SIMULATION-BASED LEARNING: THE CURRENT INSTRUCTIONAL PRACTICES AND PROBLEMS OF PROVIDING TO TEACH A MATERNAL-NEWBORN NURSING AND MIDWIFERY COURSE FOR NURSING STUDENTS AT BOROMARAJONANI COLLEGE OF NURSING, NAKHON RATCHASIMA, THAILAND

Phunthip Chubkhuntod, RN, M.N.S.
Prangthip Thasanoh Elter, RN, MA, PhD
Patamaporn Khongkhuntod, RN, M.N.S.
Maneeporn Somanusorn, RN, M.N.S.
Jitpaiboon Phrathanee, RN, M.N.S.

Boromarajonani College of Nursing, Nakhon Ratchasima, THAILAND

Abstract

The purposes of this research were 1) to explore current instructional practices and problems of using simulation-based learning (SBL) approach to teach nursing student in a maternal-newborn nursing and midwifery course and 2) to study needs for its improvement. Participants were 151 fourth-year undergraduate nursing students in the first semester of an academic year 2016 and seven instructors in the Maternal and Newborn Department of Boromarajonani College of Nursing, Nakhon Ratchasima, Thailand. Data from nursing students were collected by using The Current Instructional Practices and Problems of SBL in the Maternal-Newborn Nursing and Midwifery Course Questionnaire developed by the researchers and validated by three experts in nursing education and instructional design. Its Cronbach’s alpha correlation coefficient was .91. Using an open-ended interview guide developed by the researchers, one focus group was conducted among the instructors. Obtained quantitative data were analyzed by using descriptive statistics and qualitative data were examined by using content analysis technique.

The study findings have revealed that students perceived the overall current instructional practices and problems of SBL in the maternal-newborn nursing and midwifery course, the overall current practices were at a good level (mean = 3.83; SD = 0.80). The highest mean score was in the instructional activities of SBL (M = 3.95, SD = .52) and the lowest was in the contents of SBL (M = 3.69, SD = .64). They thought that SBL approach helped them understand contents better than traditional lecture did and easier to apply learned skills for clinical nursing practices. Future instructional design should allow the students to have more time to learn and practice.

Instructors addressed that three issues influencing on teaching with SBL: instructional planning process, instructional implication, and instructional evaluation. Most problems found in instructional planning process because of workload and a time limit and in instructional implication because a number of students and how the simulation was set up. All instructor
would like to attend training courses to improve their teaching skills. Finding of this study can be used to redesign the maternal-newborn nursing and midwifery course suitable for nursing students in the 21st century.

**Keyword:** Simulation-Based Learning (SBL), Practices and Problems in Nursing Instruction, Maternal-newborn nursing, Midwifery

**Background of the study**

Nursing education is specialized professional education involving theories, practices, and practicum to ensure that nursing students are able to develop desirable qualifications and achieve learning outcomes in accordance with all six domains of the Thailand Qualification Framework of Higher Education including the following: 1. Ethics and morals, 2. Knowledge, 3 Cognitive skills, 4. Interpersonal skills and responsibility, 5. Numerical analysis skills and communication and technology skills, and 6. Professional skills (Boromarajonani College of Nursing, Nakhon Ratchasima, 2012). However, the evaluation of the quality of graduates of Boromarajonani College of Nursing, Nakhon Ratchasima based on the aforementioned standards in 2015 has revealed that users of graduates have the lowest satisfaction with cognitive skills, knowledge, and analytical skills, respectively (Boromarajonani College of Nursing, Nakhon Ratchasima, 2015). Furthermore, it has been documented that only 59.67% of test-takers applying for the third nursing and midwifery professional certification in 2015 passed the overall eight subjects, with the lowest percentages of applicants passing the adult nursing subject, midwifery nursing subject, and elderly care nursing subject, respectively (Thailand Nursing and Midwifery Council, 2015).

