The Effects of a Simulation Education Program for Pediatric Respiratory Nursing

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Abstract. This research aimed to observe the effects in nursing students before and after simulations scenarios with acute respiratory disease infected infants and lecture in simulation room similar to clinical situation. Twenty three members of the experimental group participated in the simulation scenarios and twenty four members of the control group participated in lectures in such a manner that the experiment had a quasieperimental design. The control group’s knowledge score was statistically significant (t=2.52, p=.042), however the experimental group’s score was not statistically significant (t=1.61, p=.054). The control group’s skill score was not significant in difference (t=1.34, p=.076), however the experimental group’s skill score was statistically significant (t=2.98, p=.027). The control group’s learning attitude was not statistically significant (t=1.12, p=.069), however the experimental group’s learning attitude was statistically significant (t=2.63, p=.031). Therefore, this study demonstrates that simulation education program can be effective for knowledge and skill of nursing students in simulation room similar to clinical situation.

Keywords: Simulation, Education, Pediatric, Respiratory, Nursing

1 Introduction

1.1 Necessity of Study

Nursing educational institutions are aiming to produce professional nurses of outstanding competence not only by improving knowledge but also through effective hands-on training[1]. Clinical practice prepares nursing students to become competent practitioners who will be able to provide quality health care and promote health of the people they serve[2]. Apart from learning the skills, students are able to experience the real world of nursing in addition to the responsibilities of the nurse and develop interpersonal relationship with others[3].

Simulation as a teaching technique has been used over the centuries[4]. Simulation has existed in nursing education in many forms and the first healthcare simulation manikins were introduced in the early 1960s[5]. This style of teaching and learning is
highly interactive, allowing multiple learning objectives in a realistic simulated environment whilst mirroring the clinical setting[6]. Simulation is an educational strategy and not a technology[7]. However, an appropriate program should be developed and applied for this educational method to produce effective results and to achieve the learning objectives of the related academic courses[8]. Domestically, however, research on various pediatric nursing areas is lacking.

Therefore, this study is to develop simulation program of acute respiratory pediatric nursing education similar to clinical situation and to see the effect of the simulation education.

1.2 Purpose of Study

This study is to see effects of an knowledge, skill and learning attitude of nursing students after simulation based practical education and lecture in simulation room.

2 Research Method

2.1 Sampling of Research Subject

The study subjects are the junior of nursing students divided experimental and control group. Researcher explained purpose, contents and schedule of research to students and got signed paper from September 1 to October 31, 2013 in a university, K do.

2.2 Research Procedure

The simulation scenario of acute respiratory pediatric disease was made up nursing activity of nursing process(Assessment, Diagnosis, Intervention and Evaluation). The situation of scenario was in a state 6 months female baby showing dyspnea diagnosed pneumonia two days ago. After selection participants, researcher explained the procedure and received consent form junior nursing students and practiced the simulation and lecture from September 2 to October 31. The experiment group received simulation education and the control group got lecture. Questionnaire on the general features as well as their knowledge, skill and learning attitude was conducted before and after therapy indicated.

Table 2. Simulation Scenario for Pediatric Nursing Education of Acute Respiratory Dysfunction

<table>
<thead>
<tr>
<th>Stage</th>
<th>Scenario</th>
<th>Nursing Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>1.Recognition stage of problem</td>
<td>Birth date: 2013.3.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sex: F Age: 6Mo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diagnosis: Pneumonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>History taking</td>
</tr>
</tbody>
</table>
2. Dyspnea stage

· Flushing
· Subternal & intercostal retraction
· Check safety
· Check general appearance

· Lung sound: Wheezing on both sides, Vol 6
· Frequent heart beat with murmur
· Check Lung & Heart sound

· “ABGA: pH 7.2 PaCO₂ 65
PaO₂ 60, O₂ saturation: 76%”
· Check other symptom

Nursing diagnosis

3. Respiratory distress stage

· O₂ saturation: 76%
· Apply pulse oximetry

4. Cyanosis stage

· BT: 37.2°C, Pulse: 140x/min
· RR: 44x/min, BP: 66/42mmHg
· Notify Dr. baby’s condition
· O₂ saturation: 86%
· Apply oxygen prescribed by Dr.(2L/min)

5. Problem solving stage

· ABGA: pH 7.35 PaCO₂ 45 PaO₂ 90
O₂ saturation: 95%
· Check PaCO₂, PaO₂, O₂ saturation

Evaluation

3. Result

3.1. Test of Hypothesis 1

‘There will be more differences in the degrees of pre-test and post-test knowledge of experimental group treated with simulation education group than them of control group treated with lecture education.’

Since there was a significant difference in control group (t=2.56 p=.042) and no significant difference in the experimental group (t=1.61 p=.054), hypothesis 1 was rejected.

3.2. Test of Hypothesis 2

‘There will be more differences in the degrees of pre-test and post-test skill of experimental group treated with simulation education group than them of control group treated with lecture education.’

Since there was no significant difference in control group (t=1.34 p=.076) and a significant difference in the experimental group (t=3.48 p=.027), hypothesis 2 was adopted.
3.3 Test of Hypothesis 3

‘There will be more differences in the degrees of pre-test and post-test learning attitude of experimental group treated with simulation education group than them of control group treated with lecture education.’

Since there was no significant difference in control group (t=1.12, p=.069) and a significant difference in the experiment group (t=2.63, p=.031), hypothesis 3 was adopted.

4 Discussion

This research conducted in nursing education with the results indicated the degrees of skill and learning attitude after simulation education improve. The research conducted in nursing education with the results indicated the degrees of skill and learning attitude after simulation education improve. It can be compared that use of medium to high-fidelity mannequin is an effective teaching technique when used with nursing students[9]. The results of the present study were consistent with those of Alinier et al.[10] who showed a significant improvement in nursing performance after students were educated with simulation.

Therefore, this study demonstrates that simulation education program can be effective for knowledge and skill of nursing students in simulation room similar to clinical situation.

References