caregivers. The fact that videos can be viewed and reviewed at home helps narrow the gap between hospital care and homecare while promoting family participation in care giving at home (Scherz, 1994, cited in Panarak Natilate, B.E.2541: 23; Gaskey, 1987: 341; Cassileth, 1982: 54).

At present, there are a great numbers of videos for persons with diabetes made by foreign health institutions. Pharmaceutical firms tend to use these videos when

advertising their products. However, the language used is English or other foreign language, and they are meant for use in teaching a small or large group of patients, so they are not suitable for individual self-study. Examples of these videos include exercise videos, videos on insulin injection, and videos on self-assessment of blood or urine sugar levels.

Media using real objects or models

In teaching and demonstrations of different topics or techniques, real objects or models may be needed. The topics of teaching include how to inject insulin, measure blood or urine sugar level, or choose appropriate food, to name a few. The objects used in the teaching or demonstrations may be used or expired to save costs including syringes, insulin bottles, examples of medication, or urine or blood testing strips. New materials can also be used as well for the patients to practice. For example, the instructor may demonstrate how to use a syringe, obtain a drop of blood from a finger tip, and read the result after comparing the color with the color spectrum on the bottle. In addition, these days there are fruit and food replicas commonly available for use in the teaching and demonstrations as well.

Computer Media

The recent technological advancement has brought about the access to the Internet, which is widely popular and greatly beneficial for everyone in terms of provision of information and knowledge. There are a large number of websites that provide information services for medical and health personnel such as physicians and nurses as well as patients. The learning through the Internet can be done interactively, with question and answer sessions that can be spontaneous and allow each party to receive immediate responses. Such kind of media plays more and more important roles in the society although it is considered new. From the literature review, it has been found that there are a number of studies about diabetes and computer media. For instance, there are online lessons to educate audience on herbal medicines for diabetes by Piti Anuchartbutr (B.E.2543) and online dissemination of knowledge about diabetes in Thai by Amanee Nassanee (B.E.2543). These examples clearly reflect the positive trend of diabetic care in Thailand.

In order to minimize the limitations and make the most use of each type of media, mixed media can be utilized (Kanjana Kaewthep, B.E.2543: 142; Narong Sompong, B.E.2535: 77-79). Different media can complement one another in presenting different kinds of information. Mixed media can be used with audience of all educational backgrounds, such as those who cannot read but can still understand the spoken language used in the video-audio media. Dissemination of information through different media can help solve the problem of some information not reaching the larger group of audience. For example, in the area in which there is no radio or television media, audio cassettes and publications can still reach the target audience and solve this limitation.

To produce quality media, techniques, methods, and artistic creation must be applied so that the audience can establish coherent understanding with what the media intend to communicate, with ease of understanding and applicability. Media of such character will be effective, as well as become good investments in terms of labor, idea, cost and time needed for the media production. The components of media production are illustrated in Figure 2 below (Ornjaree Natakuatung, B.E.2539: 210-211).

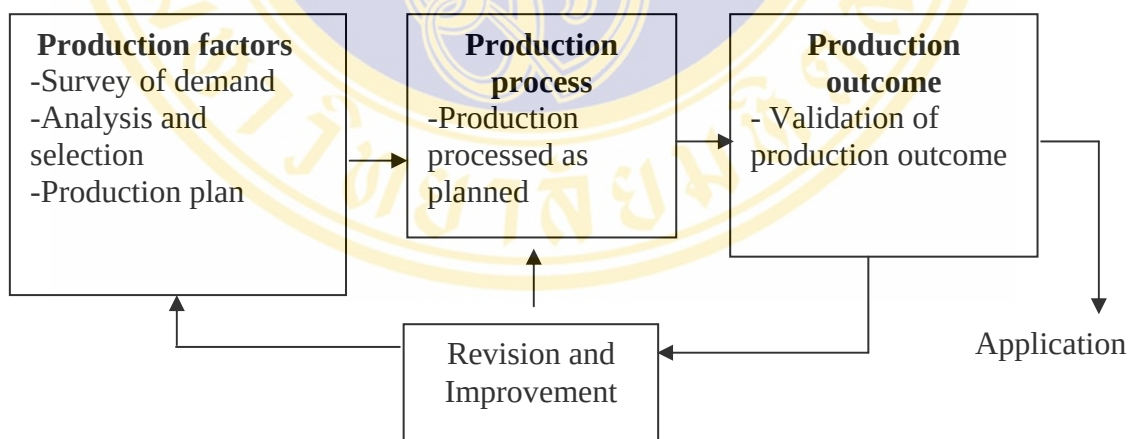


Figure 2 Model of media production (Ornjaree Natakuatung, B.E.2539: 210-211)

Production of media consists of the following ten steps (Duangmarn Summawipaweeikul, B.E.2543: 16; Chukeat Jitwongwai, B.E.2541: 43-45; Luksana Muenjak, B.E.2541: 20-22):

Preparation during the pre-production stage

- 1) Analysis of situation and problem condition
- 2) Analysis and specification of target audience
- 3) Formulation of objectives
- 4) Analysis and specification of content
- 5) Specification of media for use
- 6) Planning and preparation of media production

Production stage

- 7) Production of media according to the steps required for each type of media

Post-production stage

- 8) Testing of the effectiveness and quality of the media
- 9) Mass production for distribution
- 10) Follow-up and evaluation of results

The focus of the present research was on the post-production stage; that is, to determine the effectiveness or the quality of already produced media to conclude whether it was suitable for use with the target audience. All the weaknesses were taken into careful consideration in order to identify areas of improvement so that media with high quality would be derived for dissemination purposes in the future.

Evaluation of the quality of media

After implementing the production plan, the last step in media production is to test and evaluate the effectiveness of the use of the media. These are crucial steps because they are indicators of whether the media produced are able to reach the objectives and possess good enough quality to be subsequently distributed. It will also indicate the areas of improvement that may be beneficial for future production (Pensri Tawisuwan & Parn Gimpee, B.E.2534: 732; Vipoon Krasaetanon et al., B.E.2538: 7; Robbins, 1994: 582; Chukeat Jitwongwai, B.E.2541: 47). In using media of each developmental project, little has been done to test the quality of the media before usage. Most of the time, such procedure is viewed as time-consuming, unnecessary, and requires cost of changing the media. Therefore, effectiveness of the media has been given low regards (Jumpol Rodcumdee, B.E.2532: 81; Etzioni, cited in Chainarong Surachaipunya, B.E.2542: 9).

There are many reasons why the effectiveness of media needs to be determined (Chaiyong Promwong et al., B.E.2533: 490-492; Narong Sompong, B.E.2530: 104-105). They are as follows:

1. For the media production team, quality assurance is necessary to determine which type of media should be produced in a greater amount. If quality testing is not conducted prior to the production, the media might have to be produced again after revision, costing more time, labor and investment capital.
2. For the media user, the media teach them by creating the learning environment to change the behavior of the learners. Sometimes, the media play the role of teacher or assistant teacher. Thus, before the media are used, evidence that they can effectively lead to actual learning must be sought. Media need to provide knowledge and correct understanding according to the objectives of the teaching. Tests of effectiveness according to these steps will ensure that the media meet the quality and standards previously determined.
3. For the media producer, testing of media efficiency will ensure that the content of the media is appropriate, easy to understand, and able to provoke interest in the subject. They need to also possess the ability to motivate curiosity and convince the learners to change their attitudes or adjust their behaviors.

Components of effectiveness of media

Tests of effectiveness of media are conducted with an aim to gather information regarding components of effectiveness of particular media by attempting to answer the following questions:

1. Attractiveness: Is the content attractive enough to stimulate and sustain interest among the target audience? Will they like it or not? If there are more than one message, which one is the most attractive?
2. Comprehension: Is the content clear and easy to understand? If there are more than one message, which one is easiest to understand?
3. Acceptability: Is the content against the norm of the society or not? Is there any content which can be seen as incorrect? Is there any content which is unsatisfactory? Which one is the least accepted?

4. Self-involvement: Does the content suit the needs and interest of the target audience? Does the target audience think that the message is meant for them? Which one is the most relevant?
5. Persuasion: Is the content able to motivate the change? Which one can create the most change that best suits the target behavior?

Evaluating the effectiveness of the media can be done in various ways. The evaluator can choose to adopt only one way or tool or use many tools that they deem appropriate for any particular type of the media as follows (Narong Sompong, B.E.2530: 105; Naline Makarasan., et al.(B.E.2542: 29; Pensri Tawisuwun & Parn Gimpee, B.E.2534: 372):

1. Survey questionnaires
2. Formal and non-form interviews
3. Observations
4. Testing
5. Self-assessment
6. Practice workshop
7. Secondary data readily available

The aforementioned methods of evaluating the media outcome can be used differently as follows (Chiansri Wiwitsiri, B.E.2530: 79):

1. Process evaluation: This is the assessment of interest and cooperation of the user and media receivers on either an individual or a group basis during the actual use of the media to transfer information or knowledge. This type of evaluation can be done by having the audience fill out a survey questionnaire, interviewing the audience, or conducting an observation during the time of the media use.

2. Media outcome evaluation: This is the assessment of the changes in knowledge, skills, or attitudes of individuals or groups after the use of any particular media using the following methods:

- 2.1 Testing knowledge and gathering opinions before media presentation.

- 2.2 Testing knowledge and gathering opinions after media presentation using same or equivalent forms of tests.

2.3 Measuring general opinions and ideas about the content, approach, media, instructor as well as the atmosphere and the activities included.

Such evaluation requires the use of a questionnaire or test so that the scores obtained can be compared per item to determine the number and percentage of correct and incorrect responses. Frequency distribution can be calculated to determine the effectiveness of the media and reflect how the media should be revised and improved to increase their validity.

Criteria used in evaluating media

Criteria need to be established to evaluate media. In general, criteria refer to rules or standards used in decision making (Thorndike & Barnhart, 1965, cited in Rattana Buason, B.E.2540: 15). Criteria also refer to specifications consistently used in decision making. Criteria can be divided into two categories as follows (Rattana Buason, B.E.2540: 15; Purachai Peamsomboon, B.E.2529: 165; Orapun Pornsima, B.E.2530: 131):

1. Absolute criterion

Absolute criterion refers to establishment of the goal or satisfactory level against which the media can be compared. This also refers to criterion-referenced evaluation. For instance, if the criterion sets 50% as satisfactory, the increase in percentage can be measured with incremental or categorized intervals as well. It is worth noting that setting percentile must be done reasonably and consistently. In this research, the effectiveness of media in the area of knowledge and understanding was set at 80%.

2. Relative criterion

Relative criterion refers to evaluation in which the satisfactory level or decision making is done according to the most common characteristic of the sample. When most of the sample possesses a certain characteristic or yields certain data, then the outcomes must be interpreted in such direction. This criterion can be indicated by the satisfactory level of the learners by gauging the effectiveness of the particular media in reaching its objective instead of looking for faults in the media developer or user. This will better support and help with the media usage. If the media that have been built do not reach the target, the effort and the budget will be futile. As the media are used

according to the target, it is interesting to study the effects of such media on the target, as well as problems or obstacles in the use. Evaluating the usage of media must therefore answer the aforementioned questions and help with further development of the media.

Not only can effective media pass on knowledge and understanding to the audience, but other factors that help distribute the media to reach their objectives also need to be taken into account. One of the most important factors is the media receivers or learners, who were persons with diabetes in the present study. If the learners are mature and ready, they are able to learn different things. As such, before helping learners to learn, the media user should take their age, readiness, and capability into consideration.

Related Theories of Learning

Learning

Learning can take place where there are 3 major components—stimuli, learners, and responses (Oranun Harnyat, B.E.2532: 117; Quinn, 1995: 89). Stimuli refer to the environment that surrounds the learners such as activities, books, television, movies, and videos. These stimuli arouse the sensory perceptions of seeing, hearing, feeling, smelling, and tasting of the learners, resulting in reflexes or responses. In this research, videos and booklets were used as stimuli in learning of persons with diabetes. They were mixed media used as seen appropriate for each of the persons with diabetes who have their own learning style and take different amount of time in learning each topic.

Learners or organics refer to individuals who respond to the stimuli after they are aroused through their sensory perceptions. They translate the stimuli through analysis and interpretation of meaning as they process the knowledge they receive and apply it to result in learning for themselves. The learners can learn best when they are ready learn and are aware that they can apply the knowledge learnt for their benefits. This will make them satisfied with learning and want to learn more.

