

THE DEVELOPMENT OF HEALTH CARE MODEL AMONG NURSING STUDENTS AT BOROMARAJONANI COLLEGE OF NURSING, NAKHONRATCHASIMA, THAILAND¹

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Abstract

The participatory action research aimed to develop a health care model among nursing students at Boromarajonani Nursing College, Nakhonratchasima. These included assessing their health status, developing the healthcare model and evaluating the health care model after the implementation. The participants of this study consisted of 991 nursing students, who admitted to the college between 2015 and 2018 (academic year) and five lecturers, who collected all data, assessing students' health and evaluating students' satisfaction. The study was conducted for three year between August 2015 and July 2018. The quantitative data were analysed by descriptive statistics, inferential statistic and Chi-square statistics. Qualitative data was analysed using content analysis.

The results of the study revealed that the health care model was appropriate for the nursing students. The model was divided into four levels. It consisted of health issues and priorities(1) prevalence and the priority of risk factors regarding health problems(2)health care activities(3) and good health care support system(4). Furthermore, the health care model has resulted in improving health status among nursing students. For example, the number of students with anemia problem was decreased from 36.5% to 21.9%. The pre-and post-operative health status of the students was statistically significant different ($p < .05$). The results of the study also showed that nursing students more satisfied with the health care model than the previous model. Applying the health care model should considered the fact that the different contexts may result in the effective of the model. Future research should continue to evaluate and improve the model based on their current situation.

Keywords: Health care model, nursing students

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Background of the study

Currently, society was rapid changes which were technology and competition led to population health changes into more complicated lifestyle related to nursing care on physical, mental, spiritual and social aspects. Nurse profession plays crucial role as taking care to the health of population and as health role model, in particular being the healthy nurse. The student nurses, the future nurses, need to be healthy for effective new generation workforce. The nursing college needs to prepare students for both academic and health. Any sickness decreases in advances of learning and health of nurses. In contrast, healthy strategies implement during student living fostering the ability to applied for health quality of life worldwide(Chuchuenet, et al, 2012). Study on health status of Thai nursing student found that majority of nurse students in some aspects, practice high-risk health care such as going to see doctor when they sick only 43.1%, get over the counter medication 34.3%, refused any treatment and waited until the sickness getting better (Arpanantikul, et al, 2011).

Boromarajonani College of Nursing, Nakhonratchasima, is a nurse education institute, which provides learning and risk students with sickness, as students practice nursing care skills in the tertiary care hospital and stay next to. Thus students were high risk to be sick and expose to sickness prevalence. Moreover, students stayed in dormitories together, they somehow were closed and shared diseases and infections. Besides, learning required more efforts and lead to not enough rests, travel to community and difference places, that made the students more chances of sickness and accidents. As new to such skills, student might have to trial and errors, and got some extends of injuries or accidents. From the 2014-2015 statistic at the college, the students sick 562 cases: diarrhea, stomach ache, nausea, vomiting mostly from food poisoning for 167 cases (29.7%), common cold and influenza 110 cases, small accidents 98 cases, other sickness 213 cases. This reported during diarrhea 29 cases and eye infection in 20 cases. Among this, 14 students were effected and cannot complete their study (Klaimanee, 2015) As such students did not have time to get quality food, they always had instant noodle, fast food, keep food too long before eating (Powpong, et al, 2011). Form the above, it is needed for the involved staff to find the new model of health care for nursing students, for constitute of proper health care and to promote learning success including nurse career success.

Aim of the study

The participatory action research aimed to:

1. To study the situation of health status among nursing students at Boromarajonani College of Nursing, Nakhonratchasima
2. To develop a health care model for nursing students at Boromarajonani College of Nursing, Nakhonratchasima,
3. To evaluate the healthcare model development

Research Definition

Model development means development process or model developed for health care among nursing student at Boromarajonani College of Nursing, Nakhonratchasima, through

participatory action research between researchers and participants in order to formulate a new model for student health care.

Health care means health care activities for nursing student according to the model development by researcher team.

Nursing student means a nursing student from the year 1- 4 program of Bachelors of Nursing from Boromarajanani College of Nursing, Nakhonratchasima, during August 2015-July 2018.