The Department of Maternal and Newborn Nursing, Boromarajonani College of Nursing, Nakhon Ratchasima is responsible for offering the maternal-newborn nursing and midwifery course which encompasses the contents needed to be certified as a professional nurse and midwife based on the requirements of the Thailand Nursing and Midwifery Council (2000). The course evaluation conducted in 2015 has shown that in terms of theories, the course was mostly lecture-based, and this caused nursing students to lose interest and lack motivation to learn. Furthermore, the duration of the course was considered short compared to the total number of courses the students were required to take in one semester, hence less opportunity to review the course contents, leading to a lower level of learning achievement. As regards practices, the students had a chance to practice necessary nursing care skills such as pregnancy examination, natural childbirth, and physical examination of newborn infants, etc. before actual practices at the ward. However, a number of students were concerned because they felt that they still lacked theoretical knowledge and the skills practiced did not cover all the activities they had to carry out at the actual ward. When faced with actual situations at the ward, most of the students lacked systematic analysis of information or problems of service users. As a result, they were unable to comprehensively devise a nursing care plan and lacked confidence in their own ability to provide care to service users (Department of Maternal and Newborn Nursing, 2015).

A review of literature has indicated that there are a number of teaching methods that enable students to develop knowledge, understanding, and analytical thinking to translate theories into actual practices such as case studies, discussions, etc. Also, SBL (SBL) is considered appropriate for nursing students as it involves arrangement of teaching and learning activities in a simulated environment, thus enabling students to develop analytical thinking and problem-solving skills (Kammanee, 2014). In addition, the students are enabled to apply what they have learned instead of actual experience, so they are able to learn and practice necessary skills before practicing at the ward. As such, students should be able to develop confidence and
reduce their stress and anxiety before actual practices at the ward. Simply put, it is believed that SBL can increase patients’ safety that may be compromised if nurses lack a chance to practice care provision before working at the ward (Kim, Park & Shin, 2017). At Boromarajonani College of Nursing, Nakhon Ratchasima Province, SBL is utilized at a rather limited extent, as the emphasis is placed on letting the students practice necessary nursing care skills before they actually practice at the ward. A number of problems and obstacles have been identified as previously mentioned. For this reason, the researchers aimed to investigate the current instructional practices and problems of a maternal-newborn nursing and midwifery course. It was anticipated that the study findings could be utilized to further develop SBL to ensure its efficiency and effectiveness.

Study Objectives

1. To explore current instructional practices and problems of the SBL approach to teach the maternal-newborn nursing and midwifery course to nursing students
2. To investigate needs for use of simulation-based instructional practices in the maternal-newborn nursing and midwifery course.

Methodology

Participants

The participants of this study were 151 fourth-year undergraduate nursing students in the first semester of the academic year 2016 and seven instructors in the Maternal and Newborn Department of Boromarajonani College of Nursing, Nakhon Ratchasima, Thailand.

Data collection instruments

1. The instrument used to collect data from the student participants was the current instructional practices and problems of SBL in the maternal-newborn nursing and midwifery course developed by the researchers based on a review of literature, consisting of both closed-ended and open-ended items divided into three parts as follows:
   Part 1: General information included age, gender, the final grade of the maternal-newborn nursing and midwifery course, and the latest grade point average.
   Part 2: Current instructional practices and problems of SBL were divided into four aspects—contents of SBL, instructional activities of SBL, instructional materials of SBL, and evaluation of SBL. There were 23 items arranged in a five-point Likert Scale. As regards interpretation of scores, the mean scores were divided into ‘excellent’ (4.20-5.00 points), ‘good’ (3.40-4.19 points), ‘fair’ (2.60-3.39 points), ‘poor’ (1.80-2.59 points), and ‘very low’ (1.00-1.79 points).
   Part 3: Needs for development of SBL were elicited using open-ended items.
   The questionnaire was examined by a panel of three experts to ensure content validity and language appropriateness. It was revised and improved based on the experts’ comments and suggestions before it was tried out with 30 nursing students whose demographic characteristics were similar to those of the participants of the main study. With regard to reliability, Cronbach’s alpha correlation of the questionnaire was 0.91.
2. The instrument used to collect data from the instructor participants was constructed based on a review of literature by the researchers. It contained open-ended items to assess current instructional practices, problems, and needs for further development of SBL. There were
four topics for group discussion as follows: planning for instruction, implementation of instruction, testing and evaluation, and needs for further development of SBL. The instrument was examined to ensure content validity and language appropriateness by a panel of three experts before it was employed in the main study.