Responses refer to acting or behavior of the learners once they are stimulated. Responses are divided into different domains. The cognitive domain is responses shown in the forms of knowledge, ideas, memory, and critical thinking; affective

domain is responses in the forms of attitudes, values, and feelings shown through facial expression or interest. The third domain is psychomotor domain or practice such as foot care, food selection, or exercise. In this study, responses in the forms of knowledge and attitudes toward arousals, namely media, were investigated based on the three rules of learning proposed by Thorndike (Thorndike, cited in Vicha Poomsiri, B.E.2544: 41-42):

First, law of readiness is when the persons with diabetes are ready to take in knowledge or information from listening, watching, reading, or experiencing, which enable them to synchronize the knowledge perceived. After understanding has been achieved, responses can then be made. Second, law of effect contends that after the learners have studied the content and felt that they are able to correctly answer questions, they will develop satisfaction which will make them proceed to the next step. Third, law of exercise is based on the principle that after the learners have studied and developed expertise, they will be able to learn faster and perform self-evaluation.

Because most of the persons with diabetes tend to be adults who are 30 years of age or older (Pongamorn Boonnag, B.E.2541: 1; Thep Himathongkum, B.E.2545: 40; The Thai Society of Endocrinology, B.E. 2543: 18), they are likely to have learning styles different from those of younger learners. This affects perception of information and persuasion which becomes harder as the learners become older (Janis & Rife, 1995, cited in Pusawalee Nitikasetsoonthorn, B.E.2544: 228). In other words, the pattern of learning of adults is different from that of children. Adults generally have background knowledge, freedom, and experience, so teachers should be facilitator of learning instead of one who directly imparts knowledge. According to Orem (Orem, 1995, cited in Somchit Hanucharurnkul, B.E.2544: 131-133), when teaching patients nurses have to consider the content which should supplement what they already know by considering experience and the readiness of the patients. Furthermore, the content and method have to be adapted and applied to suit the learning capability of each patient. According to Knowles (Knowles, 1984: 55-61, 83-85), learning of adults can take place through the following conditions:

- 1) The content matches the learners' interest.
- 2) The content is relevant to the real-life situation of the learners. The learning process will be effective if situations are practical and realistic to adulthood as much as possible.
- 3) The content is relevant with life experiences since the experiences are the most valuable sources of knowledge of adults.
- 4) Adults must be able to be their own leader and have the feelings that they can guide themselves confidently through the learning process.
- 5) There are differences among individuals, and this results in difference in learning capacity of each adult learner.

Knowles has developed the notion of adult learning called Andragogy (Knowles, 1984: 55-61). The term 'Andagogy' comes from the greek word, *Aner*, meaning man, and *agonus*, meaning leader. The word means the science and art in helping adult to learn. According to this notion, adult learning is different from child learning in six following aspects:

1. The need to know: adults need to know the purpose of learning.
2. The learners' self-concept: adult learners have leadership and are able to use reasons and logic to make decision and lead their life.
3. The role of the learners' experiences: adults have past experiences.
4. Readiness to learn: adults are ready to learn what they want to know about.
5. Orientation to learning: one difference between child and adult learning is that child learning is content-centered, while adult learning is problem-centered.
6. Motivation: adults respond to motivation such as better job or things they like.

Therefore, in arranging activities for adult learning, the aforementioned factors must be considered. When adults become older, their eagerness to learn may decrease, while their experiences and individual differences may increase. Thus, teaching methods must be in compliance with their needs and interests, especially the teaching about healthcare when learners are different in terms of health status, educational background, financial status, readiness, attitude, and beliefs (Prapapen Suwan & Sawing Suwan, B.E.2536: 95-96). Furthermore, using appropriate media will help the

adults learn better and promote learning that is practical and realistic. This will induce vivid understanding over only a short period of time and the learner can do self-learning individually or in group, both of which have impact on improvement of behavior (Kidanan Malitong, B.E. 2536: 80; Khanokwan Prawarnthip, B.E.2540: 34).

Related Research

Review of literature has revealed that there is no existing research on media production on self-care of persons with diabetes. However, a number of research studies exist on problems, conditions, the need for media, and the testing of media qualities in other areas of healthcare such as HIV infection, pregnancy, arthritis, etc. As regards problems and needs of media for dissemination of health information, the literature review has shown that there have been continuous problems regarding the insufficiency of media and the irrelevancy and inapplicability of existing media, or obsolete media. Therefore, the developmental plan for public health technology and media has been included in the Sixth Health Development Plan to develop media production and establishment of public health media center.

Besides, the literature review has indicated that there have been changes in perception of information from different media including television, news towers, videos, and the Internet. This poses the need to produce more media or to use the appropriate type of media that cater to the needs of the public as a pathway to reach the largest group of population possible. For instance, Chukeat Jitwongwai (B.E.2541) studied the readiness to produce health media and public relations of provincial health centers, regional hospitals, and general hospitals in Thailand. The result showed that the most effective media were photographs, slide shows, radio or slides with audio, published media, and videos. The institutions studied had the high level of need for the media but the production of media was only at an average level. The quality of the media was also at the average level. Similar findings were also reported by several research studies such as the study of Suchitra Sukhontasup (B.E.2524) on the use of audio-visual equipment for the purpose of family planning in Bangkok, the study of Pornpimol Kitiwongwisut (B.E.2541) on problems and needs of media in a communal hospital in Khon Khaen Province, and the study of Siriporn Putarungsri (B.E.2541) on

needs and opinions related to the teaching and learning of AIDS among secondary school teachers.

Previous research has reflected on similar problems regarding use of media. That is, more effective media such as audio-incorporated slides or videos are produced less than other forms of media. This is probably due to the high cost in producing such media, which involves complex tools and expertise. The findings also show that the number of personnel who are experts in video production is limited. Therefore, there should be promotion of such media production to prevent the lack of an important means to disperse knowledge and information. One of the reasons why past health development plans have not been accomplished may be that the general public as well as working staff do not receive sufficient information.

On the other hand, research on diabetes has been conducted regarding methods and means that can help persons with diabetes increase knowledge to perform self-care and control their blood sugar level. Examples of these means and methods are use of self-help group activities, provision of consultation and advice, family support, and knowledge support. It has been found that different media have been used in all research studies. A review of existing research by Sineenart Likitratanacharoen (B.E.2542) suggested that there were 57 studies conducted during 1977 to 1999. Of these, more than half, or 56.14%, involved the use of at least one form of media based on readiness of the patients to learn. The factors in media selection included visual ability, reading ability, and economic status. It was found that printed media and videos were the most popular forms of media used to disseminate knowledge among patients, accounting for 63.16% and 33.33%, respectively.

There are research studies on media to teach self-care to diabetes patients. For example, Pawana Keeratiyutawong (B.E.2537) studied 30 non-insulin dependent patients who attended the diabetic clinic of a provincial hospital and found that the format of support and education was creating an environment convenient for the diabetes patients to learn about self-care. In this study, booklets and videos were given to develop self-care efficacy regarding nutrition, medication intake, and exercise. As a result, better control of blood sugar level could be achieved, and the blood sugar level reduced with statistical significance. Moreover, Ura Suwunaruk (B.E.2539) investigated the effects of an empowering care program on self-care efficacy of

persons with diabetes in Sating-prah Hospital, Songkla Province. The subjects were divided into the experiment group and the control group, with 30 subjects in each group. The experimental subjects were given the empowering care through individual consultation and use of documents and videos to provide knowledge. The findings showed that the level of knowledge of the experimental group was higher after the experiment and was also higher than that of the control subjects with statistical significance at the 0.01 level.

It has also been found that some research used only manuals as means to provide knowledge. For example, Kasaree Lertprapai (B.E.2539) studied the effectiveness of participation in group activities for self-care development and flaws in self-care. The sample consisted of 78 non-insulin dependent diabetic patients, with 39 in the experimental group and another 39 in the control group. Emphases were placed on the subjects' attempts to search for solutions to problems and exchange of self-care experiences. The findings suggested that the self-help group had fewer flaws in self-care after the end of the experiment, even though the blood sugar levels of both groups were not statistically significantly different. In addition, Porntiwa Inprom (B.E.2539) explored the effects of homecare on perceived self-efficacy to perform self-care and health status of 20 non-insulin dependent diabetic patients who sought treatment at the diabetes clinic of Lampang Hospital, Lampang Province. Manuals were used as research instruments. According to the study findings, the scores of perceived self-efficacy to perform self-care and the mean blood sugar levels of the subjects were lower with statistical significance after the experiment ended.

Suputra Poomdandin (B.E. 2534) investigated the effectiveness of a systematic teaching method on self-care of 80 females with diabetes who were non-insulin dependent at Khamalasai Hospital in Kalasin Province, with 40 subjects in the experimental and control groups each. Pamphlets and illustrations were media used in the study. The result showed that the experiment group had better knowledge and greater control of blood sugar level with statistical significance at the 0.01 level.

Vulla Tantayotai (B.E.2540) carried out a participatory action research to develop self-care potential among insulin-dependent diabetic patients. In this study, therapeutic relationship and interaction between nurses and patients were the core component in developing patients' self-care agency. Development of self-care

potential was done in 11 ways including provision of pamphlets on dietary control, use of insulin, prevention and treatment of hypoglycemic episodes, and other necessary self-care covering a total of 12 topics. The research results showed that the patients' scores of overall perceived self-efficacy, dietary control, and use of insulin were higher than those obtained before the experiment with statistical significance.

Teaching with videos was also investigated in some studies. For example, Poonsiri Arunnate (B.E.2541) examined the effects of using group discussion in order to disseminate diabetes knowledge, to stimulate self-care regimen, and to control the disease among non-insulin dependent patients. The study findings indicated that the mean scores of knowledge about diabetes and self-care obtained before and after the experiment were statistically significantly different at the 0.05 level.

Jidapa Loytalae (B.E.2542) studied the effects of a psychological and nursing self-control program on the patients' self-care efficacy. The sample consisted of 40 diabetic patients at Chumpolburi Hospital, Surin Province, with 20 patients in the control group and 20 in the experimental group. Videos were used as teaching media. It was discovered that the subjects who received the self-control program had better self-efficacy to perform self-care than those who received only routine nursing care with statistical significance at the 0.05 level.

Kanjana Jaitham (B.E.2541) investigated the effects of establishing goal to perform behavioral adjustment on control of blood sugar level in non-insulin dependent patients at Yala Hospital, Yala Province. The experimental subjects were required to participate in the activities of the health education program which took place three times, each lasting one hour, with one-month intervals. Videos were used as the teaching media. On the other hand, the control group received only routine nursing advice. The results showed that after the experiment the experimental group had higher scores of knowledge, perceived self-efficacy, perceived benefits of action, dietary control, and exercise than before the experiment and the control group with statistical significance.

Even in the countries with advance technology, problems still persist in the control of diabetes mellitus. Therefore, research on methods to help the patients with diabetes to control their disease condition has continuously been conducted. In the area of media and tools for learning, there is numerous research on the effectiveness of

different media including pamphlets, videos, computers, games, or phone calls, etc. These research studies have yielded varying results. For example, Skeleton (1973, cited in Yaovarate Prapasanon, B.E.2536: 33) studied the use of tools in teaching diabetes including flip charts with accompanying contents on what diabetic patients should know and do. The study was conducted with 40 persons with diabetes, 20 in the experimental group who received the use of the flip charts and 20 in the control group who were taught with no planning during hospitalization. Home visits were subsequently conducted to measure the patients' knowledge and skills using a questionnaire. The results showed that the knowledge level and skills in all areas of the experimental group were higher than those of the control group with statistical significance.

Brown, Duchin & Villagomea (1992) studied the effectiveness of health education given to diabetic Mexican-Americans using videotapes on diabetes disease, blood sugar level and food intake, and monitoring blood sugar level. The sample consisted of 30 diabetic patients. The results revealed that the mean scores of the sample obtained after the experiment were higher than those obtained before the experiment with statistical significance.

Ledda, Walker & Basch, (1997) studied the development and evaluation of a teaching program on foot care of African-American diabetic patients. Problem assessment and consultation were conducted on an individual basis at home, and a manual on foot care was given and telephone calls were made as follow-ups. According to the study findings, most of the subjects had satisfaction at a high or highest level, and they felt that the knowledge was applicable in real-life practice, especially those who were younger. For older diabetic patients, the program was found to be too strict for them.

Roshim & Fowles (1999) studied the source of information on diabetes. The sample consisted of 844 patients with diabetes ranging in age from 31 to 64 years. The results showed that almost all of the sample (99.5%) sought information from various sources. Eighty percent used at least four sources of information, and health personnel including physicians, nurses, and nutritionists constituted the most important source for them.

Funnell, Donnelly, Anderson & Johnson (1992) studied the perception of effectiveness and cost-effectiveness of diabetes knowledge dissemination. The sample consisted of 816 instructors of the American Diabetes Association. Of the total number, 325 responded, accounting for 40%. The research found that most people found that manuals and videos were most effective and cost-effective, while books and cassettes were less effective and computer was least effective. Likewise, Mckiel (1991) examined the effectiveness of computer in giving diabetes health education and found that it had limitation in terms of learning appropriateness.

