ผลของรูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชัน เพื่อส่งเสริมพฤติกรรมการดูแลตนเองในผู้ป่วยโรคหลอดเลือดหัวใจ

The Effects of a Collaborative Learning Model using Storyline through LINE Application on Promoting Self-Care Behaviors in Patients with Coronary Heart Disease

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บทคัดย่อ

การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของรูปแบบการเรียนรู้ร่วมกัน โดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชัน เพื่อส่งเสริมพฤติกรรมการดูแลตนเองในผู้ป่วยโรคหลอดเลือดหัวใจ กลุ่มตัวอย่าง คือ ผู้ป่วยโรคหลอดเลือดหัวใจที่เข้ารับการรักษาที่โรงพยาบาลสุรินทร์ในปี พ.ศ. 2562 จำนวน 40 คน ทำการทดลองตามรูปแบบการควบคุมก่อนและหลังการทดลองแบบสุ่ม วิเคราะห์ข้อมูล ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน และ t-test รูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชันถูกสร้างขึ้นตามความต้องการของผู้ป่วยและนำไปใช้ในการวิจัย

ผลการวิจัยพบว่าประสิทธิผลของรูปแบบชี้ให้เห็นว่าหลังจากการศึกษากลุ่มทดลองมีความรู้โรคหลอดเลือดหัวใจสูงขึ้น มีการปรับปรุงการดูแลตนเอง และคะแนนคุณภาพชีวิตในกลุ่มทดลองดีกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ โดยไม่พบการกลับมารักษาซ้ำ

ดังนั้นการใช้รูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชัน เพื่อส่งเสริมพฤติกรรมการดูแลตนเองตามความต้องการของผู้ป่วย โดยได้รับการสนับสนุนโดยทีมแพทย์และพยาบาล มีความสำคัญในการนำมาใช้ในปฏิบัติการทางคลินิกต่อไป

คำสำคัญ : การเรียนรู้ร่วมกัน, สตรอรี่ไลน์, การดูแลตนเอง

Abstract

The present study aimed to investigate the effects of a collaborative learning model using storyline through LINE application on promoting self-care behaviors in patients with coronary heart disease (CHD). The sample size were 40 patients who admitted at Surin Hospital in 2019. A randomized pretest-posttest control group design was performed. Collected data were analyzed by t-test, mean and standard deviation. The model of collaborative learning using storyline through line application was created based on patients' needs and applied to use in the research.

The results showed that a collaborative learning approach could improve self-care behaviors in treated patients. Statistical improvement in health-related quality of life were revealed in treated group with had no readmission to the hospital. This was not so obvious in the control group.

Thus, implementation of a collaborative learning model using storyline through LINE application to promote self-care behaviors based on patients' needs, supported by a healthcare team and led by nurses, is important in clinical practice.

Keywords : Collaborative Learning, Storyline, Self-Care

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Introduction

New teaching and learning style is the introduction of new concepts used in learning management, solving problems and developing learning efficiently in order to meet the goals of the curriculum. LINE application is being a popular application for chatting on various communication devices (Kunjitchueawong, 2013 : 42-54). With the outstanding features of LINE application, LINE is therefore able to perform a variety of functions in teaching and learning; for example as a means of communication between teachers and learners and becomes a new way to manage the online learning. The storyline management is a teaching that trains students to learn about real life by thought processes and analysis, including critical thinking processes to guide the decisions by using the main questions to lead a variety of activities (Siladet, 2002 : 185-194). It is now more effective than learning through competition methods and studying without relationships with other people (Johnson and Johnson, 1991 : 105-107).

Acute coronary syndrome (ACS) is caused by an artery that feeds the myocardial infarction or is clogged. The symptoms are more pronounced when the artery is narrowed by more than 50 percent (Thai Heart Association of Thailand, 2014 : 15), including Intense chest pain, pain while resting, tiredness during exertion, fainting, or even death. In addition, ACS is a disease that causes patients to admit in many hospitals and is frequently readmitted to the hospital during the first month after discharging from the hospital. Treatments of coronary heart disease (CHD) to restore the clogged arteries include balloon angioplasty, coronary artery stents, coronary artery bypass grafting surgery (CABG), etc. However, CHD can return to it repeatedly, if risky behaviors are not reduced. These behaviors include eating less fiber, having foods with high in fat and cholesterol, keeping smoking, drinking alcohol, caffeine and a lack of exercise, not taking medication on time or stop taking the drug yourself. To take care of this group of patients, therefore, the behavioral changes must be made and encourage patients to maintain their health which will cause complications after coronary dilatation (Leewattana et al., 2008 : 141-150 & Orem, 1991 : 60). Planning distribution using only one activity cannot reduce the rate of recurrence (Ravn-Nielsen et al., 2018 : 375). Having a good knowledge of the disease, symptoms, risk factors, and treatment will help to reduce complications and death risk (Clark et al., 1992 : 931-937).

