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พัฒนารูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชัน เพื่อการเรียนรู้เรื่องการดูแลตนเองของผู้ป่วยโรคหลอดเลือดหัวใจ

The Development of Collaborative Learning with Storyline by Using Line Application for Self-care Skills of Coronary Heart Disease Patients

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**นักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิตสาขาวิชาเทคโนโลยีสารสนเทศและสื่อสารการศึกษามหาวิทยาลัยราชภัฏสุรินทร์ จังหวัดสุรินทร์ ประเทศไทย 32000*
***อาจารย์ประจำภาควิชาเทคโนโลยีและสื่อสารการศึกษาคณะครุศาสตร์มหาวิทยาลัยราชภัฏสุรินทร์ จังหวัดสุรินทร์ ประเทศไทย 32000*
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บทคัดย่อ

หลักการและเหตุผล : การดูแลตนเองของผู้ป่วยโรคหลอดเลือดหัวใจที่เหมาะสมเป็นสิ่งที่มีความสำคัญต่อผู้ป่วย เพราะช่วยในการลดภาวะแทรกซ้อนของโรค

วัตถุประสงค์ : เพื่อพัฒนารูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชันเพื่อการเรียนรู้เรื่องการดูแลตนเองของผู้ป่วยโรคหลอดเลือดหัวใจ (CHD) และเพื่อศึกษาประสิทธิภาพของแบบจำลอง

รูปแบบการศึกษา : การวิจัยและพัฒนา

วิธีการศึกษา : ดำเนินการพัฒนา 4 ขั้นตอนคือ 1) การวิเคราะห์ข้อมูลพื้นฐาน 2) การพัฒนารูปแบบแนวทาง 3) การใช้แบบจำลองการทดลองและ 4) การประเมินผล กลุ่มตัวอย่างเป็นสหสาขาวิชาชีพ 25 คนและผู้ป่วยโรคหลอดเลือดหัวใจ 72 คน โดยวิธีการเลือกตัวอย่างแบบเฉพาะเจาะจง

ผลการศึกษา : 1. รูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชันประกอบด้วย 5 องค์ประกอบ คือ 1) สภาพปัญหาและความจำเป็น 2) จุดมุ่งหมายของรูปแบบ 3) สมรรถภาพที่มุ่งเน้นความรู้ พฤติกรรม และความรู้สึกที่ดี 4) แผนการสอนใช้เป็นแนวทางปฏิบัติ และ 5) เงื่อนไขการใช้เทคนิคการเรียนรู้ร่วมกัน พบว่ารูปแบบการเรียนรู้ร่วมกันมีความเหมาะสมในระดับสูงสุด (mean = 4.9; S.D. = 0.3) 2. ประสิทธิผลของแบบจำลองชี้ให้เห็นว่าหลังการศึกษากลุ่มที่เข้าร่วมการเรียนรู้มีความรู้เกี่ยวกับโรค

หลอดเลือดหัวใจและทักษะการดูแลตนเองสูงกว่าก่อนเรียนและสูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 ประสิทธิภาพที่สูงขึ้นและคุณภาพชีวิตที่สูงขึ้นยังพบในกลุ่มที่เข้าร่วมการเรียนรู้เทียบกับกลุ่มควบคุมอย่างมีนัยสำคัญที่ p = 0.01 และไม่พบการกลับมารักษาซ้ำในกลุ่มที่เข้าร่วมการเรียนรู้

สรุป : รูปแบบการเรียนรู้ร่วมกันโดยใช้สตอรี่ไลน์ผ่านไลน์แอปพลิเคชันในการศึกษานี้มีประโยชน์และสามารถนำไปสู่การปรับปรุงพฤติกรรมการดูแลตนเองของผู้ป่วยโรคหลอดเลือดหัวใจ

คำสำคัญ : การเรียนรู้ร่วมกัน สตอรี่ไลน์ การดูแลตนเอง

วารสารการแพทย์โรงพยาบาลศรีสะเกษ สุรินทร์ บุรีรัมย์ 2563;35(2): 269-280

ABSTRACT

Background : Self-care of patients with proper coronary heart disease Is something that is important to patients themselves because it helps in reducing the disease's complications.