Glasgow et al. (1996) studied the effectiveness of support given to patients with diabetes with regard to self-care. The sample consisted of 206 diabetic patients. The subjects in the experimental group administered self-assessment of self-care efficacy using computer to gather and immediately solve problems. They received videos for self-study at home, and phone calls were made to follow-up. On the other hand, the control subjects received only routine advice. The experiment lasted three months. It was found that the mean of blood cholesterol of the experiment group reduced with statistical significance, they had better food intake, and their satisfaction with such method was at a high level. When data were collected one more time one year after the experiment ended, it was discovered that the results remained similar.

According to the aforementioned research, it can be seen that printed media and videos are accessible media that can be produced easily. Thus, there are many research studies involving the use of printed media together with videos. For example, Nittaya Worachakreeyanun (B.E.2531) investigated the effects of practice on knowledge, attitudes, and self-care behavior of patients with lung disease using a self-care manual. The findings showed that after the experiment, the patients had a higher level of knowledge, were better able to breathe with abdominal muscles and diaphragms, and coughed more correctly to expel phlegm with statistical significance at the .01 level. Similarly, Varin Binhosen (B.E.2536) also found that patients that had been given the self-instruction pamphlet had better knowledge and behavior than those who were given normal formal teaching.

The study was conducted on effectiveness of teaching tools and the impact of media by Department of Health, Ministry of Public Health, in collaboration with the Faculty of Medicine, Ramathibodi Hospital, and Faculty of Public Health, Mahidol

University (cited in Benja Taoklom et al., B.E.2538). The sample consisted of patients who sought services from Ramathibodi Hospital. According to the findings, there was no difference in immediately studying the documents provided and subsequently studying at home. Also, teaching with flip charts and verbal descriptions resulted in better learning than with audio-slides and documents. Finally, the patients who received transfer of knowledge had better knowledge than those who did not receive such transfer. In another study on the use of media to disseminate health information by Boonsong Jangsawang (B.E.2527), it was found that the most commonly used media were posters and brochures and that the medium that could attract most attention of the general population was TV. Such findings were congruent with the results of research carried out by Samorn Wisarnwat & Daungmarn Summavipaweeikul (B.E.2538) which studied the needs of media and the problems of media use among health educators under the provincial public health offices. The findings suggested that the most commonly used media were posters, documents, and pamphlets. It was also discovered that the media which received the highest amount of interest and which were expected to be most popular in the future was videos, but they were available in a limited quantity.

Apart from videos, the media that attract the most attention of the general public was television (Khanokwan Montirath, B.E.2539; Benjamas Suramitmitree., et al., B.E.2542). Other media such as periodicals, personal media, phone calls, and the Internet could reach a considerable number of people, especially phone calls and the Internet which were considered new and whose popularity tended to increase with time (Benjamas Suramitmitree., et al., B.E.2542). These findings were similar to those of a survey on use of IT tools/equipment all over Thailand conducted in 2001 by NECTEC which reported that the use of the Internet had become increasingly popular in all regions of the country (National Statistical Office, B.E.2544: 16-22).

Based on the aforementioned research, it could be concluded that videos are beneficial for learning, teaching, and training. They are highly effective as they contain images, colors, and sound which can well attract the learners' attention. Thus, they can relieve some burdens of the teacher in finding teaching materials, solve the problem of teacher shortage, and improve the learning outcome (Ludda Sukhapreeda, B.E.2533; Kidanun Malitong, B.E.2536). Besides, videos can be used with learners at

all levels. As for the effectiveness, it has also been found that learning through the use of video is more effective than through normal teaching (Pongpan Untarikanon, B.E.2539).

Using videos to teach the patients can save time for nurses. In addition, information can be systematically presented, and they can be entertaining. Moreover, they are suitable for the audience with reading problems. In short, videos can make health education effective (Khosum Suwanchata et al., B.E.2530; Yaowaluck Saeresatian, B.E.2531). Furthermore, videos have an effect on behavior of the audience as they help increase the knowledge level and enhance correct self-care. A study of Jirapun Thongsuchot (B.E.2535) which examined the effectiveness of health education among patients with cervical cancer before ICRT treatment with videos to give instructions on self-care showed that the subjects had a higher level of knowledge about self-care and a lower level of anxiety when compared to those who received normal teaching.

Gaskey (1987) compared the use of videos to teach about anesthesia with regular visits of anesthesiologists before surgery. The findings showed that both groups of subjects had similar levels of anxiety, but the group that received video teaching had more knowledge about anesthesia and had more behaviors reflecting reduced level of fear. On the contrary, Khosum Suwunnachata., et al. (B.E.2530) examined the effectiveness of teaching about diarrhea in infants to the general public who sought services at a health center located in Bangkok. The sample consisted of 90 service receivers who were divided into three groups of 30. The media used were personal media, videos, and personal media with videos. The findings indicted that the mean scores of knowledge were not different.

Scherz, (1994, cited in Panaruk Natilate, B.E.2541) studied the effectiveness of foot care in patients with diabetes. One group received video teaching, whereas the other was taught by nurses. It was discovered that both groups had better knowledge, attitudes, and foot care with no statistically significant difference. Moreover, Lin et al. (1997) studied the health education program given to patients with arthritis. A comparison was made between the two groups that had been taught by using manuals and videos. It was found that the group which was exposed to videos possessed more knowledge than the group taught with manuals. The former had more consistent and

appropriate exercising regimens and better practice when bending their knees. Furthermore, Mahler et al. (1999) studied the information provision for the patients who had undergone coronary surgery before hospital discharge. The experimental group received information through videos, while the control group received standard information regularly given to patients. The results showed that the experimental group ate less low-fat food than the control group for the period of one month after the surgery. The group also exercised more frequently within the period of three months after leaving the hospital. These results were consistent with the results of Panarak Natilate (B.E.2541) who investigated the effects of teaching with videos on knowledge and self-care practice of 40 school-age children with Thalassemia. The findings revealed that after teaching the sample had increased knowledge and self-care practice.

Based on the existing research previously discussed, it can be said that teaching or providing health education through the use of booklets or videos is considered an effective means which can be applied to use with different groups of patients. The teaching outcomes are likely to be similar to the outcome of teaching conducted by nurses. It is time-efficient and enables the patients to receive information continuously and consistently. However, teachings with different types of media have limitations. For example, the use of videos with visuals and sound may stimulate interests among the audience and provide a vivid image of the content to be taught repeatedly in place of instructors. However, if it takes too much time for the content to be delivered, the audience may not be able to memorize much information or no information at all especially toward the end of the video. For instance, learners may very well remember all the content taught within the first 15 minutes, but after 30 minutes, they may be able to memorize only 27% of the content, and only 16% after 40 minutes have passed (Anakekul Srisang, B.E.2523, cited in Juangjun Suttasiri, B.E.2534). Therefore, other media are needed to supplement the primary media. For instance, manuals can be studied with no time restriction. They can be reviewed anytime, and they can be shared among individuals. The more they are read, the higher level of knowledge and understanding. Better yet, they can help solve the limitation of videos when it comes to content memorization.

Santana Kanoksin (B.E.2533) found that patients who had been given advice in small groups with the use of mixed media including videos and booklets had a higher

level of knowledge and practice than those who received only normal advice by healthcare providers. Likewise, a study of Mazzuca et al. (1986) showed that health educators who performed teaching through videos, lectures, and demonstrations were better able to promote knowledge among the patients exposed to these media than patients who received normal teaching. In addition, Yaowarate Prapasanon et al. (B.E.2536) reported that the self-care regimen of the group that was taught with mixed media was better than that of the group receiving only normal teaching at two months after the teaching ended with statistical significance. Therefore, learning through different sensory perception is better than learning through only one of the senses (Rovinski & Zastocki, 1989: 5) with either manuals or videos alone.

Summary

According to the literature review, it can be seen that teaching or dissemination education regarding self-care of persons with diabetes is important. The use of media makes it easier to accomplish the teaching goal. With media, learners will be enabled to learn more easily, memorize faster, and develop more interest and participation. In this study, it was believed that the use of videos gave realistic and natural images and sounds and the videos were easy to produce and present. At the same time, booklets gave persons with diabetes a good opportunity to review information through self-study at home. They were cheap and easy to produce, and they were effective and recyclable. The patients could review as much and as often as they wanted, and booklets could also be shared among groups of patients. Most important, booklets helped solve the limitations of videos which may prevent the patients from fully and completely memorize the content. For these reasons, it was believed that using videos together with booklets would be more effective and fruitful than using either of them alone.

CHAPTER III

MATERIAL AND METHODS

The present study employed a one-group pretest-posttest research to assess the effectiveness of a teaching package on self-care of persons with diabetes developed by Somchit Hanucharunkul and colleagues at the Department of Nursing, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, under the project to develop standard media for persons with diabetes. In this chapter, the research methodology is discussed in the following topics:

1. Population and sample
2. Instrumentation
3. Data collection procedures
4. Data analysis and statistics

Population and Sample

The target population of the present study was persons with diabetes who were 40 years old and older who sought treatment at the diabetes clinic, outpatient department, of a hospital under Bangkok Metropolitan Administration. The sample consisted of 60 patients with diabetes who were recruited by means of simple random sampling. The inclusion criteria of the sample were as follows:

1. They had diabetes without severe complications such as end-stage of renal disease;
2. They were able to perform self-care;
3. They were able to read and write the Thai language;
4. They had no impaired vision or hearing which would prevent them from watching videos;
5. They were willing to participate in the study.

Sample Size

The sample size of this study was calculated based on power analysis by setting power at .80, an effect size at .80, and alpha level at .05. The sample size of 50 subjects was required to test the differences of two means. To prevent problem of loss of subjects, the total numbers of 60 subjects were recruited.

Setting

The study was conducted at the diabetes clinic, outpatient department, of a hospital under Bangkok Metropolitan Administration. It was a tertiary care center. This setting was chosen as the site of the study because it was one of the health centers which provided health services for diabetic patients. The characteristics of the services provided at this setting could be summarized as follows:

1. Services were provided Monday through Thursday from 8:00 a.m. to 12:00 p.m.
2. When the patients came to the clinic, they had to undergo physical examinations including elicitation of history of illness, measurement of body weight and blood pressure, and laboratory tests if required by the patients' condition. After that, the patients met with the doctor for medical examination. They received prescribed medication and an appointment card for the next examination before they could go home.
3. Informal health education was also offered at this clinic.

Instrumentation

The instruments in this study could be divided into research instruments and data collection instruments.

1. Research instruments

- 1.1 Video CDs on diabetes self-care developed by Hanucharurnkul et al. (2003) consisting of the following five episodes:

1. Getting to know diabetes
 2. Living happily with diabetes
 3. Food for persons with diabetes

4. Diabetes and exercise

5. Diabetes and foot care

The video CDs were examined to ensure content validity by a panel of eight experts including one physician and seven nursing instructors in the field of chronic illnesses including diabetes.

1.2 Booklets on “Knowledge of Self-Care for Persons with Diabetes” developed by Hanucharurnkul et al. (2003) based on the information gathered from texts, journals, and related research and consisting of ten topics as follows:

1. Diabetes can be prevented.
2. What is diabetes mellitus?
3. Control of diabetes and its complications
4. Diabetes food
5. Diabetes medications
6. Exercise
7. Diabetes self-monitoring
8. Diabetes and foot care
9. Self-care management in special occasions: sickness management, traveling, eating out, etc.
10. Questions about diabetes mellitus

As regards content validity, the booklets were examined to ensure accuracy and language appropriateness by a panel of eight experts including one physician and seven nursing instructors in the field of chronic illnesses including diabetes.

2. Data collection instruments

The data collection instruments used in this study were composed of the following:

1. Demographic characteristics questionnaire was developed by the researcher to elicit data regarding age, gender, marital status, educational background, occupation, monthly income, medical expenses, and sources of health information including persons providing diabetic care information, type of media used in provision

of health information, and the frequency of application of health information in daily living to perform diabetic self-care.

2. The Diabetes Knowledge Scale was developed by Luksana Loychroen who modified the questionnaire originally constructed by Pawana Kiratiyutawong (B.E.2544). The questionnaire consisted of 35 items arranged in a two-point rating scale. A score of 0 meant the patients perceived that they did not have any knowledge and a score of 1 meant that the patients had good knowledge about diabetes self-care. The total scores ranged from 0 to 35, with higher scores indicating a higher level of knowledge about diabetes self-care.

Validity and Reliability

The instrument was examined for content validity by a group of three experts in diabetes mellitus. In addition, Kuder Richardson KR-20 was also performed to determine the reliability of the instrument with 30 patients with type 2 diabetes. The reliability was equal to 0.84.

3. Diabetes booklets evaluation form consisted of six items which elicited the subjects' satisfaction with the booklets in the following aspects—format, content, usefulness, and appropriateness. Each item was rated in percentage. If more than 80% of the subjects rated each item as satisfactory or very satisfactory, it meant that the quality of the booklets was accepted and they were appropriate for use as teaching media for persons with diabetes. The booklets were also examined for content accuracy and appropriateness by a panel of five experts.