Data collection

The present study was approved by the Institutional Review Board on Research Involving Human Subjects of Boromarajonani College of Nursing, NakhonRatchasima. The researcher approached the prospective participants to explain the study objectives and data collection procedures. The questionnaire was distributed among the student participants and the focus group discussion was conducted with the instructor participants. Data collection took place in October 2016.

Data analysis

The general data of the study participants elicited by means of the questionnaire were analyzed in terms of frequency, percentage, mean, and standard deviation, while the data regarding current instructional practices and problems were analyzed using mean and standard deviation. Furthermore, the qualitative data regarding further development of SBL collected with the open-ended items and the data elicited during focus group discussions undertaken with the instructors were analyzed by means of content analysis for interpretation, categorization, and summarization.

Findings

Findings regarding current instructional practices, problems, and needs as perceived by the student participants

1. As regards the demographic characteristics of the student participants, they ranged in age between 20 and 23 years old (mean = 21.52±0.60 years old). Of these, 145 (96.03%) were female, and six (3.97%) were male. Eight of them (5.30%) had an excellent achievement of the maternal-newborn nursing and midwifery course, 34 (22.51%) had a good level of achievement, 63 (41.72%) had a moderate level of achievement, 38 (25.17%) had a poor level of achievement, and eight (5.30%) had a very poor level of achievement. Their mean grade point average was 2.98 (SD = 0.26).

2. In terms of current instructional practices and problems of SBL in the maternal-newborn nursing and midwifery course, the overall current practices were at a good level (mean = 3.83; SD = 0.80). When analyzing each aspect, it could be seen that the instructional activities of SBL had the highest mean score at 3.95, followed by the evaluation of SBL, the instructional materials of SBL, and the contents of SBL, at 3.92, 3.78, and 3.69, respectively, as shown in Table 1.
<table>
<thead>
<tr>
<th>Current instructional practices and problems</th>
<th>Evaluation outcomes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contents of SBL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The contents are important and necessary for this method of teaching and learning.</td>
<td>3.79 .83</td>
<td>Good</td>
</tr>
<tr>
<td>2. The course objectives are clearly specified.</td>
<td>4.13 .68</td>
<td>Good</td>
</tr>
<tr>
<td>3. Instructional materials are appropriate.</td>
<td>3.58 .82</td>
<td>Good</td>
</tr>
<tr>
<td>4. The contents are up-to-date.</td>
<td>3.66 .81</td>
<td>Good</td>
</tr>
<tr>
<td>5. The difficulty level of the contents is appropriate.</td>
<td>3.17 .95</td>
<td>Moderate</td>
</tr>
<tr>
<td>6. References are clearly specified.</td>
<td>3.66 .77</td>
<td>Good</td>
</tr>
<tr>
<td>7. The contents are consistent with the course objectives and evaluation.</td>
<td>3.84 .72</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>3.69 .64</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Instructional activities of SBL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The teaching method is appropriate.</td>
<td>3.99 .67</td>
<td>Good</td>
</tr>
<tr>
<td>9. Learning activities are appropriate.</td>
<td>3.95 .70</td>
<td>Good</td>
</tr>
<tr>
<td>10. Duration of the course is appropriate.</td>
<td>3.81 .72</td>
<td>Good</td>
</tr>
<tr>
<td>11. The teaching method promotes student participation in class.</td>
<td>4.01 .75</td>
<td>Good</td>
</tr>
<tr>
<td>12. The teaching method is learner-centered.</td>
<td>3.97 .73</td>
<td>Good</td>
</tr>
<tr>
<td>13. The teaching method makes it possible to achieve the course objectives and enhances learning efficiency.</td>
<td>3.95 .69</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>3.95 .52</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Instructional materials of SBL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. The library of the College has sufficient textbooks and documents for the teaching and learning of the course.</td>
<td>3.99 .64</td>
<td>Good</td>
</tr>
<tr>
<td>15. It is convenient for the students to search for information from the Internet of the College the course.</td>
<td>3.67 .86</td>
<td>Good</td>
</tr>
<tr>
<td>16. Instructional materials have appropriate sound and visual quality with no defects.</td>
<td>3.70 .80</td>
<td>Good</td>
</tr>
<tr>
<td>17. The venue for the instruction is sufficient and appropriate for the number of students, with good lighting and air ventilation.</td>
<td>3.78 .70</td>
<td>Good</td>
</tr>
<tr>
<td>18. Equipment and tools used in the instruction are appropriate, up-to-date, and in good working condition.</td>
<td>3.77 .73</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>3.78 .62</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Testing and evaluation of SBL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. The evaluation covers the course objectives.</td>
<td>4.09 .67</td>
<td>Good</td>
</tr>
<tr>
<td>20. There are different assessment methods.</td>
<td>4.03 .75</td>
<td>Good</td>
</tr>
<tr>
<td>21. The level of difficulty of the tests is appropriate.</td>
<td>3.95 .80</td>
<td>Good</td>
</tr>
<tr>
<td>22. The knowledge gained from the course makes it easier to</td>
<td>3.76 .80</td>
<td>Good</td>
</tr>
</tbody>
</table>
### Current instructional practices and problems