At Surin hospital, there is an advice and a teaching on health education to patients during the stay in the hospital, the patients have returned to treat 3.4% and 3.9% in the year 2017-2018 respectively. The majority of self-care behaviors are incorrect; such as eating as you like with unlimited food, still smoking, and a lack of exercise. Mortality rate of the patients was counted by 18.3% and 13.8% respectively and were deaths within 30 days after being discharged from the hospital at 3.7% and 2.8% respectively.

Currently, developing learning styles through LINE applications by using the concept of model development and the concept of combine various pedagogical approaches is introduced (Driscoll : 2020) as an educational approach. This is focus on collaborative learning through daily storytelling by using LINE application as a classroom and communication channel for learning in self-care of coronary heart patients. There is a limited report on the effectiveness of this learning style. Thus, collaborative learning using storyline through LINE application for self-care in patients with coronary heart disease is selected for this study.

Objectives

The present study aimed to investigate the effects of a collaborative learning model using storyline through LINE application on promoting self-care behaviors in patients with coronary heart disease (CHD) as follows:

1. A comparison of knowledge and understanding on practices before and after health education using the collaborative learning model using storyline through LINE application in patients with coronary heart disease.

2. A comparison of self-care behaviors of coronary heart disease patients between the experimental group and the control group after using the collaborative learning model using storyline through LINE application.

3. A comparison of the effects on coronary heart disease patients between the experimental group and the control group after using the collaborative learning model using storyline through LINE application.

4. A comparison of the quality of life of coronary heart disease patients between the experimental group and the control group after using the collaborative learning model using storyline through LINE application.

Methodology

Design

A randomized pretest–posttest control group design was used.

1. Participants

Between November 2019 to February 2020, 40 patients who had undergone percutaneous coronary intervention (PCI) were randomized to either an intervention group (Experimental group), 20 people where they received education in a collaborative learning model using storyline through LINE application to promote self-care in patients with CHD, and a control group (Control group), 20 people with no such interventions. The exception criteria is that the patient is unable to read and cannot type text on the LINE application and checked for diseases with poor prognosis.

2. Research tools

There were two parts which were tools used in the experiment and tools used for data collection as follows:

2.1 Tools used in the experiment: It is a collaborative learning model using storyline through LINE application to promote self-care in patients with CHD. (modified from Krajaiklang, et al. 2020 : 134-141). By using the integrated teaching concepts, focusing on learning together with story line learning, so that students can use knowledge and share their experiences to share with each other through LINE applications. And creating instructional media to reinforce patients' awareness of the importance of self-care, consisting of 5 components: 1) the condition, problems, and needs, 2) objectives, 3) focus on competency, 4) the teaching plan, 5) conditions in use which was evaluated by 12 experts. This was rated at the highest level of suitability ($\overline{X}$ = 4.88; S.D. = 0.29).

The implementation:

It took four weeks of activity with four learning plans. Week 1: Knowledge of coronary heart disease, Week 2: Self-care to prevent coronary heart disease, Week 3: Nutrition of patients with coronary heart disease, and Week 4: Exercise matters with the 3P-CA model learning process were implemented as follows:

1) Preparing: It is an introduction of lessons in situations, content, stories, pictures, posters, questions, and videos using situations as a content to encourage students to think and understand.

2) Presenting of knowledge and skills: Instructors must encourage students to share knowledge as storytelling and practice by providing opportunities for learners to think and manage situation with leading questions and encouraging group members to participate by assigning roles to share individual skills.

3) Practicing: It is an opportunity for students to present their practice skills to a large group. The instructors and learners could share opinions in order to interact and exchange ideas between the instructor and the learner and the learner to learners to develop the thinking of the learners. The instructors follow up on the application of knowledge to change the behavior from the skills described in each group and provide additional advice on missing part.