4. Diabetes video CDs evaluation form was designed to elicit information regarding the patients' satisfaction with the video CDs in terms of format, content, usefulness, and appropriateness. The form required the subjects to evaluate the major components of the video CDs in various aspects including content presented, type of media, language use, illustrations or characters, use of colors, and other components such as music and duration. The criteria for accepted quality of the booklets and the video CDs involved consideration of each item. The total score for each item had to be at a good or very good level before its quality would be accepted, and all items needed to be at a good or very good level on average before the quality would be accepted.

Data Collection Procedures

Preparation stage

1. The introductory letter from the Graduate School of Mahidol University was sent to the Director of BMA Medical College to ask for cooperation in conducting research.
2. The researcher contacted the head of the diabetes clinic to introduce herself, explain the objectives of the study, and ask for cooperation in data collection.
3. The researcher prepared the data collection venue and installed the audio-visual aids necessary for data collection.

Data collection stage

This stage was further divided into two phases as follows:

1. Sample selection

On day before persons with diabetes would come to the clinic to receive treatment, the researcher conducted simple random sampling to select 10 to 15 subjects per day. On the examination date, the researcher approached the would-be subjects to introduce herself, explained the research objectives and data collection procedures, and asked for their cooperation to participate in the study. The researcher also informed the subjects of the protection of the rights of human subjects and asked them to sign the informed consent form if they agreed to take part in the study. After that, the subjects were asked to complete the demographic characteristics questionnaire and the diabetes knowledge scale. The researcher also made an appointment with the subjects to participate in the study at 1:00 p.m. on the same day.

2. Provision of knowledge

The subjects were asked to watch each part of the video CDs. After they finished watching each part, the researcher summarized the content of the video CDs and offered the subjects the opportunity to ask questions to clarify their doubts. Then, the subjects were asked to complete the diabetes video CDs evaluation form. This was done until the subjects finished watching five parts of the video CDs. At the end of the session, the researcher distributed the booklets on self-care for persons with diabetes for self-study at home. The researcher explained to the subjects that there was a diabetes booklets evaluation form included for each of the booklets. The

subjects were required to fill out the form after finishing reading each booklet. Every week the researcher would make a phone call to the subjects to stimulate them to read the booklets and to give them encouragement. This lasted four weeks, with a total of four phone calls. On the fifth week, the researcher met the subjects to have them complete the diabetes knowledge scale one more time as a post-test. The data elicited from them would then be prepared for data analysis in the next step.

Steps involved in data collection are illustrated in Figure 3 below.

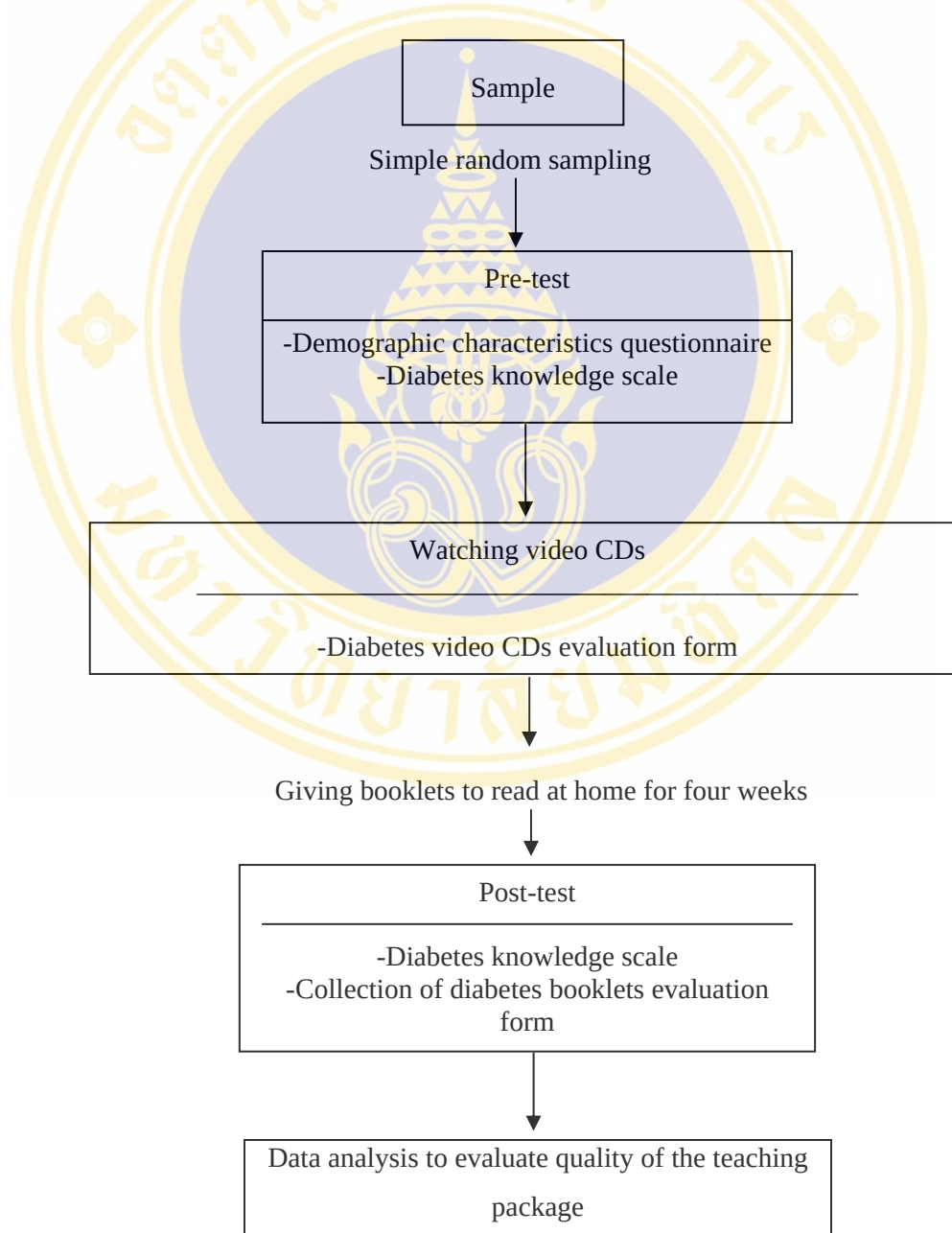


Figure 3 Steps involved in data collection

Protection of the Rights of Human Subjects

The subjects were informed of their human rights protection as indicated in the consent form. The researcher clearly explained the purposes of the study and the data collection procedure including the duration and the expected outcomes. They were ensured that their participation was on a voluntary basis and that they could withdraw their participation at anytime during the procedure if they wished, and their withdrawal from the study would not affect them in any way. In addition, they were reassured that the data collected from them would be kept strictly confidential and would be presented only as group data. (See Appendix.)

Data analysis

After the data were collected from the subjects, statistical analyses were conducted using the SPSS (Statistical Package for the Social Science) as follows:

1. Data regarding demographic characteristics of the subjects, quality of the booklets, and quality of the video CDs were analyzed by means of descriptive statistics including frequency, percentage, mean, and standard deviation.
2. The subjects' mean scores of knowledge of diabetes obtained before and after the experiment were compared using paired t-test.

CHAPTER IV

RESULTS

The present study aimed at investigating the effectiveness of a teaching package for self-care in persons with diabetes to develop standard media for persons with diabetes. In this chapter, the research findings are presented in the following sections:

Part 1: Demographic characteristics of the sample

Part 2: Diabetes knowledge of the sample

Part 3: Evaluation of the quality of the diabetes self-care booklets

Part 4: Evaluation of the quality of the diabetes self-care video CDs

Part 1: Demographic characteristics of the sample

Table 1 Number and percentage of the sample as categorized according to demographic characteristics (n = 60)

Demographic characteristics	Number	Percentage
Gender		
Male	26	43.3
Female	34	56.7
Educational background		
Primary Grades 1-3 or lower	13	21.7
Primary Grades 4-6	9	15.0
Early secondary	7	11.7
High school	8	13.3
Diploma/Certificate	9	15.0
Bachelor's degree	12	20.0
No information	2	3.30

Table 1 Number and percentage of the sample as categorized according to demographic characteristics (n = 60) (cont.)

Demographic characteristics	Number	Percentage
Occupation		
Housewife	19	32.8
Government official/Public enterprise employee	16	27.6
Employee	6	10.3
Trader	7	12.1
Agriculturist	1	1.70
Others	9	15.5
No information	2	3.30
Monthly income (Baht)		
< 1,000	2	3.30
1,000 - 5,000	14	23.4
5,001 – 10,000	14	23.4
10,001 – 15,000	10	16.7
>15,000	14	23.4
No information	6	10.0
Marital Status		
Single	7	11.70
Married	41	68.30
Widowed/Divorced	8	13.30
Separated	1	1.60
No information	3	5.0
Medical payment		
Social security	4	6.70
Government reimbursement	34	56.7
Health insurance	1	1.60
30-baht healthcare scheme	14	23.30
Self payment	4	6.70
No information	3	5.0

According to Table 1, there were more female subjects than male subjects. To be more exact, there were 34 females, accounting for 56.7%, while there were 26 males, making up 43.3% of the total sample. In addition, the largest group of subjects, or 21.7%, completed primary grades 1 – 3 or lower. Fifteen percent completed primary grades 4 – 6, while another 15% held a certificate or diploma. As regards occupation, close to two-thirds, or 31.7%, were housewives, while about one-quarter, or 26.7% worked as government officials or public enterprise employees. Regarding monthly income, about a quarter of the subjects, or 23.4%, earned less than 5,000 baht, 5,001 – 10,000 baht, and more than 15,000 baht each. Only 3.3% earned less than 1,000 baht a month. When it came to marital status, most of them, or 68.3% were married. Finally, concerning medical payments, more than half, or 56.7%, had government reimbursement, while 23.3% had a 30-baht healthcare scheme.

Table 2 Number and percentage of sources of diabetes information (n=60)

Sources	Number	Percentage
Personal media*		
Nurses	50	84.7
Doctors	42	71.2
Friends and relatives	14	13.7
Other patients	13	22.0
Specific media*		
TV	38	65.5
Pamphlets	34	58.6
Magazines/Periodicals	24	41.4
Persons	24	41.4
Newspaper	18	31.0
Radio	16	27.6
Posters	11	19.0
The Internet	4	6.9
Phone calls	2	3.4

*Each subject may have more than one source of information

From Table 2, it can be seen that the most important source of information was television, as 38 subjects or 65.5% had access to information from television. Second came pamphlets, accounting for 58.6%. The least popular form of media was telephone as only two of the subjects, or 3.24%, used telephone as their media. As regards personal media, it was found that most of the subjects, or 84.7%, received information from nurses. This was followed by physicians at 71.2%.

Table 3 Frequency and percentage of application of knowledge in daily living before participation in the study (n=60)

Usage level	Frequency	Percentage
Very frequently	6	10.0
Frequently	15	25.0
Moderately	33	55.0
Minimally	5	8.33
Never	0	0
No information	1	1.70

As illustrated in Table 3, the largest group of subjects, or 55.0%, applied the knowledge gained from media in their daily living at a moderate level.

Part 2: Diabetes Knowledge of the Sample

Table 4 Comparison of the mean scores of diabetes knowledge of the sample before and after the experiment (n=55)

Sample	Diabetes knowledge scores			
	N	Mean	SD	t
Pre-test	55	25.50	4.6	-11.33*
Post-test	55	31.29	1.7	

*p < 0.05

According to Table 4, the mean score of diabetes knowledge of the sample obtained after the implementation of the teaching package was higher than that obtained before the implementation with statistical significance at the .05 level. This means that the persons with diabetes had a higher level of knowledge after watching the video CDs and reading the booklets on diabetes self-care.

Part 3: Evaluation of the quality of the diabetes self-care booklets

Table 5 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 1: Diabetes can be prevented (n=60)

Aspects of the booklet	Percentage			
	Very Good	Good	Fair	Poor
1. Content easy to understand	60.0	38.2	1.8	-
2. Concise content	41.8	56.4	1.8	-
3. Interesting content	40.0	56.4	3.6	-
4. Appropriate alphabet size	69.1	29.1	1.8	-
5. Appropriate for distribution among diabetic patients and their family	74.5	25.5	-	-
6. Usefulness of content	58.2	36.4	5.5	-
Acceptable quality				

According to Table 5, the subjects perceived that the quality of Booklet 1 “Diabetes can be prevented” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (74.5%), followed by appropriateness of alphabet size (69.1%).