<table>
<thead>
<tr>
<th>Evaluation outcomes</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>do the tests.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. The knowledge gained from the course helps enhance confidence and ability for actual practice.</td>
<td>3.76</td>
<td>.77</td>
<td>Good</td>
</tr>
<tr>
<td>Mean</td>
<td>3.92</td>
<td>.63</td>
<td>Good</td>
</tr>
<tr>
<td>Overall current instructional practices and problems</td>
<td>3.83</td>
<td>.80</td>
<td>Good</td>
</tr>
</tbody>
</table>

3. Needs for further development of SBL

The analysis of data elicited with open-ended item has shown that most of the students understood the needs to further develop instructional activities. They explained that during SBL, the instructors tended to use lectures with case studies, which could not sustain the students’ interest and made it difficult for them to understand the contents. The students suggested that SBL be improved by giving the students the opportunity to see the actual situations such as using a model that resembled a human body to enhance the students’ understanding. They also felt that they needed to practice analytical thinking skills to apply what they had learned with patients. They preferred learning activities that allowed learners to take part in analyzing situations in small groups, with a variety of cases to learn from, and with a longer duration of learning. As for practices, the students wanted simulation of actual cases to practice before, during, and after learning to increase their understanding.

In terms of instructional materials, the students believed that the institution had sufficient facilities for SBL including textbooks and the Internet system. However, the institute could further improve tools and equipment such as a model for pregnancy examination, a model for a pap smear test, and more equipment for baby delivery, etc. The tools and equipment should be up-to-date, sufficient, well maintained, and without a defect. They also needed convenience in borrowing and returning these tools and equipment.

With regard to instructional contents, the student participants agreed that the contents of SBL were difficult to understanding including those related to child delivery, care of mothers and infants with complications, etc. Finally, when it came to testing and evaluation of SBL, the students felt that the tests should cover all details of practical skills and the students should be informed of the testing and evaluation guidelines before each test.

### Findings regarding current instructional practices, problems, and needs as perceived by the instructor participants

1. There were seven instructors of the course who participated in this study. They ranged in age from 33 to 58 years old (Mean = 42±9.22 years old). All of them graduated with a Master’s degree in a field related to maternal-infant nursing and midwifery. Four of the seven participants (57.14%) had teaching experience from ten to 15 years, while three (42.86%) had been teaching for more than 15 years.

