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The effect of repeated high-fidelity in situ simulation-based training on self-efficacy, self-perceived leadership qualities and team performance: A quasi-experimental study in a NICU-setting

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ABSTRACT

Background Simulation-based training has been widely used in various disciplines and has increasingly been recognized as useful in healthcare education during the past decade. In nursing schools, simulation-based training was initially used to train nursing students. However, there is a growing trend to use simulation-based training for continuing education and lifelong learning amongst professional healthcare workers.

Objectives To investigate if simulation-based training has an effect on self-efficacy, self-perceived leadership qualities and team performance in a neonatal intensive care unit.

Design Time series design.

Setting One referral neonatal intensive care unit in a general hospital in Flanders, Belgium.

Participants Convenience sample of 71 nurses and midwives.

Methods Participants were involved in a series of three simulation-based training sessions. Before and after these series, a set of validated questionnaires was completed to measure the self-efficacy and self-perceived leadership qualities of the participants. Each session was videotaped and assessed for team performance ($n=8$).

Results Participating in repeated high-fidelity in situ simulation-based training resulted in a significant increase in self-efficacy ($p<0.001$) and self-perceived leadership qualities ($p<0.001$). The intervention did not lead to a significant improved team performance ($p=0.209$).

Conclusion Repeated high fidelity in situ simulation-based training in the NICU had a positive effect on self-efficacy and self-perceived leadership abilities in registered nurses and midwives in acute care situations. Repeated participation in simulation-based training had a positive effect on these outcomes, regardless of the number of years of NICU experience. The effect on team performance could not be confirmed in this study.

INTRODUCTION

Global healthcare is challenged by an increase in acute pathologies in a continuously fast evolving, high-technological environment (Lucas, 2014). Nurses are expected to quickly and accurately identify and appropriately intervene in clinically deteriorating patients (Crowe, Ewart, & Derman, 2018; Lucas, 2014). In reality, symptoms are often not detected (or too late) resulting in a lack of appropriate interventions (National Patient Safety Agency, 2017).

Nurses experience difficulties in maintaining a level of competence and confidence in adequately managing complex observations and interventions. The perception of lacking competence leads to decreased levels of self-efficacy (Lucas, 2014). This is especially the case in high risk, low incidence situations. These are complications that don't happen on a regular basis, so nurses do not get the opportunity to develop practical experience. This creates a gap between theory and practice (Christian & Krumwiede, 2013).

BACKGROUND

Simulation-based training is defined by the Institute of Medicine (2010) as *"The act of imitating a situation or a process through something analogous. Examples include using an actor to play a patient, a computerized mannequin to imitate the behavior of a patient, a computer program to imitate a case scenario, and an animation to mimic the spread of an infectious disease in a population."*

Simulation-based training has different classifications. The characteristics of two classifications, one based on the level of fidelity and the other based on the location of the simulation-based training, are further explained in table 1 and table 2 (Cooper, 2015; Lopreiato et al., 2016; Posner, Clark and Grant, 2017, Sørensen et al., 2017).

From the above-mentioned dynamics, concerning the experienced difficulties among nurses, the need for a different approach to lifelong learning arises that moves away from the traditional ways of passive training to an active way of education that focuses on high risk low incidence interventions and also contributes to the self-efficacy of nurses (Lucas, 2014).

In healthcare education, simulation-based training fulfills those needs. It is a specific educational strategy designed to represent actual or potential situations in healthcare. Simulation-based training allows caregivers to analyze and respond to realistic simulated situations without putting human patients at risk (Pilcher et al., 2012). The purpose of simulation-based training is to reduce the gap between theory and practice (Lucas, 2014).

In previous research, high-fidelity simulation-based training has shown a significant increase in self-efficacy among nurses and midwives (Boyde et al., 2018; Crowe et al., 2018; Fernando et al., 2017). Moreover, simulation-based training contributes to optimizing technical nursing skills (Cooper, 2015; Hegland, Aarlie, Stromme, & Jamtvedt, 2017; Warren, Luctkar-Flude, Godfrey, & Lukewich, 2016). Lastly, simulation-based training shows to have a positive effect on leadership qualities (Cooper, 2015; Ryan et al., 2018; Watters et al., 2015).