Table 6 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 2: What is diabetes mellitus? (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	47.3	47.3	5.5	-
2. Concise content	41.8	54.5	3.6	-
3. Interesting content	43.3	49.1	7.5	-
4. Appropriate alphabet size	60.0	36.4	3.6	-
5. Appropriate for distribution among diabetic patients and their family	70.9	25.3	3.6	-
6. Usefulness of content	58.2	38.2	3.6	-
Acceptable quality				

According to Table 6, the subjects perceived that the quality of Booklet 2 “What is diabetes mellitus?” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (70.9%), followed by appropriateness of alphabet size (60%).

Table 7 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 3: Control of diabetes and its complications (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	56.4	41.8	1.8	-
2. Concise content	41.8	50.9	1.3	-
3. Interesting content	65.5	32.4	1.8	-
4. Appropriate alphabet size	70.9	29.1	-	-
5. Appropriate for distribution among diabetic patients and their family	76.4	23.6	-	-
6. Usefulness of content	74.5	25.5	-	-
Acceptable quality				

According to Table 7, the subjects perceived that the quality of Booklet 3 “Control of diabetes and its complications” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (76.4%), followed by usefulness of the content (74.5%).

Table 8 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 4: Diabetes food (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	65.5	21.8	12.7	-
2. Concise content	58.7	47.3	-	-
3. Interesting content	65.5	27.3	7.30	-
4. Appropriate alphabet size	74.5	25.5	-	-
5. Appropriate for distribution among diabetic patients and their family	74.5	25.5	-	-
6. Usefulness of content	61.8	38.2	-	-
Acceptable quality				

According to Table 8, the subjects perceived that the quality of Booklet 4 “Diabetes food” was at a very good level. The aspects of the booklet that were found to be most satisfactory for the subjects were its appropriateness for distribution among diabetic patients and their family and appropriateness of alphabet size, both at 74.5%.

Table 9 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 5: Diabetes medications (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	43.6	47.3	9.1	-
2. Concise contents	38.2	54.5	7.3	-
3. Interesting contents	54.5	41.8	3.6	-
4. Appropriate alphabet size	50.9	43.6	5.5	-
5. Appropriate for distribution among diabetic patients and their family	61.8	54.5	3.6	-
6. Usefulness of content	50.9	49.5	3.6	-
Acceptable quality				

According to Table 9, the subjects perceived that the quality of Booklet 5 “Diabetes medications” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (61.8%), followed by interesting content (54.5%).

Table 10 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 6: Exercise (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	58.2	40.0	1.8	-
2. Concise content	45.5	52.7	1.8	-
3. Interesting content	60.0	38.2	1.8	-
4. Appropriate alphabet size	50.9	40.3	1.8	-
5. Appropriate for distribution among diabetic patients and their family	76.4	23.6	-	-
6. Usefulness of content	70.9	29.1	-	-
Acceptable quality				

According to Table 10, the subjects perceived that the quality of Booklet 6 “Exercise” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (76.4%), followed by usefulness of the content (70.9%).

Table 11 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 7: Diabetes self-monitoring (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	40	54.5	5.5	-
2. Concise content	38.2	60.0	1.8	-
3. Interesting content	54.5	40.0	5.5	-
4. Appropriate alphabet size	54.5	45.5	-	-
5. Appropriate for distribution among diabetic patients and their family	69.1	30.9	-	-
6. Usefulness of content	61.8	38.2	-	-
Acceptable quality				

According to Table 11, the subjects perceived that the quality of Booklet 7 “Diabetes self-monitoring” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (69.1%), followed by usefulness of the content (61.8%).

Table 12 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 8: Diabetes and foot care (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	54.5	41.8	3.6	-
2. Concise content	50.9	49.1	-	-
3. Interesting content	63.6	36.4	-	-
4. Appropriate alphabet size	61.8	36.4	1.8	-
5. Appropriate for distribution among diabetic patients and their family	78.2	21.8	-	-
6. Usefulness of content	69.1	30.9	-	-
Acceptable quality				

According to Table 12, the subjects perceived that the quality of Booklet 8 “Diabetes and foot care” was at a good level. The aspect of the booklet that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (78.2%), followed by usefulness of the content (69.1%).

Table 13 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 9: Self-care management in special occasions: sickness management, traveling, eating outside, etc. (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	50.9	45.5	3.6	-
2. Concise content	40.0	60.0	-	-
3. Interesting content	56.4	38.2	5.5	-
4. Appropriate alphabet size	63.6	36.4	-	-
5. Appropriate for distribution among diabetic patients and their family	67.3	27.3	5.5	-
6. Usefulness of content	61.8	30.9	7.3	-
Acceptable quality				

According to Table 13, the subjects perceived that the quality of Booklet 9 “Self-care management in special occasions: sickness management, traveling, eating out, etc.” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was the appropriateness for distribution among diabetic patients and their family (67.3%), followed by appropriate alphabet size (63.6%).

Table 14 Percentage of the subjects' opinions on the quality of the diabetes self-care booklets: Booklet 10: Questions about diabetes mellitus (n=60)

Aspects of the booklet	Percentage			
	Very good	Good	Fair	Poor
1. Content easy to understand	70.9	27.3	1.8	-
2. Concise content	63.6	34.5	1.8	-
3. Interesting content	70.9	27.3	1.8	-
4. Appropriate alphabet size	72.7	27.3	-	-
5. Appropriate for distribution among diabetic patients and their family	74.5	25.5	-	-
6. Usefulness of content	72.7	27.3	-	-
Acceptable quality				

According to Table 14, the subjects perceived that the quality of Booklet 10 “Questions about diabetes mellitus” was at a very good level. The aspect of the booklet that was found to be most satisfactory for the subjects was the appropriateness for distribution among diabetic patients and their family (74.5%), followed by appropriate alphabet size and usefulness of content, both at 72.7%.

Part 4: Evaluation of the quality of the diabetes self-care video CDs**Table 15 Percentage of the subjects' opinions on the quality of the diabetes self-care video CDs: Title 1: What diabetes is (n=60)**

Aspects of the video CD	Percentage			
	Very good	Good	Fair	Poor
1. Clarity of illustration	61.0	39.0	-	-
2. Content concise and easy to understand	57.6	35.6	6.8	-
3. Interesting content	67.8	28.8	3.4	-
4. Appropriateness of presentation time	39.0	42.4	13.6	-
5. Appropriate for distribution among diabetic patients and their family	64.4	32.2	3.4	-
6. Usefulness of content	67.8	30.5	1.7	-
Acceptable quality				

According to Table 15, the subjects perceived that the quality of the video CD episode 1 “What diabetes is” was at a very good level. The aspects of the video CD that were found to be most satisfactory for the subjects were the usefulness of the content and interesting content, both at 67.8%.

Table 16 Percentage of the subjects' opinions on the quality of the diabetes self-care video CDs: Title 2: Living with diabetes with a good quality of life (n=60)

Aspects of the video CD	Percentage			
	Very good	Good	Fair	Poor
1. Clarity of illustration	55.9	44.1	-	-
2. Content concise and easy to understand	42.4	50.8	6.8	-
3. Interesting content	62.7	35.6	1.7	-
4. Appropriateness of presentation time	44.1	49.2	3.4	3.4
5. Appropriate for distribution among diabetic patients and their family	71.2	28.8	-	-
6. Usefulness of content	38.0	32.2	3.4	-
Acceptable quality				

According to Table 16, the subjects perceived that the quality of the video CD episode 2 “Living with diabetes with a good quality of life” was at a very good level. The aspect of the video CD that was found to be most satisfactory for the subjects was its appropriateness for distribution among diabetic patients and their family (71.2%), followed by interesting content at 62.7%.

Table 17 Percentage of the subjects' opinions on the quality of the diabetes self-care video CDs: Title 3: Diabetes food (n=60)

Aspects of the video CD	Percentage			
	Very good	Good	Fair	Poor
1. Clarity of illustration	66.1	30.5	1.7	1.7
2. Content concise and easy to understand	50.8	44.1	5.1	-
3. Interesting content	66.1	30.5	3.4	-
4. Appropriateness of presentation time	40.7	47.5	10.2	1.7
5. Appropriate for distribution among diabetic patients and their family	66.1	32.2	1.7	-
6. Usefulness of content	64.1	32.2	3.4	-
Acceptable quality				

According to Table 17, the subjects perceived that the quality of the video CD episode 3 “Diabetes food” was at a very good level. The aspect of the video CD that was found to be most satisfactory for the subjects were its appropriateness for distribution among diabetic patients and their family, interesting content and clarity of illustration (66.1%), followed by usefulness of content (64.1%).

Table 18 Percentage of the subjects' opinions on the quality of the diabetes self-care video CDs: Title 4: Exercise (n=60)

Aspects of the video CD	Percentage			
	Very good	Good	Fair	Poor
1. Clarity of illustration	55.9	39.0	3.4	1.7
2. Content concise and easy to understand	55.9	40.7	3.4	-
3. Interesting content	45.8	49.2	5.1	-
4. Appropriateness of presentation time	39.0	55.9	3.4	1.7
5. Appropriate for distribution among diabetic patients and their family	59.3	37.3	3.4	-
6. Usefulness of content	59.3	37.3	3.4	-
Acceptable quality				

According to Table 18, the subjects perceived that the quality of the video CD episode 4 “Exercise” was at a very good level. The aspects of the video CD that were found to be most satisfactory for the subjects were its appropriateness for distribution among diabetic patients and their family and usefulness of the content, both at 59.3%.

Table 19 Percentage of the subjects' opinions on the quality of the diabetes self-care video CDs: Title 5: Diabetes and foot care (n=60)

Aspects of the video CD	Percentage			
	Very good	Good	Fair	Poor
1. Clarity of illustration	71.2	28.8	-	-
2. Content concise and easy to understand	66.1	32.2	1.7	-
3. Interesting content	62.7	33.9	3.4	-
4. Appropriateness of presentation time	50.8	45.8	1.7	1.7
5. Appropriate for distribution among diabetic patients and their family	66.1	32.2	1.7	-
6. Usefulness of content	71.2	27.1	1.7	-
Acceptable quality				

According to Table 19, the subjects perceived that the quality of the video CD episode 5 “Diabetes and foot care” was at a very good level. The aspects of the video CD that were found to be most satisfactory for the subjects were clarity of illustration and usefulness of the content, both at 71.2%.

CHAPTER V

DISCUSSION

The present research employed a one-group pretest–posttest design to evaluate the effectiveness of the teaching package for self-care in 60 persons with diabetes who sought treatment at a hospital under the Bangkok Metropolitan Administration. This chapter presents the discussion of the study findings.

Demographic characteristics of the sample

According to the findings, more than half of the subjects (56.7%) were female, most (68.3%) were married, and about one-fourth (21.7%) graduated from primary level. In terms of occupation, close to one-third (31.7%) were housewives while a little more than one-fourth (26.7%) were government officials and public enterprise employees. As for income, about the same percentage, or 23.4%, earned 1,000 – 5,000 baht, 5,001 – 10,000 baht, and more than 15,000 baht per month, whereas only 3.3% earned less than 1,000 baht per month.

As regards source of diabetes information, the largest group of subjects (65.5%) received information from television. The sources of information varied depending on their personal interests and due to a wide variety of available media. In addition, different media have different characteristics that make them attractive to different target groups. The findings of the present study were incongruent with the findings of some previous studies which reported that printed media and documents were the most popular type of media (Uthairat Suthisomboon, B.E.2546; Uritcha Chudboontham, B.E.2535; Pornpimol Kitthiwongwisuth, B.E.2541). However, the findings were similar to those reported by Wilbur Schram (cited in Narong Sompong, B.E.2535) that individuals tend to choose the media that require the least amount of effort or the media that was readily accessible. In general, television can be watched easily and conveniently without much effort. This may explain why the subjects of this study found that television was the most important source of information for them.

After the experiment, the results indicated that the level of knowledge of persons with diabetes increased with statistical significance. The increase in scores reflected the fact that the teaching package used in this study, which consisted of booklets and video CDs, could effectively help persons with diabetes understand diabetes self-care.

Evaluation of the teaching package

The teaching package used in this study was composed of booklets and video CDs. The findings regarding the quality of the teaching package were as follows:

Booklets

It was found that the subjects perceived that they received knowledge about diabetes which was applicable in their daily living to perform self-care. All ten booklets were rated with acceptable quality. Six of the ten booklets were rated as very good. They were booklet 1 “Diabetes can be prevented” booklet 3 “Control of diabetes and its complications,” booklet 4 “Diabetes food” booklet 6 “Exercise” booklet 8 “Diabetes and foot care,” and booklet 10 “Questions about diabetes mellitus” The content, alphabet size, illustrations, and cover colors were rated and analyzed as follows:

Content and Language

The findings showed that the subjects gained knowledge about diabetes from the booklets. In other words, the booklets were useful in helping them to care for themselves. They could get the answers for their questions by themselves without having to ask anybody. In addition, the content was concise, easy to understand, and it could encourage them to continue reading. In particular, the content was divided into different topics with specific details, and this enabled the subjects to easily choose to read what they were most interested in. The booklets helped them develop better understanding about their condition and appropriate self-care, and this was in compliance with the production principle that printed media should be produced specifically for the target group and the content should be directly relevant to their experiences and way of life (Vichit Awakul, B.E.2535: 210-211; Adisak Sathatham, B.E.2542: 151).