Research conceptual framework

This action research employed participatory action research (PAR) based on system theory (Hayajneh, 2007) and Kemmis & Mctaggart (1998) in order to develop healthy health care model for nursing student as shown in Figure 1

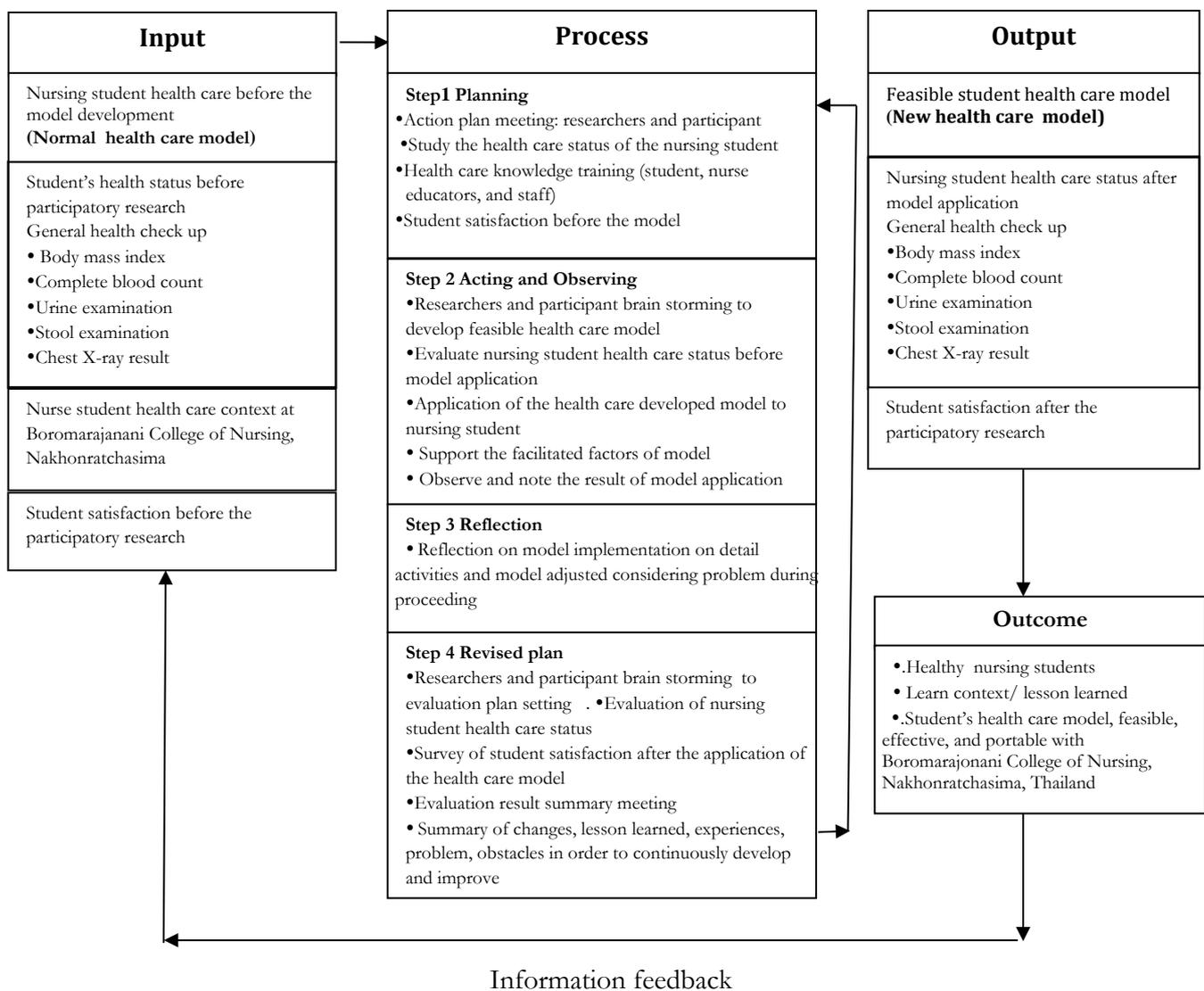


Figure 1 Research conceptual framework

Research Method

Study design

This participatory action research (PAR) involved **994** nursing students, who admitted to the college between **2015** and **2018** (academic year) and five lecturers. Lecturer collected all data, assessed students' health and evaluating students' satisfaction. It was conducted for three year during August 2015 to July 2018. The research was divided into 3 phases as follows.