4) Conceptualizing and applying: It is tracking the ability to use. This is a stage where teachers give questions to encourage students working together for summarizing the lesson. This could give the opportunity to students to use the results of the skills training to present and summarize each lesson in the content. (Figure1)

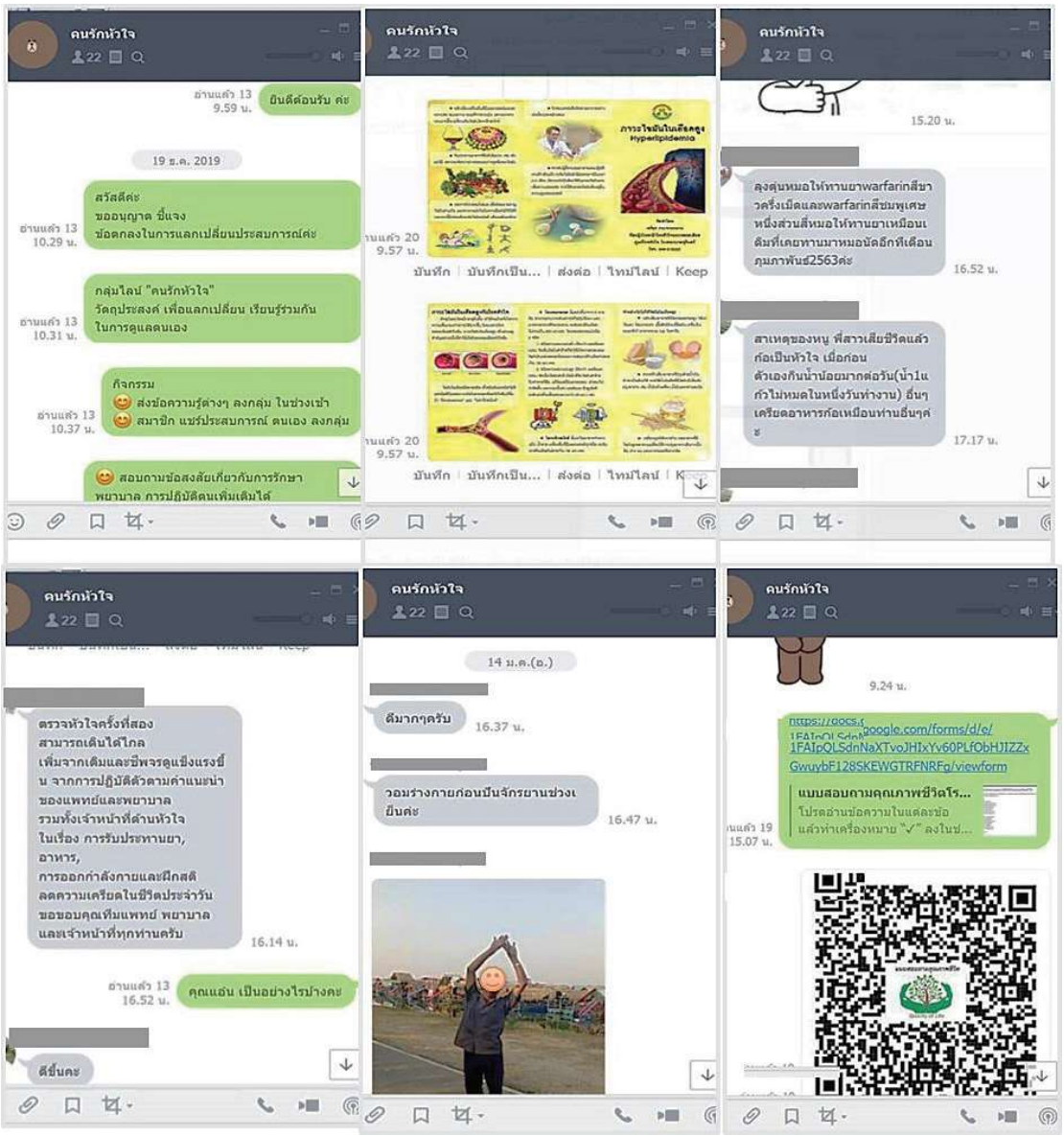

Figure 1 Examples of classroom atmosphere through the LINE application

2.2 Tools used for data collection:

1) Cardiovascular knowledge test and practice: The selective knowledge test with two options; yes or no for 25 items was used, and evaluated for the reliability. This was equaled to 0.76 by using Kuder Richardson's formula 20 (KR-20).

2) Self-care behavior questionnaire: A form with a 5 rating scale of 26 items was used as a research tools and a Cronbach's alpha coefficient was equaled to 0.88.