The patient population in a NICU, containing premature and ill neonates, is extremely vulnerable and is often exposed to intensive care for longer periods of time (Profit et al., 2012). Due to the dynamics and high technological character of this unit, simulation-based training appears to be a suitable way to anticipate acute and complex patient deterioration in a safe learning environment.

Because the organization and coordination of this educational strategy takes time, energy and financial resources, it is important that the simulation training contributes to the knowledge and skills that caregivers adopt on a daily basis. For this reason, there is a need for proper evaluation, resulting in the following research questions which were addressed in this study:

1. Do repeated simulation-based training sessions in the neonatal intensive care unit have a positive impact on team performance in acute situations among caregivers?
2. Do repeated simulation-based training sessions in the neonatal intensive care unit have a positive impact on self-efficacy in acute situations among caregivers?
3. Do repeated simulation-based training sessions in the NICU have a positive impact on self-perceived leadership qualities in acute situations among caregivers?

METHODS

Research design

A pre and post design was conducted to study the effect of the intervention on the level of self-efficacy and self-perceived leadership qualities. The effect of the intervention on team performance was studied in a time-series design.

Setting and sample

The study took place in a referral NICU-center in Flanders, Belgium. A team of caregivers, consisting of 77 registered nurses and midwives, was invited to participate in the study. Informed consent was obtained from 71 participants. Participants were divided into eleven groups of approximately 6 individuals (range between 4 and 7). Stratification on the variable “experience” was applied to constitute the groups. A random proportional selection out of different strata took place to obtain a representative composition of each group, in which a third of the caregivers had less than five years of experience in a NICU and two thirds had five or more years of experience in a NICU. This composition reflects the reality during a shift in this NICU.

Intervention

The schedule of the simulation sessions was communicated to the team by e-mail. The two-hour simulation sessions took place when the caregivers were not scheduled to work a shift. The participants had not been informed about the content of the simulation sessions in advance. An outline of the simulation sessions is given in figure 1.

The developed scenarios had a similar level of difficulty which enabled to observe the evolution of participants throughout the repeated training sessions. These levels of difficulty revolved around so-called B-problems, which are complications with their origin in the mechanism of breathing and turned out to be the cause of deterioration of the simulator in each scenario. The European Resuscitation Council (2015) differentiates A-, B- and C-problems. A-problems are complications that are rooted in the airway, B-problems are complications rooted in the mechanism of breathing and C-problems have a cardiac or circulatory cause. For each of the developed scenarios, the cause of deterioration was a B-problem. This is a deliberate decision because respiratory complications and interventions represent the majority of activities in a NICU. This is caused by the physiopathology of premature and term neonates (Donn & Sinha, 2017). The first scenario addressed respiratory deterioration as a result of

necrotizing enterocolitis with the need for intubation. During the second scenario, a LISA-procedure (less invasive surfactant administration) was performed in response to respiratory distress syndrome resulting in an increasing need for oxygen administration. In the final scenario of the study, a chest drainage intervention was needed to treat a pneumothorax.

Data collection

To measure team performance, checklists were used for each scenario, which were drawn up in collaboration with the responsible NICU nurse educator and the neonatologists. The checklists were approved in consensus with six neonatologists of the NICU and contained necessary clinical actions to avoid additional risk during the complication. An example of such a clinical action is checking the medical equipment at the start of each scenario. While forgetting these actions is not necessarily life-threatening, they can easily avoid additional risks. The actions during the sessions were rated dichotomously by the researcher by means of the checklist. Correctly performed items were scored as 1, incorrectly or unperformed actions were scored as 0.

To measure the variable “self-efficacy”, the clinical decision-making self-confidence scale (CDMSCS) was used. This scale is validated by Hart, Spiva and Marengo (2014). The scale measures nurses’ self-efficacy in handling acute patient deterioration events. The items in the scale reflect four dimensions, i.e. the accurate recognition of changes in the condition of the high-risk patient (1), the assessment of those changes in condition (2), identifying basic nursing interventions for the current condition (3), and the evaluation of the effectiveness of the intervention for the current condition (4). The scale consists of 12 items with a 5-point Likert-type response format.