Phase 1: To Study situation of health status among nursing students during August 2015 to July 2016

Phase 2: To Develop health care model for nursing students at Boromarajonani College of Nursing, Nakhonratchasima, August 2016 to July 2017

Phase 3: To evaluate the healthcare model developed during August 2017 to July 2018.

Participant

Study participant were: 1) the 991 nursing student who study Bachelors of nursing at Boromarajonani College of Nursing, Nakhonratchasima, during August 2015 and July 2017, and 5) five researchers, 3 instructors and 2 staffs

Research instrument

The research instruments, developed by researchers, were 8 tools: 1 health status questionnaire, 2 student satisfaction questionnaire, 3 the health care context record of nursing student at Boromarajonani College of Nursing, Nakhonratchasima, 4 new developed health care model, 5 meeting record, 6 observed records of student health care activities, 7 the activities summary record of student health care, and 8 the evaluation of knowledge training.

The instruments were content validated by 5 experts: 2 medical doctor experts, 2 nurse instructors, and a nurse expert of health screening, and adjusted according to the experts. Then, the instruments were reliability tested by 40 nursing students and then changed accordingly.

Research limitation

This research study only physical health status of a nursing student of Bachelor nursing program from the year 1 to 4, at Boromarajonani Nursing College, Nakhonratchasima during August 2015 and July 2018.

Ethical considerations

This research grant ethical review board of Boromarajonani College of Nursing, Nakhonratchasima, IRB number 01/2558. For the researcher participant, researcher provided information of the research of objectives, benefits, limitation, and process of the research until the participant understood. The participant then volunteers to co-operate to the research, and could freely leave the research process at any time they wanted. The volunteer was asked to sign consent form before the research process began. The data would kept secret and were analysed in big picture and the volunteer would be anonymous.

Data analysis

The quantitative data were analyzed by descriptive statistics, inferential statistic. The compared the health care status before and after the health care model was analyzed by Chi-square statistics. The qualitative data were analyzed by content analysis, read and re-read, validated content by triangulation technique.

Prevalence rate of health problem were calculated by the equation;

$$\text{Prevalence rate} = \frac{\text{The number of all health problems of students (old case + new case)} \times 100}{\text{The number of all surveyed student}}$$

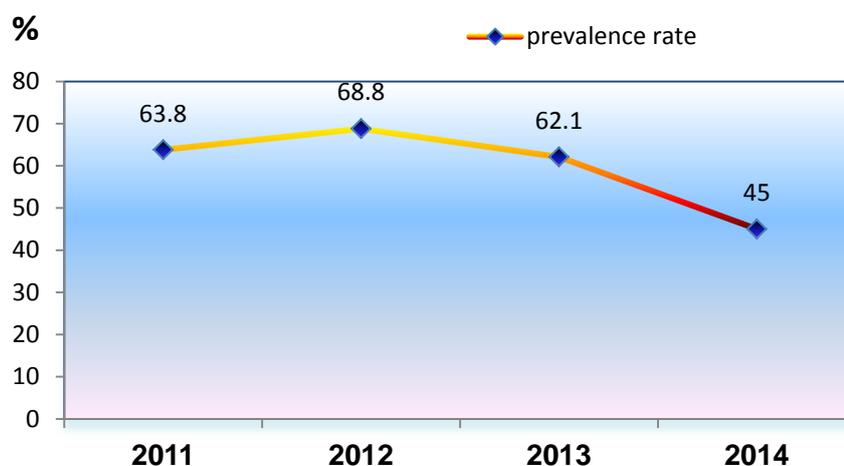
Prediction of associated factors to anemia in nursing students was analyzed by logistic regression analysis.

Results

Phase 1: To study the health care problem situation from August 2015 to July 2016