3) A record form and follow-up: Structure validity evaluated by five experts were performed.

4) An evaluation form of the quality of life of patients with coronary artery disease: applied from Ferrans and Powers Life Quality Assessment Form (1985 : 15-24; 1998). There are 70 items within two dimensions, namely the satisfaction and significance dimensions, with six answers to choose the Cronba's alpha coefficient. C of all copies is equal to 0.94.

3. Data collection

3.1 In order to collect data in Surin hospital, a letter was provided by the Graduate School Surindra Rajabhat University, and required approval by the director of Surin Hospital.

3.2 The list of names and sample selection from patient registration through computer system of Surin Hospital was surveyed. When the sample group met the specified qualifications, the researcher was introduced himself. Clarify objectives benefits steps was given to patients and requested cooperation for participation in research and asked for a signature in the document showing consent to study. Numbers were entered to patients from 1 to 40. Numbers were randomly drawn in pairs as an experimental group, and odd numbered order was assigned as a control group.

3.3 The first day of the hospital stay (within 24 - 48 hours), general information of patients was collected, and gave the 1st knowledge test (pretest) to patients.

Control group: Providing health education to patients with coronary artery disease following the normal pattern of the hospital was obtained.

Experimental group: Recommend use of LINE applications was introduced to patients, then guided how to use of LINE applications and registered to the classroom online.

3.4 On the day of discharge from the hospital, give out self-care manual to patients.

3.5 Orientation day: Inform the purpose of the study every time. Clarify rules for classroom access (LINE name-lover group) and participation.

3.6 Implementation of the form: The teacher offered the lesson to the classroom during the morning time. Each student was then assigned with questions in their personal LINE room and encouraged follow-ups during the day for a period of four weeks.

3.7 The online knowledge test was sent to the classroom and personal line after the course (Post-test). The control group was made an appointment to monitor the treatment in the 1st month and took the knowledge test before visiting a doctor at the heart disease clinic.

3.8 Self-care behaviors and the quality of life were tracked and measured by sending tools to the classroom and personal line after one month of teaching. A follow-up record form was used to follow up on treatment results and performance at the appointment day in the 2nd month for both groups.

4. Data analysis

4.1 The collaborative learning model through line application for promoting self-care patients with CHD that the researcher created, knowledge scores, self-care behaviors and quality of life were evaluated by descriptive statistics. The average and standard deviation were performed.

4.2 Knowledge on cardiovascular disease and behavior before and after using the model was compared by using t-test dependent statistics.

4.3 Knowledge score, self-care behavior and quality of life between the experimental group and the control group were compared by using t-test independent statistics.

Ethical considerations

The study design was approved by the Ethics Committee of Human Research, Medical Organization of Surin Hospital with a certificate number 36/2019. Principles according to the ICH-GCP criteria were followed. Informed and written consent was obtained from all participants in this study.

Results

The effects of a collaborative learning model using storyline through LINE application on promoting self-care behaviors in patients with CHD was investigated, and it was found that:

1. Knowledge and understanding in practice of patients in an experimental group after the education with story-telling through LINE applications had improved and higher self-care skills than before with statistical significance at the level of 0.01 in both the overview and category (Table 1). The experimental group also had higher knowledge on CHD and higher self-care skills than the control group with a statistical significance of 0.01 (Table 2).

Table 1 A comparison of knowledge on CHD and self-care education before and after using the learning model of the experimental group and the control group

Sample	Before trial		After trial		$\sum D$	$\bar{D}$	S_D	t	p
	$\bar{X}$	S.D.	$\bar{X}$	S.D.					
1. Control group	**17.15**	**1.79**	**17.15**	**1.18**	**0.30**	**0.98**	**0.22**	**1.371**	**0.186**
1.1 Coronary artery disease	8.35	1.50	8.40	1.43	0.05	0.83	0.18	0.271	0.789
1.2 Self-care	8.80	1.61	9.05	1.32	0.25	0.79	0.18	1.422	0.171
2. Experimental group	**17.15**	**1.18**	**23.30**	**1.17**	**6.15**	**1.93**	**0.43**	**14.273****	**0.000**
2.1 Coronary artery disease	8.40	0.75	11.15	0.81	2.75	1.12	0.25	11.000**	0.000
2.2 Self-care	8.75	0.97	12.15	0.75	3.40	1.39	0.31	10.926**	0.000

Note: p** <0.01, α = 0.01, df = 19, table value t = 2.492.