Objective : This research aimed to develop a model of collaborative learning with story line using LINE application for self-care skills in patients with coronary heart disease (CHD) and to study the effectiveness of the model.

Study Design : Research and development

Methods : This was a developmental research composing of 4-steps process: 1) basic data analysis, 2) development of guideline model, 3) experimental model usage, and 4) evaluation. The samples were 25 multidisciplinary professions and 72 CHD) patients by a purposive sampling method.

Results : 1. The model of collab orative learning with story line using line application was composed of five components;1) the conditions of problem and the need, 2) the purpose of model, 3) the competency oriented in good knowledge, good behavior and good feeling, 4) the teaching plans as a guideline process,and 5) the conditions of use of collaborative learning technique. It was found that the suggestive form was suitable at the highest level ($\overline{X}$ = 4.9; S.D. = 0.3). 2. The effectiveness of the model indicated that after the study, the treated group had higher knowledge in CHD and self-care skills than before studying, and higher than the control group at a 0.01 significance level. Higher performance and higher quality of life were also found in treated group compared to a control group signifi-cantly at p=0.01., and was not re-admittedto the hospital in treated group.

Conclusion : Thus, the model of collaborative learning with story line using line applicationin this study, is useful and can lead to the improvement of the self-care behaviors in CHD patients.

Keywords : Collaborative learning, storyline, self-care.

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Introduction

Thailand is entering the era "Thailand 4.0", with aiming to modernize the country. All types of media as creative learning resources are broadly used. The information technology is used as tools for communication and building relationships. Social media has become an intermediate communication in getting people closer by talking, chat, video call, photo and location sharing in order to inform your own movement to others, making the world without borders. Current education therefore has more useful channels. Students can learn via mobile devices, regardless of location, time and unlimited knowledge. This is, therefore, a big chance to enhance the skills of people in the 21st century.

New teaching and learning style are 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.[1] 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.[2] The storyline management is used for students to learn and practice skills together, which is now more effective than learning through competition methods and studying without relationships with other people.[3]

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[4], 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.[5,6] Planning distribution using only one activity cannot reduce the rate of recurrence.[7] Having a good knowledge of the disease, symptoms, risk factors and treatment will help to reduce complications and death risk.[8]

Due to an achievement of education requires an effective method of giving knowledge. With lack of guidelines for educating cardiovascular patients after discharge, specifically, there is no online learning model

for patients. Therefore, the development of new learning styles is necessary. A collaborative learning model with storyline using LINE application for self-care skills of coronary patients in a good quality format may be useful. This model can be used as the main guideline to educate patients with CHD for self-care learning effectively with a better quality of life. This will be beneficial to CHD patients and educational operations as well as other public health work. Furthermore, this can bring together learning styles using storyline through the line application for other areas more efficiently.

Research objective

1. To develop a collaborative learning model with storylines using LINE application for self-care skills of CHD patients to meet a specified criteria.

2. To evaluate the effectiveness of a collaborative learning model with storyline using LINE application for self-care skills of CHD patients, in terms of knowledge and understanding for practicing, self-care behavior, the impact of teaching, and the quality of life.

Research methodology

There are four steps of the developmental research as followed below :

Step 1 Research (R1) : Analysis. The need for the development of collaborative learning styles, and the need for learning management to promote self-care ability of CHD patients were assessed by surveying the basic information in teaching of health education. The concepts, principles and theories related to the development of learning styles with storyline using LINE applications were analyzed. The samples were CHD patients admitted to Surin Hospital during June 2019 to July 2019 with the total number of 32 patients, and 25 people of a multidisciplinary team using a purposive sampling method. The qualitative data through focus groups was studied for problems and needs in health education management in order to promote self-care ability. The research tools were a document analysis form and an interview form. The data analysis was preformed and displayed as frequency, percentage, and content analysis.

Step 2 Development (D1) : Design and Development. The conceptual framework in the design and development of collaborative learning model were created using storylines through LINE application for self-care skills of CHD patients. The model was composed of five components; the conditions of problem and the need, the purpose of model, the competency oriented in good knowledge, good behavior and good feeling, the teaching plans, and the conditions for using collaborative learning technique.[9] The collaborative learning model was developed and used as a research tool. The structural suitability assessment form with a 5-level rating scale was used. Collected data were analyzed by means of computing arithmetic mean and standard deviation. The summarized opinion of 12 experts by using the average of the criteria above 3.5 level was accepted.

