Development of Patient Safety Management Learning Model Based on Problem Based Learning Integrated Soft Skill Higher Level Thinking for Health Students in Samarinda

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Research Article

Development of Patient Safety Management Learning Model Based on Problem Based Learning Integrated Soft Skill Higher Level Thinking for Health Students in Samarinda

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ABSTRACT

Background: Nursing students who participate in clinical practice in hospitals are not ready to provide quality care in maximizing patient safety. This study aims to develop a Problem Based Learning Patient Safety (PBLPS) conceptual model design that stimulates high-level thinking soft skills for students and finds PBLPS learning tools. **Method:** Research and Development (R&D), which is a research method that aims to produce new products through a development process. The stages of the research method consist of 3 stages, namely: the preliminary study stage; model development stage; model testing stage. The research subjects were nursing students at tertiary institutions in Samarinda city who had taken patient safety management courses, totaling 162 people. Data were analyzed using the Wilcoxon test. **Results:** Patient safety goals have not been implemented properly by students who practice clinical practice in hospitals. Students state that case-based learning can improve both hard skills and soft skills. The design of the integrated Problem Based Learning (PBL) learning model and the integrated PBLPS learning tools developed are RPS and integrated PBL-based modules on patient safety management. The results of the analysis of the soft skills assessment of high-level thinking students who practice in hospitals in the first year and the second-year show that there are differences in the results of the assessment of high-level thinking soft skills in the application of patient safety. **Conclusion:** The Problem Based Learning Patient Safety (PBLPS) conceptual model can stimulate high-order thinking soft skills for students in patient safety management practices in hospitals.

Key words: Patient Safety, Problem Based Learning, Soft skills.

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INTRODUCTION

Patient safety has become a priority for all healthcare systems globally.[1,2] The ultimate goal of all health care systems is to provide safe and error-free care.[3] All health workers including nurses have a big responsibility to ensure patient safety. Nurse graduates must have sufficient knowledge and soft skills to identify potential safety risks and must have the confidence to protect patients from preventable harm because they are future health care professionals.[2,4] The self-confidence and skills of graduates are closely related to the safety practices received while participating in the educational process at tertiary institution.[5] Therefore, universities as providers of vocational education are responsible for developing student abilities and preparing future nursing workers to practice according to patient safety standards. The educational process in tertiary institutions must contribute to the mastery of competencies that are balanced between knowledge, skills and soft skills. Elements of soft skills are very important in cognitive and psychomotor achievement and functionalization.[1,2,6]

The importance of teaching patient safety to medical and nursing students has been emphasized by WHO. Several studies have shown that nursing students may not be adequately prepared to provide quality care to maximize patient safety. Little is known about the educational experience and competence of nursing students in relation to patient safety and perceptions of their competence in this field.[1,2,4] Most universities around the world are looking for teaching methods that can enhance students' abilities in clinical decision making and student-centered learning. In recent decades, the use of student-centered learning methods has become a strong trend with educational systems.[2,7]

Problem Based Learning (PBL) is a pedagogical approach that has the potential to utilize students' soft skill abilities.[8,9] Research results in various parts of the world indicate the importance of mastering high-level soft skills such as: critical thinking, problem solving, willingness to keep learning, being able to learn from mistakes. Critical thinking skills are believed to increase self-confidence, be able to evaluate one's own beliefs or opinions or be able to evaluate evidence of assumptions and logical thinking.[6,8,10] Given the widespread adoption of PBL in medical and nursing schools around the world, experts believe that PBL can bridge the gap between theory and practice.[1,2,8,10,11] Patient safety needs to be covered in integrated nursing curricula and in various modes of learning, including simulations, assignments, readings, and clinical experiences. Several researchers have recommended teaching patient safety through simulations for undergraduate nursing students.[3,7] Therefore a better understanding of experiences and perceptions will enable educators to design better curricula that embed these competencies in future nurses. This study aims to develop a Problem Based Learning Patient Safety (PBLPS) conceptual model design that