The language used in the booklets was the written language that the subjects felt that it was easy to understand, clear, and unambiguous. In general, the language and word choice in written or printed documents must be straight to the point, easy to understand, and concise (Somkid Isarawat, B.E.2543: 208). Besides, the number of pages was small, so the subjects were more motivated to read. They also felt that the booklets were easy to carry around and convenient to read. This was in congruence with the distinguishing features of small-sized printed matters (Kanchana Kaewthep, B.E.2543: 311). Furthermore, most of the subjects read all ten booklets, and there were some of the booklets that were read more than once. They were booklet 4 and booklet 10 which were found to directly serve the needs of the subjects. They also felt that the illustrations in the booklets were excellent, but they wanted more colored illustrations as they were more attractive. Besides, they pointed out that the illustrations were consistent with the content of the booklets and made them understand the content more easily. This is also in agreement with the notion of information for learning, which points out that learning will not take place unless the consumed information is interesting and appealing.

The cover of the booklets contained colored pictures, and the size of the booklets was small. This made the booklets become more attractive to family members of the diabetic patients such as their children. They may have used this opportunity to read aloud to their children to benefit both the diabetic patients themselves and their family members at the same time. This reflected the importance of illustrations which are appealing to adults and children alike. Moreover, illustrations are easy to interpret meaning than reading, as stated in the saying “one picture is worth a million words.” Simply put, most people prefer books that contain illustrations than words alone (Vipool Krasaetanon et al., B.E.2538: 40; Phensri Thawisuwan & Parn Kimpee, B.E.2534: 756).

Some of the subjects stated that if the illustrations in the booklets were photographs, it may be easier to understand the content. Nipon Sukpreedee (B.E.2530: 15) has pointed out that photographs can create more credibility and reliability than other types of illustrations. They have influence on transfer of ideas and create images. Likewise, Samarn Shetrakarn (B.E.2533: 7) has described in the introduction to photography book that photographs enable the readers to understand the

descriptions. On the other hand, a study of Kaisang Phutchoochuen (B.E.2544) found that 98% of professional nurses needed paintings. However, regardless of the type, the illustrations used with printed media should facilitate the understanding of the text. If the illustration does not convey the intended meaning or is irrelevant to the text, it will be useless and it may be against the reader's feeling as well (Somkid Isarawat, B.E.2543: 203).

In this study, the alphabet size was perceived as at a very good level by the subjects, both the headings and the texts. They found that the alphabet size made it easier to read. Vorapong Vorachartudompong (B.E.2535) found that the alphabet size appropriate for adults and elderly who are over 60 years of age is 16 - 18 point. The subjects in this study preferred a larger alphabet size which made it easy to read through the whole booklet. However, it was also mentioned that a wider spacing would also make it easier to read. Similarly, Suwit Chungtrakulrat (B.E.2532: 79-80) and Anan Anusasananan (B.E.2540) have pointed out that a wider spacing between words would be easier to read. Empirical evidence was given by Somchai Sahawisith (B.E.2542) who studied the preference of alphabet sizes used in printed media of students of King Mongkut's Institute of Technology and found that the alphabet size that was too thin would be difficult to see while the alphabet size that was too thick would make the page look too crowded.

Appropriateness for distribution among diabetic patients and their family

In this study, most of the subjects found that the booklets were suitable for use in daily living. This is because the contents were divided into different topics that they could choose from according to their immediate needs or interests. In addition, the contents were easy to understand, and they answered the questions the subjects may have in mind. In general, diabetic persons receive needed knowledge and information from a document that must be searched for by themselves. The information provided at the hospital tends to be in the form of leaflets which contain limited content. The content may also be too general to create clear understanding and the font size may be too small. In this study, the booklets directly served the subjects' needs and interests, especially booklet 10 on "Questions about diabetes mellitus" which gave clarification in various issues and booklet 4 "Diabetes food" Even though the latter may have the

largest number of pages, it seemed to be most interesting for the subjects who began to know different food substitutes, the topic they may have heard the nurses talk about but they lacked clear understanding and were too afraid to ask for clarification. Ratchanee Chotemongkol et al. (B.E. 2542) found that food substitute was the most problematic issue to 89.7% of the study sample due to lack of understanding which prevented persons with diabetes from successfully control the disease. Thus, it can be seen that production of any printed media should take place after the target group is thoroughly studied to ensure the highest level of benefits possible (Suwit Chutrakurat, B.E.2532: 56-60; MonthichaThanasuthi, B.E.2539). Some of the subjects distributed the booklets at the school where they were teaching, while others brought them to the temple for sermons on Sunday and Buddhist holy days. The booklets were also used as a topic of discussion with other patients while they were waiting for the doctor's examination.

Despite the advantages of the booklets, some subjects indicated that more topics should be added such as herbal medicines for diabetes. The doctors may see herbal medicines as unreasonable and think there is not enough evidence to support the use of various herbs. However, it can be seen as a good intention to prevent misuse of herbal medicines. In contrast, it may at the same time pose obstacle for the principle of self-care. Penchan Pradabmuk & Leuchai Srinungyoung (B.E.2537) found that more than the half of the diabetic patients used herbal medicines together with modern medicines. The subjects explained that although doctors play a very crucial role in their treatment, the patients' and their family members' choice of alternative treatment, either pharmacological or non-pharmacological treatment, should not be overlooked. Even though it may not drastically improve the symptoms of the disease, it may help the diabetic patients to have some peace of mind and relieve their sufferings caused by the disease in accordance with their and their family's personal beliefs.

Video CDs

The results of the study showed that the subjects perceived that the quality of the video CDs was at a very good level.

Clarity of illustration

Most of the subjects felt that the illustration was clear and could convey the intended messages. The plot was written as a documentary to give fact and constructive knowledge and information. The subjects indicated that the contents of the video CDs clarified what had been ambiguous to them such as insulin and food selection. For instance, before watching, the subjects may not have known whether a certain type of food was appropriate for them or not. Most of them had to select what to eat by themselves and they did not know substitution food (91%). The video CDs told them that this should no longer cause them frustration, and they should no longer be forced to eat what they did not want. Some subjects stated that they wanted to take the video CDs home so that their caregivers would develop better understanding and they could stop fighting over this matter as some subjects sneaked forbidden food inside their house and waited to eat it when they were home alone. Many subjects agreed that the knowledge received while they were waiting for the doctor in the environment which lacked privacy was not so helpful. Also, when they were waiting to hear their name called, they lacked concentration to watch the video CDs. Thus, they may lose the opportunity to gather necessary knowledge for self-care practice regardless of their need to know what kind of self-care they should perform.

The subjects had different opinions on the presentation techniques. The largest group of subjects (42%) found that making the video CDs in the form of a documentary was natural, reliable, and realistic. They also felt that the story was not too long, so they did not become bored with watching. They cited examples of attractive programs such as the National Geographic. Previous studies found that a documentary with quality production was popular among the viewers as it was easy to watch and accept (Prachum Suwatthee et al., B.E.2534; Jirawan Kamolratthanayothin, B.E.2535). Good documentary programs are made into videos for sales in the market.

A small group of subjects (17%) commented that if the videos were made into a docu-drama which was less formal, it would create learning while being entertained. Likewise, Uraiporn Thanasuakrn (B.E.2540) studied the knowledge about AIDS gained from a docu-drama with actors and actresses and a documentary. The subjects were a group of Huachiew University students. It was found that the docu-drama was more preferable because of their favorite actors and actresses. Another successful

strategy is to include mass communication in an attempt to promote healthcare. For example, the Soul City Project in South Africa tries to offer the opportunity for the underprivileged people to gain access to healthcare using television soap operas (Nate Hongkraitert (B.E. 2542).

It is worth noting that some of the subjects who were male criticized that the characters were only women. They said that if there was an illustration of males, it would make them feel equal because in real life there were both male and female diabetic patients. In addition, they commented that the characters in the video CDs were too young, so it was not appropriate. The study of Naline Makarasane (B.E.2542) on the assessment and distribution of the AIDS media in a series called “Thai Families Are Free from AIDS” revealed that the images emphasized the target group with risk behaviors who were more males than females, so the male audience did not accept the images and texts because the communicated messages were negative in their opinions. For this reason, production of the media should take into consideration the sensitivity of some target groups who may prefer certain images and messages.

Content

It was also found that the subjects preferred the information to be concise, brief, and easy to understand. For instance, they stated that the message about insulin injection was easy to understand, and they had no problem with that. However, it would be better if for some parts which involved calculation, the calculation was done for them in the video CDs such as calculation of appropriate weight. Moreover, the subjects agreed that they liked the illustration of foods which clearly showed them which kind of food they could eat because they still had some misunderstanding about what diabetic persons should eat such as honey and herbs.

As regards the interest of the video CDs, the subjects agreed that the division of different topics into different parts was appropriate as each part did not take too long and the continuity of the content made it easy to understand, especially some topics that the subjects never paid attention to such as insulin injection and foot care. Also, they said that they may have already read about some topics, but they still did not understand them. After they had seen the video CDs, they understood more details. It

is noteworthy that the subjects were very interested in the topic of food substitution, and they wanted to take the video CDs home so that they could watch it as much as possible. This is because they had never understood the topic of food substitutions before. Similar findings were reported in the study of Somboon Tianthong (B.E.2542) and Ratchanee Chotemongkol (B.E.2542). There were only 10% of the subjects who could control food and drinks when they went to a party. Besides, it was found that 75% of the subjects were not interested and did not know how to prevent the complications. As many as 80% of the subjects had never had an annual eye examination and daily foot examination, whereas 66% trimmed their nails incorrectly. Thus, the subjects described that the video CDs were interesting because they directly discussed their problems, so they were reliable and stimulated their interest. This was in congruence with the principle of information of Adisak Sathatham (B.E.2542) that the consumers are more likely to accept the information if it is directly related to them.

As for the presentation time, almost all of subjects found that it was appropriate. However, some subjects wanted the presentation to be longer. Moreover, they commented that the video CDs should be used in the clinic while the patients were waiting to see the doctor as they could draw attention and give necessary knowledge little by little at a time. In general, most of the diabetic patients who come to meet the doctor come to get prescriptions only and they do not pay much attention to existing media available for them (Vipool Krasaretanon et al., B.E.2538; Ratchanee Chotemongkol et al., B.E.2542). Therefore, the video CDs are the most attractive means to present necessary information because they convey messages through visual and sound as 83% of human learning takes place through seeing and hearing (Kraisri Vivithsiri, B.E.2535). Although the persons with diabetes are elderly and have eye problems, they can listen. Besides, it takes a little time and it can easily be shown repeatedly. Likewise, a study of Salomon (1984, cited in Noomuan Romkaew, B.E.2545: 132) found that the learners had to make more efforts to study from a book than from television. Also, Chanthima Chatchaiphonlarat (B.E.2544) studied the adoption of knowledge media and attitudes towards food and nutrition of middle-aged women living in Bangkok and discovered that they received information from television more than any other media because it required the use of the least amount of attempt so it was the most convenient means to receive information.

As regards the appropriateness for distribution among persons with diabetes, the subjects found it very satisfactory. When considering the physical factors such as poor eyesight or inconvenience in reading, the use of videos could effectively deal with such limitations in access to knowledge. In addition to the diabetes clinic, the videos should be used in other public places such as a temple or a school as suggested by the subjects. This is because these are the places where elderly people get together to do their activities. If monks or teachers have appropriate knowledge about diabetes, they can help distribute information to the public. Similarly, a study of Bynum et al. (2003, cited in Chaweewan Boonnag, B.E.2545) investigated the use of modern audiovisual aids in giving health education to elderly people resulted in a high level of satisfaction and a good level of understanding. It was also able to change the elderly's beliefs and attitudes with statistical significance. Another study also pointed out that the use of videos together with demonstrations and documents is still the best way to learn and is easiest to understand (Kobkij Tancharoenrat, B.E.2536). Although the cost of audiovisual aids is rather high, but if they are used widely, they will reach a very large group of audience, making it worth the investment as they can effectively lead to behavioral adjustment to prevent diabetic complications, hence reduction in necessary medical payments.