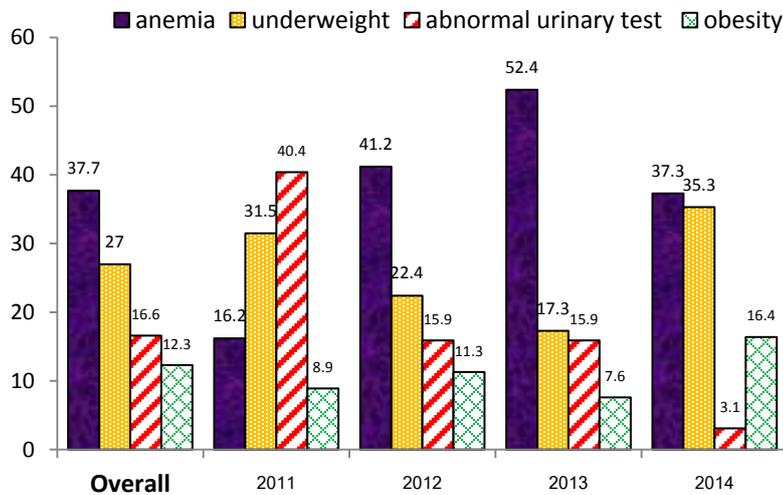
1) The status of health problems among nursing students between the academic years of 2011 and 2014, found that the prevalence of overall health problems were 63.8%, 68.8%, 62.1%, and 45% respectively (n= 384, 491, 515, and 689 respectively), as shown in chart 1.

Chart 1 Prevalence of health problems from 2011-2014



2) The most common health problems among these participants were anemia, underweight, abnormal urine test, and obesity respectively as shown in Chart 2

Chart 2 The percentages of student health problems from 2011-2014



3) Context of health care among nursing student found that the college had a policy to set student health care activities in the student affair: instructors, staff, and senior nursing students on call if any sickness happen. Students got vaccination according to disease-prevalence with climate changes all years. Besides, all the students stayed in college dormitories, was convenience for first aid, observation, or rest (none severe diseases), the college is next door to the hospital which can be refer on time. Moreover, all students had health insurance with yearly health check including hepatitis B immunity test. The student known health results case by case, each got health suggestions of care. Abnormalities would go to see the expert doctor. Those risk should verify by doctor. Those with no hepatitis-B-immune would get 3 times hepatitis vaccination.

4) The status of health problems among nursing students, completed the health examination recorded by questionnaire (n=666: powerful 99.6 %)in academic years 2015, before health model developed, shown that the prevalence of overall health problems were46.5 %.The most common health problem was anemia(46.1%),underweight(19.4%),obesity(13.1%),abnormal urine test(4.6%), and abnormal chest X-ray(3.0 %).

Phase2: To Develop health care model for nursing students at Boromarajonani College of Nursing, Nakhonratchasima

1) Researchers, instructors and staff were brain storming to integrate information from student health care information and health guideline, reflection, discussion, supported by evidence based of students health status, and changed until these process can reach the verdict. Then the results were formulated and group into new health care model development. Finally, the new model was constructed from 4 steps as shown in Figure2.