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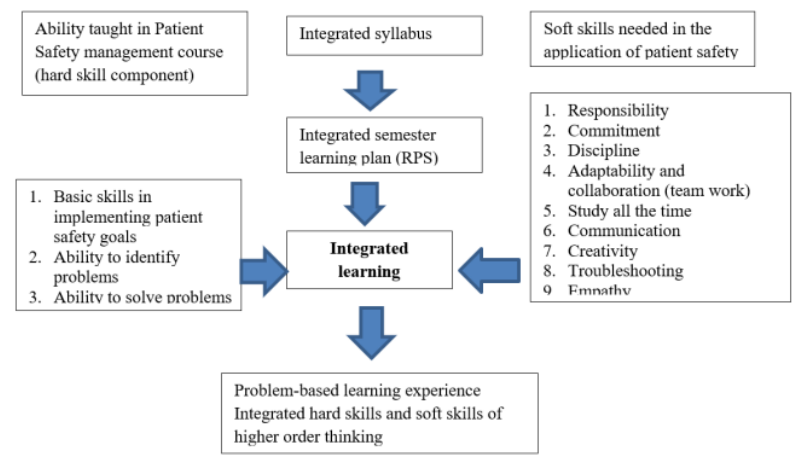

Figure 1: The design of the initial model of integrated problem-based learning

stimulates high-level thinking soft skills for students, and find PBLPS learning tools.

RESEARCH METHODS

This research uses the Research and Development (R&D) method, which is a research and development method that aims to produce new products through the development process. In this study the development was carried out on learning devices. The stages of the research method consist of 3 stages, namely 1) the preliminary study stage which aims to find the need for high-level thinking soft skills through FGD, 2) the model development stage, namely developing conceptual models and learning tools, 3) the model testing stage, namely the implementation of models and learning tools. The research subjects were students of health colleges in the city of Samarinda who had taken patient safety management courses, totaling 162 people. Data was collected through FGDs and questionnaires which were distributed via the Google form. The results of the soft skill measurement of the respondents were measured using a questionnaire which was distributed via the Google form.

RESEARCH RESULT

Characteristics of respondents

Table 1 presents the distribution of respondents based on age, gender and school of origin of the respondents.

Based on table 1, it can be seen that the majority of respondents were female (55%) and 45% were male. Most of the respondents were aged 21-23 years (70%) and a few were aged 18-20 years (10%). Most of the respondents came from the East Kalimantan Ministry of Health Poltekkes (61%) and a small number came from the Dirgahayu STIKES (13%).

Preliminary study phase

Based on the results of the preliminary study through the pretest (questionnaire) which was distributed via the Google form, the results of the application of patient safety goals by students practicing in hospitals were obtained as presented in table 2.

In table 2 it can be seen that not all students who practice clinical practice in hospitals implement patient safety goals, where the standard

Table 1: Distribution of frequency characteristics of respondents (N=162).

Characteristics of Respondents	Respondents	Percentage
Gender		
- Male	73	45
- Female	89	55
Age		
- 18-20 y.o	16	10
- 21-23 y.o	114	70
- 24-25 y.o	32	20
Respondent Universities		
1) Poltekkes Kemenkes Kaltim	99	61
2) STIKES Dirgahayu	21	13
3) Program Studi Keperawatan FK Unmul	19	11
4) Universitas Muhammadiyah Kalimantan Timur	23	14

of implementation is 100%.[12] Furthermore, the research team found several learning problems that became the basis for constructing the model to be developed. The author was inspired from several literature studies to develop an integrated PBL model as written by Deep S. *et al* (2020)[10] entitled The Problem-Based Learning Approach towards Developing Soft Skills[8,10] entitled Implementation of PBL to enhance the soft skills of engineering students[8,11] entitled Problem-based learning for anesthesia resident operating room crisis management training[1,11] entitled Simulation-based learning for patient safety: The development of the Tag Team Patient Safety Simulation methodology for nursing Education[1,13] with the title Integrated Problem Based Learning for the improvement of soft skills and high order thinking of vocational students.[6] PBL is a student-focused educational approach in which students expand their previous knowledge to new problems through self-reflection, research and practice in solving problems.[8] The hard skills component in the study of the patient safety management curriculum is then integrated with the soft skills of higher order thinking.

The results of soft skill measurements from respondents who were measured using a questionnaire distributed *via* Google form can be seen in table 3.

Based on table 3 it can be seen that there are no students who claim to have very good communication skills, leadership skills, analytical skills and public speaking skills and there are still those who admit to

Table 2: Percentage distribution of the frequency of application of patient safety goals by students who practice in hospitals (N=162).