With regard to the usefulness of the content, it was found that after viewing the video CDs, the subjects realized that they had previously performed incorrect self-care behaviors related to diet consumption and foot care, especially eating flour and sugar and wearing inappropriate shoes. These findings were consistent with previous research by Suwalee Chukiat (B.E.2541) and Ratchanee Chotemongkol et al. (B.E.2542) that persons with diabetes may not be able to control the disease and problems such as foot ulcer is commonly found in more than 50% of diabetic elderly who may not realize that they are having problems and do not seek medical assistance (Arthisaphan Chulagatappa, B.E.2548). This study revealed that videos made the subjects find it easier to choose their meals, so they became happier and more encouraged to control the disease. This is because the knowledge from both the booklets and the video CDs answered the questions they may have had but were unable to find the needed answers. In the past, they may have adjusted the treatment to suit their personal beliefs, but now they had better awareness of the necessity of foot

care from the motivation gained from the video CDs that they needed to prevent cuts and wounds on the feet. Even though the images shown may be scary, they knew that they were realistic and possible. This may be seen as a ‘threat’ but it still worked. Generally, information that creates a high level of fear makes individuals understand the severity of the disease and more effectively enables individuals to adjust their attitudes and behaviors than the information that does not instill fear (Chatchareeporn Weluwanarak, B.E.2542).

The foot exercise was one of the things that the subjects thought to be clearest in applicability. They had never practiced this before as it seemed to be unimportant or they had never known this before. In particular, for the subjects who tended to have wounds that were easy to heal, when they watched the videos, they had the motivation to follow the instruction to protect their feet. Some subjects used the videos to promote relationships in the family by watching them together. The effectiveness of the videos was also reported in the study of Paungchan Kleubpanichakul & Somboon Boonyakiat (B.E.2545) who found that the subjects who were taught self-breast examination with videos could perform better than those who were taught by nurses. Moreover, Chaweewan Boonnag et al. (B.E.2545) found that the use of videos enabled the sample to do the knees exercise to decrease the aching symptoms caused by deterioration of the joints.

The findings of this study were similar to those of previous studies (Jinarat Srepatarapinyo, B.E.2540; Arom Boonkird, B.E.2540). The teaching programs in those studies provided instructional media such as booklets, videos, pamphlets, or slides which were useful in helping the patients to take care of themselves. The teaching package is expected to minimize workload of nurses in teaching basic information to patients and help patients learn necessary information by themselves. However, it is worth noting that healthcare providers should adjust the information to be presented so that it suits each individual patient’s specific disease conditions and caring needs to ensure the highest level of effectiveness possible.

CHAPTER VI

CONCLUSION

Conclusion

This research employed a one-group pretest-posttest design to evaluate the teaching package for self-care in patients with diabetes mellitus. The sample consisted of 60 persons with diabetes who attended the diabetic clinic at a BMA Hospital. Simple random sampling was used to obtain the subjects of the study.

The instruments used in data collection were composed of the demographic characteristics data recording form, the questionnaire on knowledge of diabetes, the questionnaire on the quality of the video CD, and the questionnaire on the quality of the booklets. The experimental instruments that were used in research operation comprised five video CDs and ten booklets which were developed by Somchit Hanucharurnkul and colleagues.

Both the research experiment and data collection were conducted by the researcher. Persons with diabetes were asked to complete the demographic characteristics data recording form and the questionnaire on knowledge of diabetes. Then, they were required to view each part of the video, summarize the contents, and respond to the questions. The subjects were then asked to complete the questionnaire eliciting data regarding their attitudes toward the video at the end of each of the five video CDs. After that, the researcher passed out the ten booklets on diabetes care for the subjects to read at home. The researcher also explained that the questionnaire eliciting data regarding the subjects' satisfaction was attached to each booklet for them to fill out after finishing reading the booklets. During the 5th week, the researcher met the subjects at the place and time previously appointed in order to evaluate the research outcomes as the patients were required to complete the questionnaire on the knowledge of diabetes similar to the one they had already completed at the beginning of the experiment so that the results obtained from both questionnaires could be compared to determine if there was any change in their level of knowledge.

Data Analysis and Statistical Procedures

In this study, data analysis was carried out as follows:

1. Demographic data, the data regarding quality of the video CDs, and the data regarding the quality of the booklets were analyzed by means of descriptive statistics including frequency, percentage, means, and standard deviation.
2. A comparison of the knowledge of diabetes obtained at the pre-test and the post-test was conducted using paired *t*-test.

The results of the study can be summarized as follows:

1. More than half of the subjects were female (56.7%), and about one-fourth (21.7%) completed primary education. As regards the quality of the ten booklets, the subjects rated them at a very satisfactory level. To be more exact, five of the booklets were evaluated as appropriate for distribution to diabetic patients and their family. In addition, the subjects rated the overall quality of the video CDs as very satisfactory. However, they indicated that the video CDs should be improved with regards to the appropriateness of the presentation time.
2. As regards the subjects' knowledge about diabetes, the mean score obtained after the use of video CDs and booklets was higher than that obtained before the application of the teaching package with statistical significance at the 0.05 level. Thus, it could be concluded that the use of the teaching package enabled the subjects to have more knowledge about diabetes.

Recommendations

1. Recommendations for Nursing Practice

1.1 Based on the findings of the present study, it is recommended that the video CDs and the booklets which were developed by Professor Dr. Somchit Hanucharurnkul and colleagues should be used in actual nursing practice. The teaching package should be distributed to the patients with diabetes to enable them to learn how to care for themselves. This is because the findings of this study have shown that the video CDs and booklets could increase the patients' knowledge about diabetes. However, it is worth noting here that nurses should not overlook the importance of their role of teaching as all teaching technologies applied in the nursing

activity are only parts of the components that help make nursing care more convenient, less time-consuming, and more effective.

1.2 The production of booklets and other documents should be continued. The findings of this study have indicated that apart from television, a large number of persons with diabetes are most interested in the printed media. This is because of these printed media are concise but contain full details of what they need to know. Furthermore, they are easy and convenient to carry around. However, the quality of printing can be improved by enlarging the alphabet size to make it easier to read. Despite their usefulness, it has been found that the number of printed media is rather limited, and the contents are not so comprehensive as they should be, making it difficult for persons with diabetes to search for the information they need.

1.3 The use of video CDs can stimulate the persons with diabetes to watch and obtain the information necessary for them. For this reason, nurses should increase their level of interest and make their watching more beneficial by answering the questions or clarifying the doubts they may have while watching the video CDs.

1.4 In addition to knowledge and motivation to control the disease, persons with diabetes also need cooperation from family members and close persons to provide support in learning to prevent complications and to perform self-care. Thus, caregivers should also watch the video CDs and read the teaching booklets to help promote the patients' health and quality of life.

1.5 In this study, the researcher used telephone calls to stimulate to persons with diabetes to read the booklets and asked to complete the evaluation form attached to each booklet. It was found that the diabetes patients showed interest and enthusiasm to perform self-care. Thus, it is recommended that such technique should be used as a follow-up for persons with diabetes who cannot control the disease or who do not seek continued care to increase their motivation to perform self-care.

2. Recommendations for Nursing Administration

2.1 The administrators should realize the significance of development of skills, ability, and roles of nursing personnel who can increase the knowledge level and offer needed support to the diabetes persons to help them control the disease. Policies should be devised to include provision of technology, venues, and budgets necessary for acquisition of equipment necessary to produce different forms of media

that can disseminate knowledge to the persons with diabetes, especially the printed media which are effective yet inexpensive to produce.

2.2 Other related institutes and agencies should implement the teaching package and media developed to disseminate knowledge to the diabetes patients all over the country. It is believed that such effort should be able to enable the persons with diabetes to perform better self-care, thus a reduction in complications, an increase in quality of life, and a decrease in cost of care.

3. Recommendations for Nursing Education

3.1 In nursing education, nursing students should be taught how to produce different forms of media. Also, they should be given the opportunity to take part in learning how to motivate persons with diabetes to develop interest and perform self-care to increase their quality of life.

3.2 The findings of this study could also be used as a guideline in producing a teaching package and media to disseminate knowledge among other groups of patients.

Recommendations for Further Research

Based on the results of this study, it is recommended that a longitudinal study should be conducted to determine the effects of the teaching package on long-term care of persons with diabetes to control the disease. The duration of the study should be three to six months after the implementation of the teaching package, and the accumulated blood sugar level should be examined, to prove that the teaching package is able to help the persons with diabetes continuously and effectively control the disease. In addition, it is recommended that different teaching packages should be developed to be used with other groups of chronically ill patients to increase their self-care efficacy to increase their quality of life.

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APPENDIX A

คำชี้แจงและการพิทักษ์สิทธิผู้เข้าร่วมการวิจัย

สวัสดีค่ะ ดิฉันชื่อ นางสาวเดือนใจ ทองเกล็ด เป็นนักศึกษาพยาบาลปริญญาโท คณะแพทยศาสตร์ โรงพยาบาลรามธิบดี มหาวิทยาลัยมหิดล กำลังศึกษาวิจัยเกี่ยวกับการประเมินประสิทธิภาพของสื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวาน

จึงขอเชิญคุณ..... เข้าร่วมในการวิจัย ท่านจะได้รับ
 ข้อคำถามเกี่ยวกับแบบบันทึกข้อมูลส่วนบุคคล และแบบสอบถามความรู้เรื่องโรคเบาหวาน โดยใช้เวลาในการ
 ตอบประมาณ 20-30 นาที และให้ท่านชมวีดิทัศน์ในแต่ละตอน สรุปเนื้อหา เปิดโอกาสให้ผู้เป็นเบาหวานซักถาม
 ข้อสงสัย และให้ท่านทำแบบสอบถามความคิดเห็นต่อสื่อวีดิทัศน์ ทำเช่นนี้ในแต่ละตอนจนครบ 5 ตอน แล้ว
 ผู้วิจัยแจกหนังสือคู่มือ “ชุดความรู้เพื่อการดูแลตนเองสำหรับผู้เป็นเบาหวาน” จำนวน 10 เรื่อง ให้นำกลับไป
 อ่านที่บ้าน พร้อมทั้งอธิบายให้ทราบว่า ในหนังสือคู่มือทุกเล่มจะมีแบบประเมินความพึงพอใจหนังสือคู่มือแนบ
 อยู่ และให้ท่านทำแบบประเมินนั้นเมื่ออ่านจบ หลังจากนั้นทุก 1 สัปดาห์ผู้วิจัยจะโทรศัพท์ติดต่อกับท่านเพื่อ
 กระตุ้นให้อ่านหนังสือคู่มือและสนับสนุนให้กำลังใจ จำนวน 4 ครั้งหลังจากที่พบกับท่านครั้งแรก หลังจากนั้น
 อีก 1 สัปดาห์ เมื่อท่านมารับบริการตรวจรักษาที่โรงพยาบาล ผู้วิจัยจะให้ท่านตอบแบบสอบถามความรู้เรื่องโรค
 ซ้ำอีกครั้ง และรวบรวมแบบสอบถามความคิดเห็นของท่านที่มีต่อเอกสารคู่มือที่ท่านได้อ่านทั้ง 10 เรื่อง จึงเสร็จ
 สิ้นการวิจัย

หากท่านเข้าร่วมการวิจัยแล้ว ท่านมีสิทธิ์ที่จะยกเลิกการเข้าร่วมวิจัยเมื่อไรก็ได้ โดยไม่ส่งผลกระทบใดๆ
 ต่อการรักษาพยาบาลที่ท่านได้รับ หากท่านมีข้อสงสัยประการใดเกี่ยวกับงานวิจัยในครั้งนี้ ผู้วิจัยยินดีตอบให้
 เข้าใจ ทั้งนี้ข้อมูลทั้งหมดของท่าน ผู้วิจัยจะเก็บเป็นความลับ โดยจะนำเสนอในรูปแบบผลรวมของการวิจัยเท่านั้น

ขอขอบคุณ

เดือนใจ ทองเกล็ด

ผู้วิจัย

APPENDIX B

Informed Consent Form

แบบยินยอมเข้าร่วมการวิจัย

ทำที่.....

วันที่.....

ข้าพเจ้า.....อายุ.....ปี บ้านเลขที่.....หมู่ที่.....

ถนน.....แขวง/ตำบล.....เขต/อำเภอ.....จังหวัด.....