Step 3 Research (R2) : Implementation. The experimental research was conducted by

using a collaborative learning model. Between December 2019 to January 2020, 40 patients with CHD at Surin province were selected with a purposive sampling method and randomized to either an experimental group, where they received education in a collaborative learning model using storyline through LINE application developed in Step 2 to promote self-care in CHD, or a control group with no such a learning model. A randomized pretest-post-test control design was used.[10] The selective knowledge test with two options; yes or no for 25 items was used, and evaluated for the reliability. This was equaled to 0.8 by using Kuder Richardson's formula 20 (KR-20). Statistical analysis was performed using t-test. Means and standard deviation were also calculated.

Step 4 Development (D2) : Evaluation. At a two-week follow-up period, the effectiveness of a collaborative learning model was evaluated. A self-care behavior questionnaire 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. A record form and follow-up Structure validity checking from 5 experts were performed. The Ferrans and Powers quality of life assessment form was also investigated[11,12] There were 35 items, consisting of two dimensions which was satisfaction dimension and importance dimension with the answers at 6 levels to choose. The Cronbach's alpha coefficient of the whole copy was 0.9. Data analysis was performed using a frequency, percentage, statistical t-test and compared the level of percentage of quality of life according to the specified criteria.

Ethical considerations

The study design was approved by the Ethics Committee of Human Research, Medical Organization of Surin Hospital with a certificate number 37/2019. Principles according to the ICH-GCP criteria were followed.Informed and written consent was obtained from all participants in this study.

Results

1. A collaborative learning model with storyline using LINE application for self-care skills of CHD patients was developed. According to the experts, the model was appropriate with the highest level, and it was the most consistent opinion at the highest level ($\overline{X}$=4.9; S.D.=0.3) with five components as followed below;

1.1 In terms of patients' ability based on problems and necessities, the patients were educated with exchanged experiences in practice using story-telling through LINE application in order to perform a collaborative learning approach. This was a systematic process adhered to the principles of knowledge development, intellect and proper care skills which could learn anywhere, anytime, and various knowledge could be searched by finger-tip.

1.2 The aim of the model was to educate patients with knowledge on CHD and self-care skills for reducing complications for a better quality of life.

1.3 Performance-oriented was assessed for those who participated in this learning model obtained good competency in knowledge, behaviors and feelings.

1.4 Teaching plan was a 3P-CA Model Guidance process which was 1) preparing for knowledge; 2) presenting of knowledge and skills by sharing experiences in the LINE group; 3) practicing following the application of knowledge to change behavior; 4) conceptualizing and applying followed up self-care behavior. This had four lesson plans; knowledge on CHD for the first week; on self-care to prevent for the second week; on nutrition of patients with Coronary artery disease for the 3rd week; and on exercise for the 4th week.

1.5 Conditions for applying the model to achieve the objectives as follows: 1) Preparation of teaching tools for teachers and classrooms in the online group 2) The implementation of the model for the selection of 20-30 students per teacher per room must be diverse in the team and skills in using technology for educational activities and storytelling can be adjusted according to the context.

2. The effectiveness of a collaborative learning model with storyline using LINE application for self-care skills of CHD patients was evaluated, and it was found that:

2.1 In terms of knowledge and understanding in practice, patients in an experimental group after the education with story-telling through LINE application shad higher knowledge on CHD 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 Comparisons of knowledge on CHD and self-care between before and after using the learning model of the experimental group and the control group.

Sample	Before trial		After trial		∑D	D	S_D	t	p
	$\overline{X}$	S.D.	$\overline{X}$	S.D.					
1. Control group	**17.2**	**1.8**	**17.2**	**1.2**	**0.30**	**0.98**	**0.22**	**1.371**	**0.186**
1.1 Coronary artery disease	8.4	1.5	8.4	1.4	0.05	0.83	0.18	0.271	0.789
1.2 Self-care	8.8	1.6	9.1	1.3	0.25	0.79	0.18	1.422	0.171
2. Experimental group	**17.2**	**1.2**	**23.3**	**1.2**	**6.15**	**1.93**	**0.43**	**14.273****	**0.000**
2.1 Coronary artery disease	8.4	0.8	11.2	0.8	2.75	1.12	0.25	11.000**	0.000
2.2 Self-care	8.8	1.0	12.2	0.8	3.40	1.39	0.31	10.926**	0.000

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

Table 2 Comparisons of knowledge on CHD and self-care, self-care behavior and quality of life scoresbetween the experimental group and the control group.