Implementation of patient safety goals	Always	once	Sometimes	Never
Perform patient identification	58,2	15,8	7,2	18,8
Communicate effectively	84,2	7,9	7,9	0
Improve drug safety that needs to be watched out for	43	20,6	19,4	17
Verify the patient before entering the operating room (sign in)	83	13,3	1,8	1,9
Preventing the risk of infection	80,6	13,9	4,5	1
Perform a fall risk assessment for the patient	66,7	18,2	13,9	1,2

Table 3: Percentage distribution of the frequency of soft skills of students who carry out clinical practice in hospitals (N=162).

Soft skills component	Very good	Good	Less	Very poor
Communication skills	0	83,9	14,3	1,8
Leadership spirit	0	71,4	21,4	7,1
Analytical ability	0	69,6	30,4	0
Public speaking skills	0	50	48,2	1,8
Collaboration ability	30,4	69,6	0	0

Table 4: Learning problems regarding the application of patient safety goals.

Implementation of patient safety goals	Hard skill components found	Soft skills components needed
Correct identification	Does not identify the patient	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy.
Effective Communication	Not implementing effective communication well	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy
High alert drug alert	Have never applied vigilance to high alert drugs	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy
Correct patient, procedure, operating position	Never correctly applied patients, procedures, operating positions	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy
Infection prevention	Not implementing Infection prevention	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy
Risk Fall	Never implemented Risk Fall reduction	Responsibility, commitment, discipline, adaptability and collaboration (team work), learning all the time, communication, creativity, problem solving, empathy

Table 5: Patient safety management learning scenarios integrated PBL based.

No	Stages	Lecturer Role	Student Role
1	Designing integrated PBL learning based on curriculum studies.	1. Reviewing the curriculum and find problems related to the context of learning and work 2. Creating atmosphere open and fun learning	1. Describe the problem and ask about problems that are not understood 2. Studying the problem associated with empirical evidence. 3. Create a student working group
2	Carry out learning problem based	1. Giving stimulus to students to work effectively in gathering information, finding solutions and testing solutions through practice as well as reviewing problems and solutions found and making conclusions. 2. Stimulate students to innovate	1. Review the problem and make a concept map of the problem and collect all information both before and during practice. 2. Finding keywords, principles, procedures and verification by utilizing information to develop innovations based on practice data
3	Testing troubleshooting results	1. Create an evaluation tool with the team 2. Give feedback.	1. Proven problemsolving performance 2. Demonstrate the performance of high-level thinking soft skills 3. Doing self-reflection on the results of problem solving

having very poor soft skills. Furthermore, in the Focus Group Discussion (FGD), students stated that case-based learning can improve both hard skills and soft skills. Based on literature studies and FGDs, the 5 soft skills are developed into responsibility, commitment, discipline,[13] adaptability and collaboration (team work), learning all the time, communication, creativity,[8,10] problem solving, empathy[14] which will be integrated into PBL-based learning and become a source of developing problem-based high-level thinking soft skills education as presented in table 4.

Learning model development phase

The development of this learning model is based on a preliminary study that has been carried out in the previous stage.

By considering the hard skill component and paying attention to the soft skill component, we conducted a review of the integrated syllabus, modified the semester learning plan so that students get a problem-based learning experience in which hard skills and soft skills of higher order thinking are integrated.

Problem Based Learning (PBL) as an instructional approach has an important role in the development of soft skills among students from various disciplines. Empirical evidence identifies various soft skills including communication skills, conflict resolution skills, leadership skills, and interpersonal skills.[10] The application of PBL is carried out simultaneously with learning theory (1 credit) and practice (1 credit) in the Patient Safety Management course (2 credits). There are 9 stages in developing the integrated PBL model syntax, namely finding problems, defining problems, gathering facts, managing work teams, educating temporary guesses, investigating, refining the problems that have been defined, concluding alternative solutions collaboratively, testing

Table 6: Results of student soft skill assessment in year I and year II.