2. As for current instructional practices and problems of SBL, the data elicited from the focus group discussion were as follows:

2.1 In terms of planning for instruction, the instructor participants agreed that the scope of the course contents was clearly specified. The instructor in charge of the course designed the contents, duration, teaching methods, and assessment and evaluation in collaboration with the instructors of each unit of the course. The learning outcomes were specified to suit the course contents and the TQF. Moreover, the course instructors planned for the instruction, prepared the instruction as specified, and if the specified learning outcomes were
cognitive skills, professional skills, or numerical analytical skills, SBL would be utilized. Lesson plans were always prepared.

2.2 As regards implementation of instruction, if the course contents were related to theories, lectures were mostly used. SBL would be employed to describe case studies, but the number of simulations did not cover all activities due to a limited preparation time resulting from overwhelming workload. Other methods of instruction were also utilized, but only to a rather limited extent, such as assignments, demonstrations, and situation analyses, etc. It is worth noting that the class size was large, so some students lost enthusiasm to learn and there was learning restrictions. As for practices, the instructors equipped the nursing students with necessary nursing skills using simulations before the students had an actual practice with service users.

Moreover, the learning materials used in the course were mostly PowerPoint presentations. Supplementary handouts were made, and the instructors were able to search for information to prepare for the instruction. A model was also used to demonstrate uncomplicated nursing technology, but since it could not be utilized with more sophisticated technology, the students’ motivation may have been adversely affected.

2.3 The course evaluation was conducted in accordance with what had been clearly specified in the course syllabus.

3. During the focus group discussion, the instructors explained that they needed professional development particularly how to implement SBL. They wanted to learn how to make lesson plans, produce instructional materials, and use complicated instructional technology to increase efficiency and effectiveness of SBL.

Discussion

The study findings could be discussed as follows:

1. Current instructional practices

The student participants agreed that SBL was appropriate. It was learner-centered and promoted student participation during learning. Furthermore, the activities and duration of the course were appropriate, and the course was effective to enable them to achieve the course objectives at a good level. As for the instructor participants, they explained that they designed the course contents before teaching, considering that SBL would be used with the contents that were difficult and the students needed to practice the skills for actual application when providing nursing care to the patients. The instructional activities were selected in accordance with the specified learning outcomes, and the lesson plans were written and followed. In addition, when it came to theoretical teaching, the instructors mostly described the situations in writing for the students to analyze and devise the nursing care plans. The class size was in fact large to reduce teaching time. Also, when it came to practices, the nursing students were given the opportunity to practice necessary nursing skills before they actually worked at a patient ward such as assisting natural childbirths, pregnancy examination using a simple model, etc. However, it is worth noting that the situations in SBL were simple situations, and they did not cover all nursing care activities. Small groups were also organized so that the students had a chance to learn about case studies that required translation of knowledge into practice. For this reason, SBL was considered appropriate because it enabled nursing students to take part and learn about the topics which were more complicated. Their learning was considered a kind of evidence-based learning as well. When the students have a chance to practice their thinking process, interaction, communication, decision-making, and problem-solving, their nursing care provision should be more effective (Kammanee, 2014).
As regards the contents of SBL, supplementary handouts were prepared, with objectives, contents, and reliable and up-to-date references clearly specified. The contents were rather difficult, complicated, and necessary for actual nursing care practices would be taught with SBL as it was believed to promote knowledge, understanding, and application of the nursing process. Chandee, Palee, Niamhom, Jongkae, and Sengpanit (2014) conducted a study entitled “Effect of Case Study Teaching in the Subject of Nursing Care for Person with Health Problem Practicum I on Nursing Student Abilities of Applying Nursing Process” and found that the nursing students had higher scores of application of the nursing process after SBL was implemented and the scores of the experimental subjects were higher than those of the control subjects.

The findings regarding instructional materials showed that the nursing students felt that the College had models for simple nursing care practices as well as interactive models. There were also sufficient learning resources. However, they agreed that further improvement could be made regarding the condition, atmosphere, and tools and equipment in the classroom. There should also be more classrooms for small group nursing care practices, and both instructors and students should be encouraged to use complicated interactive nursing models that could offer feedback. As for theoretical teaching, the instructors had prepared supplementary materials and handouts and were able to use computer programs in their teaching. Finally, the instructors were able to use a simple human model to create a situation for nursing care practices.