The test	Control group (n=20)		Experimental group (n=20)		t	p
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		
Knowledge on CHD and self-care						
Before trial	17.2	1.8	17.2	1.2	0.000	1.000
After trial	17.5	1.6	23.3	1.2	-12.983**	0.000
Difference score (Before - After)	0.3	1.0	6.2	1.9	-12.105**	0.000
Self-care behavior						
Diet	4.1	0.5	4.6	0.2	-4.196**	0.000
Exercise	4.3	0.5	4.8	0.2	-3.596**	0.001
Drug use	4.1	0.6	4.7	0.3	-3.074**	0.006
General health care	4.5	0.3	4.7	0.3	-2.210*	0.033
Overall behavior	4.1	0.3	4.6	0.2	-4.581**	0.000
Quality of life						
Health and body function (15 items)	23.6	2.5	25.8	2.5	-2.875**	0.007
Social and economy (8 items)	23.2	4.0	26.0	2.6	-2.562*	0.015
Psychological/spiritual (7 items)	24.3	2.6	27.0	2.7	-3.250**	0.002
Family (5 items)	25.1	3.3	27.5	2.4	-2.597*	0.013
Overall quality of life	23.6	2.4	25.8	2.2	-3.362**	0.002

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

2.2 In terms of self-care behavior, the improvements 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 2).

2.3 In terms of the impact of teaching, after the experiment 85.0% 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 75.0, 90.0 and 15.0, respectively (Table 3).

Table 3 The teaching effects 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	75.0	17	85.0
2. Changing smoking habits				
2.1 No smoke / quit smoking	18	90.0	20	100.0
2.2 Reduce the number	1	5.0	0	0.0
2.3 Smoke the same	1	5.0	0	0.0
3. Readmit (Recurrence or return to treatment)	3	15.0	0	0.0

2.4 In terms of the quality of life, 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 2).

Discussion

1. The development of collaborative learning model with story line by using line application for self-care skills of CHD patients in this study was appropriate with the highest level, according to the experts. This was due to the implementation of the system approach[13] and evaluated the quality of the model through research (R) and development (D) process in order to improve the application[14] as performed in this study. The use of combined collaborative learning with story-line teaching methods through LINE application was introduced to solve risk behavior of patients. This model could create motivation for learners to be enthusiastic in their studies. Recently, the LINE applications as a new communication media was used to enhance motivation of learning system and become popular. Collaborative learning is an education approach of using groups to enhance learning ability through working together.[15] In order to achieve an unlimited learning outcome and point to the needs of students, the LINE applications providing an online learning and teaching method was applied and used in this study. This applied model could help students to increase their knowledge.[16] The problem

solving ability of the students was obtained at a good level and the opinion on the learning management through storyline method showed at a high level[17] with satisfaction of nursing students was reported at a high level through the LINE application for teaching and learning.[18] Therefore, it is reliable that the collaborative learning model created is of quality. The model is able to give patients the knowledge and ability to take care of themselves properly and finally promise a better quality of life.

2. The effectiveness of a collaborative learning model using storylines through LINE application for self-care learning among cardiovascular patients:

2.1 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[19] 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.

2.2 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.[3] 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.[20]

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.[21] This was consistent with the study of Somsiri & Susang[19], 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.[22] 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.[20] which found that self-management could reduce re-hospitalization in heart failure patients. Pedcharat, et al[23]. 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.[24] 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[25], it was found that the ability to perform activities had a high positive relationship with the quality of life. The study of Saengsiri[26] 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 with storyline using line application at a two-week follow-up period leads to an improvement in patient's self-care behaviors. Higher 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 mental and physical health in CHD patients, it is suggested that educational program based on a collaborative learning model using storyline created for self–care being applied in health care centers. This research results can help health educators to design self-care improvement program for patients according to their needs and abilities.

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