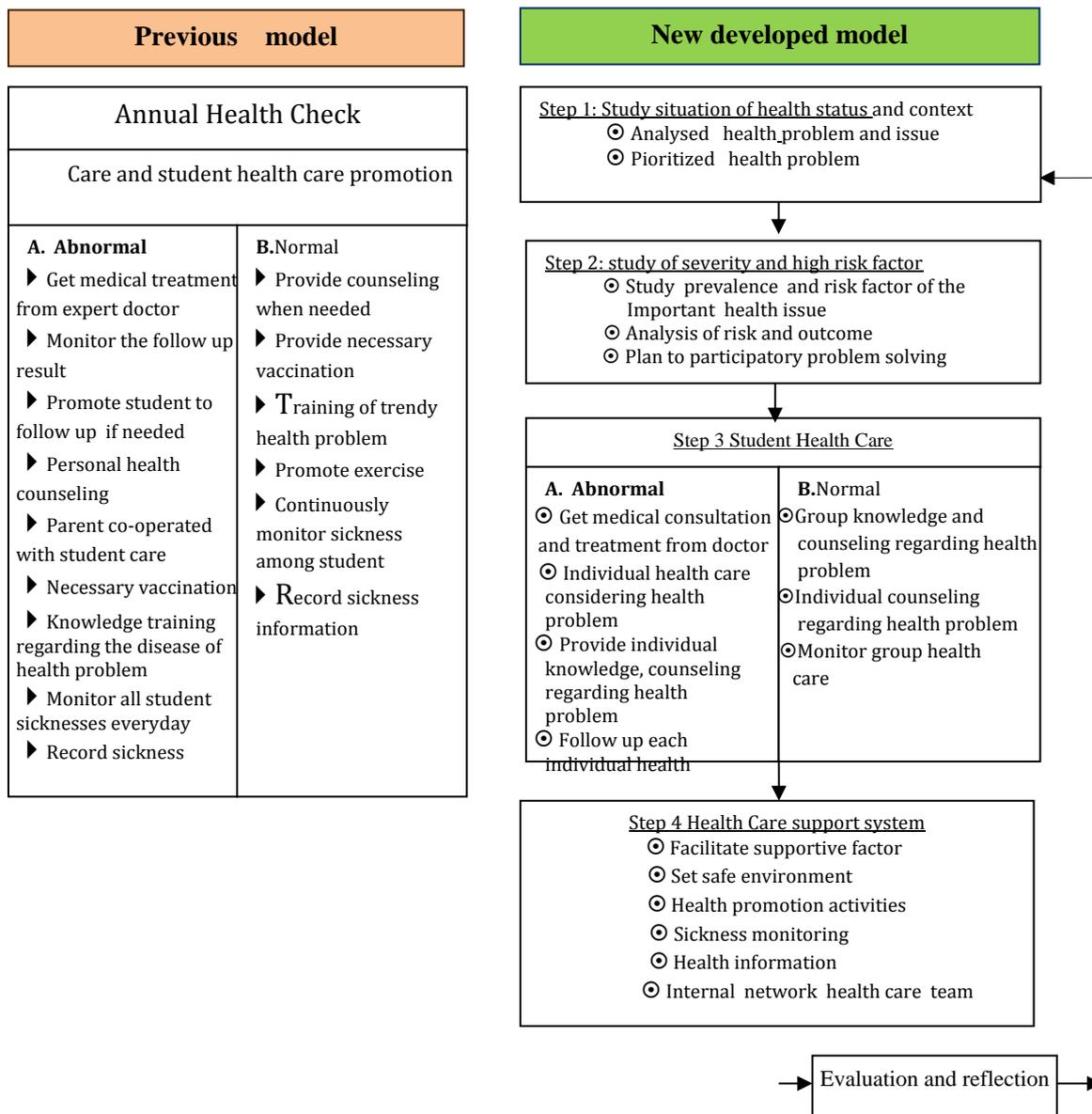


Figure 2 Previous and the new developed health care model

The summary procedure of research process and the health care model development for nursing student at Boromarajonani College of Nursing Nakhonratchasima as shown in Figure 3.