Table 2 Comparisons of knowledge on CHD and self-care between the experimental group and the control group

The test	Control group		Experimental group		t	p
	$\bar{X}$	S.D.	$\bar{X}$	S.D.		
1. Before trial	17.15	1.79	17.15	1.18	0.000	1.000
2. After trial	17.45	1.64	23.30	1.17	-12.983**	0.000
3. Difference score (Before - After)	0.30	0.98	6.15	1.93	-12.105**	0.000

Note: p** <0.01, α = 0.01, df = 38, table value t = 2.492.

2. The improvements of self-care behavior were seen in the experimental group regarding overall behavior, food control, exercise and medication significantly at the level of 0.01 compared to the control group. In general health care, the experimental group and the control group had significantly different behavior ($p<0.05$) (Table 3).

Table 3 Comparisons of self-care behaviors between experimental group and control group

Behavior	Control group		Experimental group		t	p
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		
1. Diet	4.08	0.48	4.57	0.20	-4.196**	0.000
2. Exercise	4.30	0.51	4.75	0.24	-3.596**	0.001
3. Drug use	4.14	0.58	4.73	0.30	-3.074**	0.006
4. General health care	4.53	0.32	4.73	0.25	-2.210*	0.033
Overall behavior	**4.13**	**0.33**	**4.55**	**0.24**	**-4.581****	**0.000**

Note: $p^{*} < 0.05$, $p^{**} < 0.01$, $\alpha = 0.01$, df = 38, table value t = 2.492

3. The impact of teaching, after the experiment 85% of the experimental group patients had completed anticoagulant drugs correctly according to the treatment plan. 100% of the experimental group had no smoking and there was no recurrence within 28 days. While the control group completed anticoagulant drugs correctly according to the treatment plan, did not smoke and returned to the hospital within 28 days with the percentage of 75.00, 90.00 and 15.00, respectively (Table 4).

Table 4 Impact from teaching and learning on CHD patients' behaviors of the experimental group and the control group, according to tracking issues

Tracking issues	Control group		Experimental group	
	frequency	percent	frequency	percent
1. Taking anti-coagulant drugs completely and correctly according to the treatment plan	15	75.00	17	85.00
2. Changing smoking habits				
2.1 No smoke / quit smoking	18	90.00	20	100.00
2.2 Reduce the number	1	5.00	0	0.00
2.3 Smoke the same	1	5.00	0	0.00
3. Readmit (Recurrence or return to treatment)	3	15.00	0	0.00

4. The experimental group patients had a good quality of life score while the control group was at a medium level. After the experiment, the patients in the experimental group had an overall quality of life score better than the control group at the statistical significance of 0.01. When compared to each aspect, it was found that the experimental group had a quality of life score better than the control group with statistical significance at the level of 0.01 in two aspects of health and body function, and psychological and spiritual. Furthermore, the quality of life scores for social and economy, and for the family had significantly different between two groups ($p<0.05$) (Table 5).

Table 5 Comparisons of quality of life scores between experimental group and the control group

Aspects of life quality	Control group		Experimental group		t	p
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		
1. Health and body function (15 items)	23.59	2.48	25.84	2.48	-2.875**	0.007
2. Social and economy (8 items)	23.23	3.98	25.96	2.63	-2.562*	0.015
3. Psychological/spiritual (7 items)	24.25	2.56	26.96	2.72	-3.250**	0.002
4. Family (5 items)	25.11	3.31	27.48	2.37	-2.597*	0.013
Overall quality of life	**23.59**	**2.41**	**25.84**	**2.22**	**-3.362****	**0.002**

Note: $p^{*} < 0.05$, $p^{**} < 0.01$, $\alpha = 0.01$, df = 38, table value t = 2.492.

Quality of life scores of 27-30 means that the quality of life is very good, 24-26 means that the quality of life is good, 21-23 means that the quality of life is at a moderate level, 18-20 means that the quality of life is low respectively.

Discussion

The effects of a collaborative learning model using storyline through LINE application on promoting self-care behaviors among cardiovascular patients:

1. Knowledge education: It was found that after the experiment, the patients in the experimental group had significantly higher knowledge than before the experiment at 0.01 level (t =14.273, p =0.000), and higher than the control group with statistical significance of 0.01 level (t = 12.983, p = 0.000). As consistent with the research of Somsiri & Susang (2011 : 33-46) studied the effect of methodically education which was found that after receiving the knowledge, the patients had the mean scores of knowledge, awareness ability and self-care behavior for each aspect and overall were higher than before receiving the knowledge in statistically significant results. Therefore, the development of guidance model had been applied to the patients and confirmed that the patients showed higher knowledge in CHD and self-care skills was improved in this study.