ขอทำหนังสือนี้ให้ไว้ต่อหัวหน้าโครงการวิจัยเพื่อเป็นหลักฐานแสดงว่า

ข้อ 1. ข้าพเจ้าได้รับทราบโครงการวิจัยของ (หัวหน้าผู้วิจัยและคณะ) นางสาวเดือนใจ ทองเกล็ด เรื่อง การประเมินสื่อเพื่อการดูแลตนเองในผู้เป็นเบาหวาน กรณีศึกษาเฉพาะ โรงพยาบาลแห่งหนึ่งของ กรุงเทพมหานคร

ข้อ 2. ข้าพเจ้ายินยอมเข้าร่วมโครงการวิจัยนี้ด้วยความสมัครใจ โดยมีได้มีการบังคับ บังคับ ชูเชิญ หลอกลวงแต่ประการใด และพร้อมจะให้ความร่วมมือในการวิจัย

ข้อ 3. ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยเกี่ยวกับวัตถุประสงค์ของการวิจัย วิธีการวิจัย ประสิทธิภาพ ความปลอดภัย อาการหรืออันตรายที่อาจเกิดขึ้น รวมทั้งประโยชน์ที่จะได้รับการวิจัยโดยละเอียดแล้วจาก เอกสารการวิจัยที่แนบท้ายหนังสือให้ความยินยอมนี้

ข้อ 4. ข้าพเจ้าได้รับการรับรองจากผู้วิจัยว่า จะเก็บข้อมูลส่วนตัวของข้าพเจ้าเป็นความลับจะเปิดเผย เฉพาะผลสรุปการวิจัยเท่านั้น

ข้อ 5. ข้าพเจ้าได้รับทราบจากผู้วิจัยแล้วว่าหากมีอันตรายใดๆ ในระหว่างการวิจัยหรือภายหลังการวิจัย อันพิสูจน์ได้จากผู้เชี่ยวชาญของสถาบันที่ควบคุมวิชาชีพนั้นๆ ได้ว่าเกิดขึ้นจากการวิจัยดังกล่าว ข้าพเจ้าจะได้รับการดูแลค่าใช้จ่ายในการรักษาพยาบาลจากผู้วิจัยและ/หรือผู้สนับสนุนการวิจัย และจะได้รับค่าชดเชยรายได้ที่ สูญเสียไปในระหว่างการรักษาพยาบาลดังกล่าวตามมาตรฐานค่าแรงขั้นต่ำตามกฎหมาย ตลอดจนมีสิทธิได้รับค่า ทดแทนความพิการที่อาจเกิดขึ้นจากการวิจัยตามมาตรฐานค่าแรงงานขั้นต่ำตามกฎหมายและในกรณีที่ข้าพเจ้า ได้รับอันตรายจากการวิจัยถึงแก่ความตาย ทายาทของข้าพเจ้ามีสิทธิได้รับค่าชดเชยและค่าทดแทนดังกล่าวจาก ผู้วิจัยและ/หรือผู้สนับสนุนการวิจัยแทนตัวข้าพเจ้า

ข้อ 6. ข้าพเจ้าได้รับทราบแล้วว่า ข้าพเจ้ามีสิทธิจะบอกเลิกการร่วมโครงการวิจัยนี้เมื่อใดก็ได้ และการบอกเลิกการร่วมโครงการวิจัยจะไม่มีผลกระทบต่อการได้รับบรรดาค่าใช้จ่าย ค่าชดเชย และค่าทดแทนตาม ข้อ 5 ทุกประการ

ข้อ 7. หัวหน้าผู้วิจัยได้อธิบายเกี่ยวกับรายละเอียดต่างๆ ของโครงการ ตลอดจนประโยชน์ของการ วิจัย รวมทั้งความเสี่ยงและอันตรายต่างๆ ที่อาจเกิดขึ้นในการเข้าโครงการนี้ให้ข้าพเจ้าได้ทราบ และตกลง รับผิดชอบตามคำรับรองในข้อ 5 ทุกประการ

ข้าพเจ้าได้อ่านและเข้าใจข้อความตามหนังสือนี้โดยตลอดแล้ว เห็นว่าถูกต้องตามเจตนาของข้าพเจ้า จึงได้ลงลายมือชื่อไว้เป็นสำคัญ พร้อมกับหัวหน้าผู้วิจัยและต่อหน้าพยาน

ลงชื่อ.....ผู้ยินยอม
(.....)

ลงชื่อ.....หัวหน้าผู้วิจัย
(.....)

ลงชื่อ.....พยาน
(.....)

ลงชื่อ.....พยาน
(.....)

หมายเหตุ 1) กรณีผู้ยินยอมตนให้ทำวิจัย ไม่สามารถอ่านหนังสือได้ ให้ผู้วิจัยอ่านข้อความในหนังสือให้ความยินยอมนี้ ให้แก่ผู้ยินยอมให้ทำวิจัยฟังจนเข้าใจดีแล้ว และให้ผู้ยินยอมตนให้ทำวิจัยลงนาม หรือพิมพ์ลายนิ้วหัวแม่มือรับทราบในการให้ความยินยอมดังกล่าวด้วย

2) ในกรณีผู้ให้ความยินยอมมีอายุไม่ครบ 20 ปีบริบูรณ์ จะต้องเป็นผู้ปกครองตามกฎหมายเป็นผู้ให้ความยินยอมด้วย

APPENDIX C

Permission Letters for Protection of Human Rights



No. ว.130

Ethics Committee
For
Researches Involving Human Subjects, the Bangkok Metropolitan Administration

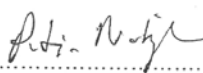
Title of Project : Evaluation of Teaching Package for Self-care
in Patient with Diabetes Mellitus : A Case
Study of A Bangkok Metropolitan
Administration Hospital

Registered Number : 0070.49

Principal investigator : Miss Taunjai Thongkled

Name of Institution : Bangkok Metropolitan Administration
Medical College and Vajira Hospital

The aforementioned project has been reviewed and approved by Ethics
Committee for Researches Involving Human Subjects, based on the Declaration of
Helsinki.


..... Chairman
(Mr. Pitinan Natrujirote)
Deputy Permanent Secretary for BMA

DATE OF APPROVAL 19 JUN 2006

APPENDIX D

Demographic Data Form

แบบบันทึกข้อมูลทั่วไป

วันที่.....

เลขที่แบบสัมภาษณ์.....

ตอนที่ 1 ข้อมูลทั่วไป

คำชี้แจง โปรดเขียนข้อความหรือทำเครื่องหมาย ✓ ลงหน้าข้อความตามความเป็นจริง

1. เพศ

() ชาย

() หญิง

2. การศึกษา

() ประถมศึกษา

() ปริญญาตรี

() มัธยมศึกษา

() สูงกว่าปริญญาตรี

() ประกาศนียบัตร/อนุปริญญา

3. อาชีพ

() แม่บ้าน

() ข้าราชการ / พนักงานรัฐวิสาหกิจ

() รับจ้าง

() ค้าขาย

() เกษตรกรรม

() อื่นๆ.....

4. รายได้ต่อเดือน

() ต่ำกว่า 1,000 บาท

() 1,000 – 5,000 บาท

() 5,001 – 10,000 บาท

() 10,001 – 15,000 บาท

() มากกว่า 15,000 บาท

5. สถานภาพสมรส

() โสด

() คู่

() สมรส และมีบุตร

() หม้าย/หย่า

() แยกกันอยู่

6. มีบัตรสวัสดิการด้านสุขภาพอะไรบ้าง

() บัตรประกันสังคม

() สวัสดิการข้าราชการ

() ประกันชีวิต

() อื่นๆ โปรดระบุ.....

() บัตรประกันสุขภาพถ้วนหน้า (30 บาท)

7. แหล่งที่ท่านได้รับข้อมูลเกี่ยวกับโรคเบาหวาน (ตอบได้มากกว่า 1 ข้อ)

- | | |
|--|--|
| ☐ แพทย์ | ☐ พยาบาล |
| ☐ ญาติ หรือเพื่อน | ☐ ผู้ป่วยโรคเบาหวาน |
| ☐ สื่อต่างๆ เช่นเอกสาร วิทยู โทรทัศน์ | |

8. ประเภทของสื่อที่ได้รับ (ตอบได้มากกว่า 1 ข้อ)

- | | |
|---------------------------------------|---|
| ☐ โทรทัศน์ | ☐ วิทยู |
| ☐ หนังสือพิมพ์ | ☐ วารสาร/นิตยสาร |
| ☐ สื่อบุคคล | ☐ โปสเตอร์ |
| ☐ แผ่นพับ | ☐ โทรศัพท |
| ☐ อินเทอร์เน็ต | |

9. ท่านนำความรู้ที่ได้รับจากสื่อไปใช้ในชีวิตประจำวันเพียงใด

- | | |
|---|-------------------------------|
| ☐ มากที่สุด | ☐ มาก |
| ☐ ปานกลาง | ☐ น้อย |
| ☐ ไม่เคยนำไปใช้เลย | |

APPENDIX E

Diabetes Knowledge Measurement

แบบสอบถามความรู้เรื่องโรคเบาหวาน

คำชี้แจง ข้อคำถามต่อไปนี้ มีคำตอบที่ถูกต้องเพียงข้อเดียว โปรดใส่เครื่องหมายวงกลม ล้อมรอบ
คำตอบที่ท่านคิดว่าถูกต้องที่สุด

1. โรคเบาหวานเป็นโรคที่มีลักษณะอย่างไร
 - ก. มีน้ำตาลในเลือดสูงกว่าปกติ
 - ข. มีน้ำตาลในเลือดน้อยกว่าปกติ
 - ค. มีน้ำตาลในเลือดเท่าคนปกติ
 - ง. ไม่มีน้ำตาลในเลือด
2. ค่าปกติของระดับน้ำตาลในเลือดก่อนอาหารเช้า ควรจะมีค่าเท่าใด
 - ก. ต่ำกว่า 80 มก. เปอร์เซ็นต์
 - ข. 80 – 120 มก. เปอร์เซ็นต์
 - ค. 120 – 140 มก. เปอร์เซ็นต์
 - ง. มากกว่า 140 มก. เปอร์เซ็นต์
 - .
 - .
 - .
 - .
 - .
 - .
35. เมื่อเกิดบาดแผล หรือตุ่มหนองขึ้นที่ส่วนใดส่วนหนึ่งของร่างกาย ควรปฏิบัติอย่างไร
 - ก. ใ้ยาทิงเจอร์
 - ข. ใช้น้ำเกลือล้างทำความสะอาด
 - ค. งดยาเบาหวาน
 - ง. รีบไปหาแพทย์

APPENDIX F**The Questionnaire on Video CD Quality Part 1-5****แบบสอบถามความคิดเห็นต่อสื่อวีดิทัศน์**

ตอนที่ 1 มาตรฐานโรคเบาหวานกันเถอะ

คำชี้แจง กรุณาใส่เครื่องหมาย / ลงในช่องที่ตรงกับความคิดเห็นของท่าน

หัวข้อประเมิน	ดีมาก (4)	ดี (3)	พอใช้ (2)	ควรปรับปรุง (1)
1. ภาพสื่อความหมายชัดเจน				
2. เนื้อหาสั้นกระชับเข้าใจง่าย				
3. เนื้อเรื่องน่าสนใจ				
4. ระยะเวลาที่น่าเสนอ				
5. เหมาะสมสำหรับการเผยแพร่แก่ผู้เป็น เบาหวานและครอบครัว				
6. เนื้อหาเป็นประโยชน์สามารถนำไปใช้ได้				

ข้อเสนอแนะและความคิดเห็น

โดยภาพรวมท่านคิดว่าสื่อวีดิทัศน์ตอนที่ 1 มีคุณภาพเพียงใด

() ดีมาก

() ดี

() พอใช้

() ควรปรับปรุง

ถ้าควรปรับปรุงควรปรับปรุงในส่วนใดบ้าง

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ขอขอบพระคุณอย่างสูง

APPENDIX G

The Questionnaire on Booklets Quality Number 1 – 10

เล่มที่ 1 เบาหวานป้องกันดีกว่าแก้

คำชี้แจง กรุณาใส่เครื่องหมาย / ลงในช่องที่ตรงกับความคิดเห็นของท่าน

หัวข้อประเมิน	ดีมาก (4)	ดี (3)	พอใช้ (2)	ควรปรับปรุง (1)
1. เนื้อหาเข้าใจง่าย				
2. เนื้อหาสั้นกระชับ				
3. เนื้อหาน่าสนใจ				
4. ขนาดของตัวหนังสือเหมาะสม				
5. หนังสือเหมาะสมแก่การเผยแพร่แก่ ผู้เป็นเบาหวานและครอบครัว				
6. เนื้อหาเป็นประโยชน์สามารถนำไปใช้ได้				

ข้อเสนอแนะและความคิดเห็น

โดยภาพรวมท่านคิดว่าหนังสือคู่มือเล่มที่ 1 มีคุณภาพเพียงใด

() ดีมาก () ดี () พอใช้ () ควรปรับปรุง

ถ้าควรปรับปรุงควรปรับปรุงในส่วนใดบ้าง

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ขอขอบพระคุณอย่างสูง

BIOGRAPHY

NAME	Miss Taunjai Thongkled
DATE OF BIRTH	May 5, 1962
PALCE OF BIRTH	Bangkok, Thailand
INSTITUTIONS ATTENED	Kuakarun College of Nursing, 1983 Certificate of Nursing, Public Health and Midwifery, Kuakarun College of Nursing, 1984 Diploma in Nursing Science (Equivalent to Bachelor of Nursing) Mahidol University, 2006 Master of Nursing Science (Adult Nursing)
POSITION & OFFICE	1984-2006, Staff Nurse Division of Medicine Nursing, Nursing Services Section BMA Medical College and Vajira Hospital Bangkok, Thailand