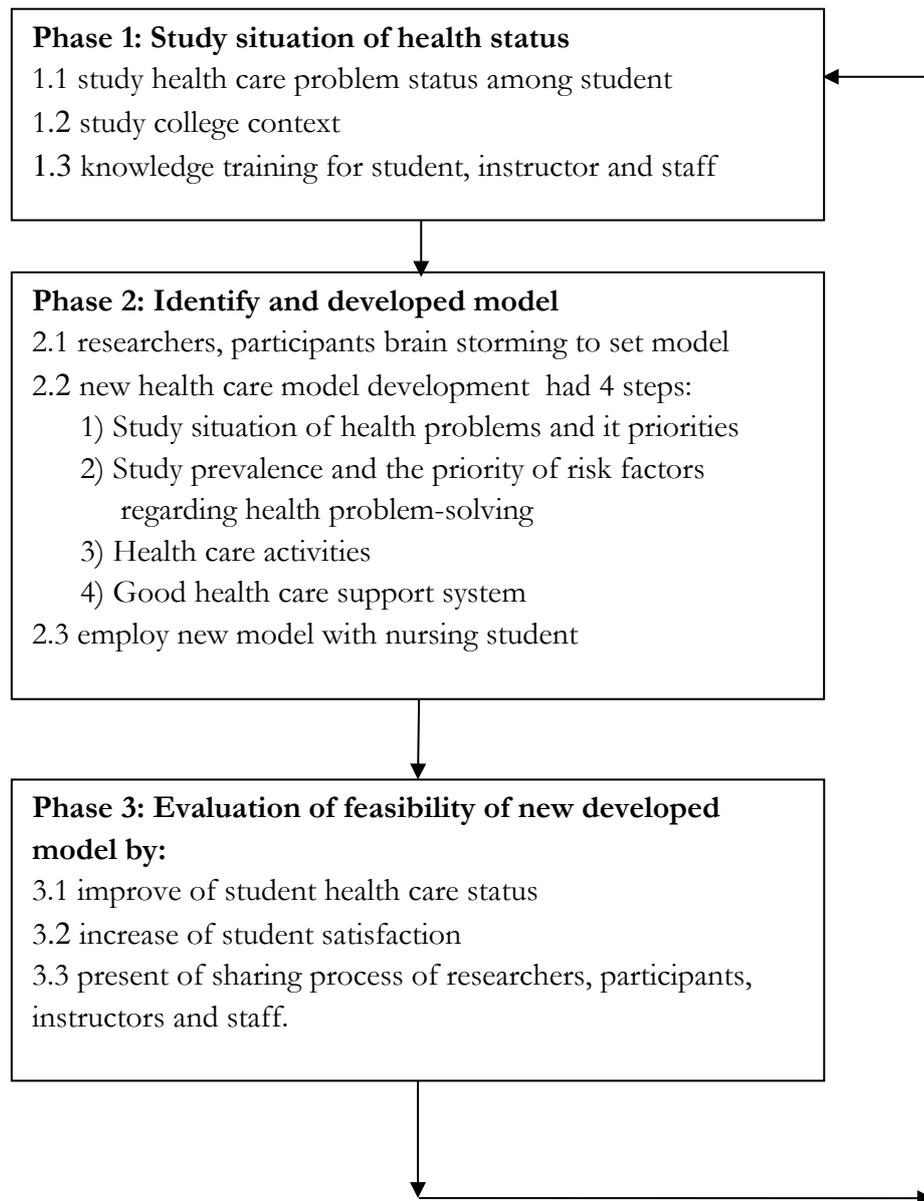


Figure 3 The summary procedure of research process and the health care model development for nursing student at Boromarajonani College of Nursing, Nakhonratchasima

2) The test result for the new health care model development

Step1: study situation of health problem and priorities, the result of the new health care model compared to previous one at the 2015, the overall health risk was 46.5 %, which were anemia 46.1%, underweight (BMI <18.5) 19.1 %, obesity(BMI >25) 13.7%, abnormal urine test 4.6 %, and abnormal chest x-ray 3 %. This study showed that Anemia was the most common problem.

Step2: Study prevalence and the priority of risk factors regarding health problem-solving

1) The study of prevalence and risk factor at 2016, from 676nursing students participated, respond rate of survey was99.7 %, found that form the overall number of anemia, number and percentage were presented in Table 1-2.

Table 1 Prevalence rate of anemia level among nursing students by number and percentage.

Level of Anemia	Number of Nursing student	Prevalence rate (%)	% accumulation
1) Mild anemia	181	26.8	26.8
2) Moderate anemia	53	7.8	34.6
3) Severe anemia	3	0.4	35.1
4) none anemia	439	64.9	100.0
Overall	676	100.0	100.0

In Table 1, the overall of prevalence rate of anemia in nursing students was 35.06%. There was mild anemia 26.78%, moderate anemia 7.84% and severe anemia 0.44% respectively.

Table 2 Logistic regression analysis of predict factors related to anemia variables.

Variables	B	S.E.	Wald	df	Sig.	Nagelkerke R Square
Education level			20.388	2	.000*	.234
Gender	2.391	.741	10.411	1	.001*	
Body Mass Index (BMI)	.458	.511	.801	1	.371	
Dietary behavior						
1) Vegetable & Fruits consumption (> 3 days/week)	.289	.200	2.090	1	.148	
2) Meat consumption (> 3 days/week)	.274	.225	1.480	1	.224	
Thalassemia or carrier	.513	.362	2.010	1	.049*	
Signs and symptom of anemia						
1) tiredness, weakness, chest pain	.352	.326	1.170	1	.279	
2. Dizziness, headache, blurred vision, cold, fatigue/tiredness, muscle pain.	.478	.290	2.729	1	.099	
3) Pale or jaundice	1.511	.386	15.31	1	.000*	
4) Hair fall, thin hair	-1.127	.437	6.661	1	.372	
Extreme Blood loss history	.164	.297	.305	1	.853	

*Significant P <.05

In table 2, the logistic regression analysis showed that education level, gender, Thalassemia or carrier, signs and symptoms of anemia, being pale or jaundice, were also the statistically significant predicting factors for anemia of these participants, accounting for 23.4 % ($P < .05$).