2. Behavior: After joining the guideline for two weeks, it was found that patients with CHD in the experimental group were able to act correctly which was higher than the control group with statistical significance at the level of 0.01 (t=4.581, p=0.000). Due to the collaborative learning model using storylines for teaching and learning together is a method of learning in which students interact with the group. Situations and conditions are defined for students to exchange ideas and to share opinions (Johnson and Johnson, 1991 : 105-107). Using more than one type of teaching media can help learners understand the lesson easily, obtain faster perceptions and are able to take care of themselves more effectively resulted in higher academic achievement (Soomhirun et al., 2009 : 17-32). As consistent with the study of Slavin (1995 : 132–135), it was found that the cooperative learning method would make learners had higher academic achievement. It was demonstrated that storyline management using a storyline was a better way to improve self-care of CHD patients rather than the regular health education.

3. Impact from teaching and learning:

3.1 Taking anticoagulant drugs: It was found that after the trial, the experimental group was taking anticoagulant drugs completely and more accurate following the treatment plans than the control group. This was due to the improved guidance style focusing on participatory learning activities in self-care. The patients would believe in their confidence of changing health behavior by themselves (Becker, 1974 : 409-420). This was consistent

with the study of Somsiri & Susang (2011 : 33-46), the systematic education promotion program showed that after participating in the project, the patients in the experimental group had a better score of behavior or medication behavior than the control group with statistical significance.

3.2 Changing smoking habits: It was found that after the experiment, 100% of the experimental group patients were able to stop smoking while 10% of the control group was still smoking. This was due to the social support having positively correlated with smoking cessation of CHD patients (Dongpho & Ua-Kit (2018 : 40-50). In which the developed model had emphasized collaborative learning activities focusing on exchanging experiences to each other. It was a part of social support that gave patients confidence in changing their health behaviors on their own. Therefore, it was reliable that the guideline created could help patients to quit smoking.

3.3 Readmit the hospital: It was found that after the experiment, the experimental group patients did not readmit the hospital within 28 days, while 15% of the control group found returned to the hospital. This was due to the developed model giving knowledge on diseases and self-care so that patients could manage themselves. This was consistent with the studies of Soomhirun, et al. (2009 : 17-32) which found that self-management could reduce re-hospitalization in heart failure patients. Pedcharat, et al. (2017 : 38-51) also found that patients after heart valve surgery had an average score of behavior after receiving the program significantly higher than before receiving the program and without returning to treatment with heart failure. Therefore, it was reliable that the guideline created could help patients to prevent recurrent diseases.

4. Quality of life in patients with CHD:

At a two-week follow-up period, statistical improvement in health-related quality of life in experimental group were revealed, and better than the control group at a statistical significance of 0.01 ($t=3.362$, $p=0.002$). The patients were able to perform daily activities and had good self-care behavior in which quality of life was the perception of their health status and their roles. Ritklar et al. (2012 : 64-76) found that after joining the program, the experimental group had a higher quality of life score than before participating in the project and higher than the control group. As consistent with the study of Ritpetch (2011 : 108-109), it was found that the ability to perform activities had a high positive relationship with the quality of life. The study of Saengsiri (2015 : 104-118) found that cardiovascular education and self-care through collaborative learning using storylines through online applications encouraged patients to take good care of themselves to prevent recurrence of the disease resulting in a better quality of life.

Conclusion

This study showed that applying education based on a collaborative learning model using storyline through LINE application on promoting self-care behaviors. Higher score of knowledge in CHD, stop smoking, good cooperate in medication, no recurrence of the disease, no readmitting to hospital resulting in a better quality of life were observed in patients. Therefore, to promote physical health in CHD patients, it is recommended that educational program based on a collaborative learning model using storyline through LINE application on promoting self-care behaviors. This research results can help health educators to design self-care improvement program for patients according to their needs and abilities.

Suggestions

1. The Ministry of Education should establish a policy for teaching and learning operations by using a collaborative learning model with storyline through LINE application. This educational approach will be useful for solving educational problems.

2. Further research should be the effect of the developed model to enhance other capabilities by bringing the process or steps in the collaborative learning model using storyline through LINE application. This approach will be the developmental guideline.

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