Year I			Year II		
Items	Average Per-Item	Information	Items	Average Per-Item	Information
X1	4.3395	Very High	X1	4.2716	Very High
X2	4.2963	Very High	X2	4.3951	Very High
X3	4.3765	Very High	X3	4.1667	Tall
X4	4.4630	Very High	X4	4.4444	Very High
X5	4.2222	Very High	X5	4.4691	Very High
X6	4.2037	Very High	X6	4.6111	Very High
X7	4.0864	Tall	X7	4.0741	Tall
X8	4.2469	Very High	X8	4.2037	Very High
X9	4.2840	Very High	X9	4.0247	Tall
X10	4.2160	Very High	X10	4.0926	Tall
X11	3.7160	Tall	X11	4.0926	Tall
X12	4.2901	Very High	X12	4.0247	Tall
X13	4.3765	Very High	X13	4.2531	Very High
X14	3.1049	Keep	X14	4.4321	Very High
X15	4.2037	Very High	X15	4.4259	Very High
X16	4.2840	Very High	X16	4.4136	Very High
X17	4.2407	Very High	X17	4.3086	Very High
X18	4.2901	Very High	X18	4.3642	Very High
X19	4.4198	Very High	X19	4.3642	Very High
X20	4.3086	Very High	X20	4.0617	Tall
X21	4.0062	Tall	X21	4.2407	Very High
X22	4.2963	Very High	X22	4.2716	Very High
X23	4.1173	Tall	X23	4.2531	Very High
X24	4.3086	Very High	X24	4.2099	Very High
X25	4.2531	Very High	X25	4.4444	Very High
X26	4.1049	Tall	X26	4.5741	Very High
X27	4.1173	Tall	X27	4.3333	Very High
X28	4.0247	Tall	X28	4.5926	Very High
X29	4.0988	Tall	X29	4.5988	Very High
X30	4.1790	Tall	X30	4.2037	Very High

Table 7: Wilcoxon test results.

Test Statistics[a]	
	Year2 - Year1
Z	-2.731b
Asymp. Sig. (2-tailed)	0.006
a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.	

Source: Primary Data Processed by Authors, 2022

problem solutions.[13,15] Based on the syntax, the learning developed is as follows. (Table 5)

The design of an integrated problem-based learning model and learning tools that have been prepared as well as soft skill assessment instruments are used to assess students' soft skill abilities in practice areas.

The results of the assessment of the soft skills of higher order thinking students practicing in hospitals are measured using a Likert scale with a minimum interval of 1 and a maximum of 5 which are categorized as follows:

Average score 1.00 – 1.80 = very low

Average score 1.81 – 2.60 = low

The average value is 2.61 – 3.40 = moderate

Average score 3.41 – 4.20 = high

Average score 4.21 – 5.00 = very high

Based on the results of an assessment of the soft skills component of students' higher-level thinking, the description of student soft skills is described in detail in table 6.

Based on table 6 it can be seen that the average results of the soft skills assessment of higher order thinking in the application of patient safety for students practicing in hospitals increased in the second year compared to the first year.

The results of the Wilcoxon test on the assessment of high-order thinking soft skills in the application of patient safety for students who practice in hospitals in the first and second years show that the Z count is -2.731 and the sig is 0.006, so it can be concluded that there are differences in the results of the soft assessment high-level thinking skills in implementing patient safety for students who practice in hospitals before and after implementing learning with the PBL patient safety (PBLPS) approach.

DISCUSSION

Based on the research results it is known that patient safety goals have not been implemented by all students who practice at the hospital. According to Faluzi, A., et al (2018)[12] the standard for implementing patient safety goals is 100%.[12] The application of these patient safety goals is related to the knowledge, skills and attitudes of students.[3] The results of this study are in line with the results of Lee,[16] where the scores for the skills and knowledge of the study participants were lower than the scores for attitudes.[16] Meanwhile, the results of the study by Bressan V. *et al*[4] showed that student knowledge remained stable, while nursing

student competency in patient safety issues increased over time. Students are more vulnerable at the end of the first year, when they seem overly confident about patient safety issues.[4]

Based on the results of the FGD, students stated that case-based learning can improve both hard skills and soft skills. Of the many existing learning models, Problem Based Learning (PBL) which has a basic constructivism philosophy, is able to encourage students to build their own knowledge and train critical, creative and innovative thinking skills. The effectiveness of PBL is that students are more active in thinking and understanding material in groups by conducting investigations of real problems around them so that they get deeper and more meaningful impressions. PBL can also improve critical thinking skills, learning motivation, and student learning achievement.[9]