Step3: Nursing students health care at Boromarajonani College of Nursing, Nakhonratchasima, health care was based on health problem focusing on anemia. For the abnormal group, the 185 students were confirmed and treated of anemia. The health care procedures were 2times training of anemia self-care, 237 students were supported high-ferrous-food consumption, exercised every Thursday, and 89 students were individual counseling. In addition, there were 146 hepatitis-B-vaccination, and 148 were influenza vaccination. There were 16 students of ferritin-serum monitoring, and 184 students of health care monitoring. There were 2 activities to decrease risky behaviors: 21 cases of parent co-operating with student health care. For the normal group, the 274 students were health care group counseling, 458 students got influenza-vaccination. All nursing students got 1 time self-care and health promotion training. All were exercise every Thursday, health monitoring everyday by on line social media both individual and group, and dormitory big cleaning day for every 2 weeks.

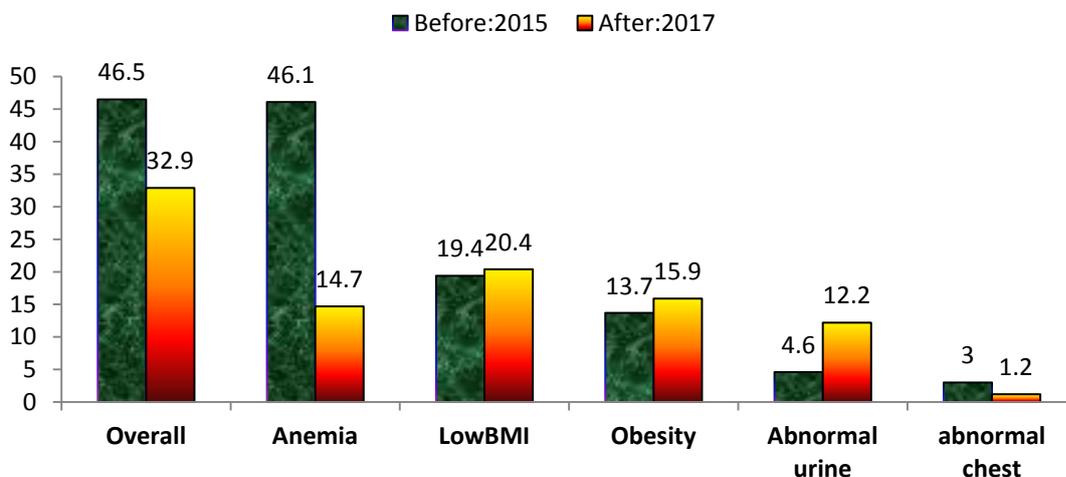
Step4: Good health care support system were supplied some basic medical for first aid, household remedy, first aid medicine, self-guard equipment, health status record program, and facilitated supportive factors. The supportive factors were set safe environment, health promotion activities, sickness monitoring, health information collection, and support healthy network.

Phase 3: To evaluate the healthcare model developed

1) The status of health problems among nursing students, who completed the health examination recorded by questionnaire ($n=672$: powerful 99.6 percentage) in academic years 2017, after the health model developed found that the prevalence of overall health problems was 32.9 %, These were underweight (20.4%), obesity(15.9%), anemia(14.7%), abnormal urine (12.2 %), and abnormal chest X-ray(1.2 %).

2) The results of the study revealed that the health care model was appropriate for the nursing students. The student health problem of the anemia of the same group (336 students, 2017 academic years) after the model was statistically significant declined ($p<.05$) as shown in Chart 3.

Chart 3 The percent of nursing students health problems from 2015- and 2017

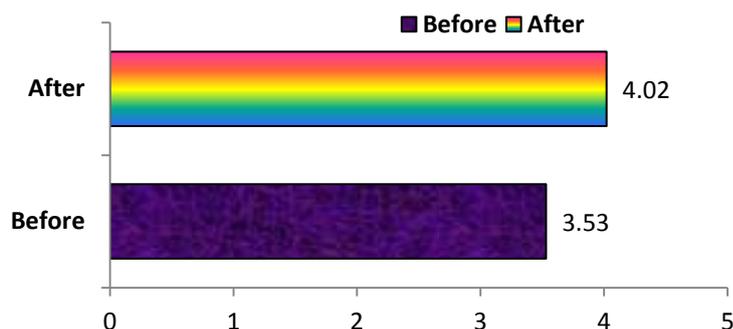


The chart 3 showed that the total student health problem was decline from 46.5%to 32.9 %. Focusing on anemia, it was decreased from 45.1% to 14.7 %. The abnormal chest X-ray was declined from 3 %to 1.2 %.The others: underweight, obesity, and abnormal urine test were not decrease.