When it came to testing and evaluation, there were tests, skill assessment forms, behavioral observation forms, and questions and answers. The instructors informed the students every time evaluation would be conducted to stimulate them to pay more attention to the course.

2. Problems with instruction

The students felt that when SBL was employed to teach theories, the instructors tended to describe case studies which made it uninteresting and difficult to understand the contents. They also felt that when the class size was large, the students lost a chance to learn. On the other hand, the instructors felt that their workload was overwhelming and they did not have enough time to prepare for their instruction. Moreover, they explained that lecturing was a teaching method that required the instructors’ ability to transmit knowledge interestingly. It took less time, but it was able to transfer a large amount of knowledge and information. However, the students did not have much role to play, and if the instructors did not have a technique to make their lectures interesting, they would not be able to sustain the students’ interest. Therefore, the students may lose interest, lack understanding, and be unable to ask questions (Kammanee, 2014). Therefore, the instructors should adjust their teaching method to make it more learner-centered.

The contents of the maternal-newborn nursing and midwifery course were related to the use of the nursing process to offer care to mothers and infants, both normal and at risk. The students needed to have knowledge and understanding to link the contents of the course with pregnancy, childbirth, and childcare, as well as related risks, which were complicated. As the students needed to apply such knowledge in actual practices, SBL was considered appropriate. For this reason, teaching methods, activities, and situations should be designed to resemble actual cases as much as possible to promote students’ understanding of difficult contents of the course.

The student participants agreed that the teaching materials were sufficient and appropriate, but the tools could simulate a moderate or a high level of situation such as interactive maternal and infant care practice models that could give feedback were not yet sufficient. Furthermore, the instructors still lacked knowledge about their use and were not able to effectively manage the teaching and learning. In fact, SBL consists of specification of objectives, creation of situations, nursing care practice patterns, provision of information for communication, problem-solving, discussion, reflection, and learning outcomes (Kanhadilok & Punsumreung, 2016). As a consequence, instructors should receive opportunity to develop skills.
necessary for teaching with SBL using an interactive nursing care model to increase the efficiency and effectiveness of the teaching. The nursing students also need to practice thinking and problem-solving skills in their nursing process.

3. Needs for further development of SBL

Based on the aforementioned current instructional practices and problems, SBL could be further developed as follows. The instructors felt that they needed to have professional development to increase knowledge and understanding to more effectively implement SBL. On the other hand, the nursing students felt that they needed the instruction to resemble actual situations as much as possible so that they would have a chance to practice necessary skills until they were able to implement them in their actual nursing care provision. Furthermore, they wanted the instructors to comprehensively explain the nursing skills so that they would be able to develop knowledge of correct nursing care processes. They also believed that if advanced nursing care cases were utilized, they would acquire more experience from the instructors and would be enabled to comprehend what they encountered based on what they had already known and understood using their own cognitive skills, thus maximizing the development of their nursing skills. Likewise, Robyn and Simon (2009) undertook a systematic review of SBL in nursing education and found that medium and/or high fidelity simulation could develop nursing students’ learning skills, analytical thinking skills, and satisfaction with the instruction better. Also, a class size should be small and the duration of the course should be long enough to ensure effectiveness of the instruction.

Implementation of the Findings

1. As for nursing education, nursing instructors could make use of the findings of the present study to further develop and improve both theoretical and practical teaching based on SBL to help nursing students achieve the specified learning outcomes.

2. In terms of nursing research, the study findings could be utilized as baseline data for further research on instructional practices and problems of instruction of other nursing courses.

Recommendations for Further Research

1. Studies should be conducted to investigate current instructional practices and problems of SBL used with other courses in the nursing science curriculum.

2. The outcomes of SBL should be explored in further research.

3. A comparative research study should also be undertaken to better determine the effectiveness of SBL compared with other teaching approaches.

References