Teaching technical skills alone will not prepare future graduates for a demanding work environment. Nursing lecturers are responsible for preparing nurses to excel. The challenge for educators is to take the initiative to teach not only hard skills but also soft skills while students are still on campus. Lecturers have the responsibility to develop soft skills for all students.[17] Graduate nurses must have sufficient knowledge to identify potential safety risks, and they must have the confidence to protect patients from preventable hazards.[18]

Subjects related to patient safety are more focused on theoretical learning in class and are less discussed in laboratory/simulation sessions. Teaching patient safety through simulation to undergraduate nursing students has been recommended by several researchers,[1,11,16] and certain patient safety scenarios (e.g., involving errors medical) can be incorporated into assignments, readings, and other learning activities. Through this activity, students are challenged to identify patient safety problems, apply their critical thinking skills in finding solutions, and consider future preventive measures. Lecturers can also consider using visual learning methods for the topic of patient safety, because nursing students are used to and enjoy obtaining information through visual media. For example, a teacher might consider creating a YouTube video clip featuring a role play to discuss the topic of patient safety. Furthermore, students can practice their application in laboratories and clinical practice in hospitals.[18]

Research that describes patient safety education programs and their impact has been carried out and many have reported an increase in patient safety knowledge after learning about patient safety management. However, the topic of patient safety is considered to be under-covered in the curriculum.[19] The results support the need for curriculum development to include all important aspects of patient safety and cultural competence in various teaching/learning places.[18] In recent years, integrating patient safety into the nursing curriculum has become an international concern.[20]

Therefore, the development of learning tools is carried out by modifying the semester learning plan (RPS) by adding video links about patient safety and its problems that stimulate student soft skills, compiling modules and creating syntax. Module development on patient safety management subjects has the goal of assisting students in undergoing the learning process in the classroom. From the results of the analysis of learning resources carried out, students have not used modules in the learning process and only sourced from the internet and power point material from lecturers. Thus, the development of a patient safety management module is needed, especially for nursing students. The development of modules that use the Problem Based Learning learning model aims to make the learning stages contained in this module structured and directed.

The results of applying the PBLPS learning model to students in the second year have been able to improve students' soft skills of higher-order thinking as the results of the Wilcoxon analysis show that the Z count is -2.731 and the sig is 0.006, there are differences in the results on the assessment of soft skills of higher-order thinking in the application of patient safety for students who practice in hospitals before and after implementing learning with the PBL patient safety (PBLPS) approach. This is in line with Hamidah's research where the integrated pattiseri learning model can foster higher-order thinking soft skills.[6]

Patient safety learning is loaded with issues that are relevant to work situations in the workplace. Soft skills with an integrated PBL approach have advantages in overcoming problems. Soft skills learning is properly integrated with problem-based learning.[21] PBL is a learning strategy that is considered active, integrated, and constructive learning. Integrated PBL learning is based on the idea that the pattern of integration allows learning subjects to build knowledge holistically through learning experiences and is more sensitive to the world of work.

Through integrated PBL learning, students learn how to analyze situations, analyze problems, find solutions and solve problems. Problem Based Learning (PBL) is a pedagogical approach that has the potential to utilize students' soft skill abilities.[8,9,22,23] Research results in various parts of the world indicate the importance of mastering high-level soft skills such as: critical thinking, problem solving, willingness to keep learning, being able to learn from mistakes. Critical thinking skills are believed to increase self-confidence, be able to evaluate one's own beliefs or opinions or be able to evaluate evidence of assumptions and logical thinking.[6,8,10] Given the widespread adoption of PBL in medical and nursing schools around the world, experts believe that PBL can bridge the gap between theory and practice.[1,6,8,10,11]

CONCLUSION

The integrated PBLPS learning tools developed in this study are RPS and integrated PBL-based learning modules on patient safety management. Developing an initial design that describes integrated PBL with high-level thinking soft skills in patient safety management courses, can be used as information for lecturers so that lecturers can play a role in improving students' soft skills during the learning process. This model will contribute to the formation of higher order thinking soft skills in nursing students so that students can implement patient safety goals which in turn can improve patient safety. The PBLPS learning model can improve students' soft skills in implementing patient safety in hospitals.

ETHICS APPROVAL

This research has received ethical approval from the ethics committee of the East Kalimantan Ministry of Health Polytechnic with number LB.01.01/7.1/002418/2021

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6