After model, tested by Chi-square, student health status was statistically significant improved after the model ($p < .05$, $\chi^2 = 49.8$).

3) The results of the nursing student satisfaction survey was in Chart 4.

Chart 4 The score of nursing student satisfaction before and after applied the new health care model of 2015 and 2017



In chart 4 showed the nursing students satisfaction before(3.53) and after (4.02)used the health care model of 2015 and 2017(maximum score =5).

4) The participant of the model suggested that the college should set up health care course activities such as healthy eating for the pale students, diet food, co-operated with the canteen food in the college to make such food available for students, including providing more

spot of drinking water at all floors of the dormitories. The obstacles of student health care were: did not compete follow up, no time for exercise, not enough sleep, eat only what students like, and the canteen food menu were routine, fast food and limited, did not meet the student preference. Some did not have time for breakfast because rushing for early job practices. Thus the students should practice the new health care model before severing health problem occurred led to bad impact to learning and to prevent new health problem.

5) The observation and activities records presented that researchers, participants, instructors, and staff continuously shared and co-operate with all related activities both by meeting, social media, and face to face with willingness. All activities for supporting the success of the model such as big cleaning day, exercise if students had free time, interested in health monitoring result on record paper than online report. The students consults their advisors and completed follow up if they have time. The problem of did not complete follow up, can solve by using outpatient clinic for follow up and treatment. The counseling supported the student health care by set up network for health problem treatment and referring system for 24 hours care.

Discussion

This participatory action research of nursing student health care model developed effectives, feasible model for nursing students which regards to the college context. The model was integrated, systematic, and continuously developed. The model was divided into 4 steps: step 1: Study situation of health problem and it priorities, step 2: Study prevalence and the priority of risk factors, step 3: student health care, and step 4: health care support system. The model was developed by many cycles, through reflection and integration continuously until model stable.

This new model was employed the scientific system of participation which consider science of holistic care, included of context related to environment accounts effected synergistic effect (Von Bertalanffy, 1962). Systems theory can be used to clearly and concisely understand health care structures, processes and outcomes processes and their interactions within a health care system. Systems theory can be used as a framework to describe the components of systems and the relationships between these components, the boundaries of the system, the goal of the system, and system's ability to change and adapt in response to internal and external forces. Systems theory and thinking can facilitate us to understand how healthcare organizations and systems behave and it allows us to clearly assess (Hayajneh, 2007).

The model tested showed that the new model promoted effective health care which decreased the overall health problem mean score from 46.5% to 32.9 %. The anemia decreased from 34.5% to 14.7%. The abnormal chest X-ray decreased from 3% to 1.2%. However, the underweight and obesity increased from 19.4% to 20.4% and 13.7% to 15.9% respectively. The increase of obesity was because friends stayed with the anemia and underweight groups, shared the same atmosphere and feeling of health care model, thus consumed more than their needed because of the promotion of the proper food habit. The group of obesity, a target of health care, were gone through the new model process to decrease problems and promote

empowerment. Abnormal urine test was higher because the sampling methods were not appropriate. The test results confirmed that the majority found normal.

Lesson learned

This participatory action research made the health care model integrated to routine work and empowered the new health care to instructors and staff. The learning by sharing needed the tacit knowledge, communication technique, and meeting for setting systematic thinking and procedure. The activities of learning by doing led to health care model developed that can be measure and understand, promoted empowerment. This participatory action research in routine work “Routine to Research: R2R” facilitated the bounding among researchers, participants, instructors, staff and other less experiences who were outside the college in some extend involved in this health care.

Barriers

During the research process, there were changing working structure of organization, which the instructors and staff were changed during the middle of the research, and that led to changing to the new group of instructors and staff.

Implication

Applying the health care model should take into account due to the fact that the different contexts may result in the effective of the model. The future research should continue to evaluate and improve the model based on their current situation and all the considered factors. The evaluation of health situation, context, and related factors should taking in to account of team development which effected the health care system and the sustainable of student health care system.

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