Despite the items “chest pain”, “shortness of breath”, and “mental status change” not being applicable in the NICU-population, the CDMSCS still allows the possibility of measuring self-efficacy of caregivers in acute situations in a NICU. Therefore, changes have been made to the scale in collaboration with an expert panel consisting of six neonatologists, specifically to address the above-mentioned items. The purpose of these changes was to keep the items within the category of the regarding organ system (cardiovascular, respiratory, and neurological) but to transform them into items that are relevant for a NICU setting. The four dimensions in the scale remained unchanged.

To measure leadership qualities, the clinical deterioration leadership ability scale (CDLAS) was used. The scale was validated by Hart, Spiva and Mareno (2016). The scale consists of eight items with a 5-point Likert-type response format.

Both scales have a good construct validity (inter-item correlations are respectively varying between 0.36-0.85 and 0.52-0.82) and a good reliability (Cronbach's alpha respectively 0.95 and 0.94) (Hart, Spiva and Mareno, 2014, 2016).

Study procedures

After obtaining informed consent, participants were assigned into eleven groups of approximately six caregivers. At the start of the first scenario, the pretest for self-efficacy and self-perceived leadership qualities took place. Subsequently, each group went through three simulation-based training sessions in the period between October 2018 and June 2019. Each scenario was videotaped. Afterwards, an assessment of team performance was made based on the content of these tapes. Two scenarios were performed eleven times ($n=11$). One scenario, the last one, was performed nine times ($n=9$) due to a drop-out of participants. One simulation session of the second scenario was excluded because it had not taken place according to the study design. In total, eight pairs of three were made for analysis ($n=8$). The posttest for self-efficacy and self-perceived leadership took place after the third simulation was completed.

Data analysis

The assessment of the determinant "team performance" was completed by a member of the research group. A dichotomous scoring-system was used. The actions were dummy-coded. A correctly performed action was scored as 1, an incorrectly or unperformed action was scored as 0. The items defined as critical contributors of success were respectively allocated with a higher weight of ± 0.25 , ± 0.25 and ± 1 on the initial dummy-coding, because of their life-threatening implications. The group scores of team performance were compared non-parametrically across the three measures using a Friedman test. A one-tailed p-value less than or equal to 0.05 was considered significant.

Both variables, "self-efficacy" and "leadership", were analyzed as continuous variables in which each item could be scored from one up to and including five. Subsequently, the mean of these items was calculated as the final result. The response rate for the checklists concerning the self-perceived level of self-efficacy and self-perceived

leadership qualities on the pretest, posttest and both was respectively 86%, 73% and 66% as compared to the received informed consents. A normal distribution was obtained. Parametrically testing by a paired t-test was performed to compare the results of the pretest with the results of the posttest. Thereupon the means of the four items of the CDMSCS regarding to B-problems were compared in a particular paired t-test, since the complications in the developed scenarios were exclusively originated in B-problems. The instruments of the pretest were linked to the posttest with an anonymized code. Lastly, two between-subject factors were added to a repeated measures ANOVA as an extension to the paired t-tests. The first factor is “experience” (in years) in this NICU and the second one is the amount of attended simulation sessions during the study period. Therefore, the influence of the two between-subject factors on the final result was tested. The data was analyzed with IBM Software Statistical Package for Social Sciences (SPSS) 24.0.

RESULTS

Demographic characteristics of the sample

The sample consisted of 71 caregivers. 44.3% of the participants were less than 30 years old. 8.2% were older than 50. 44.3% had less than five years of experience in this NICU, of which 19.7% had less than two years of experience. Approximately 40% of the participants had eleven or more years of experience in this NICU. Four of the participants were male, 67 of them were female.

Team performance

Team performance did not significantly change over the course of the study with a median score of 0.77 at the first measurement and a median score of 0.72 at the third measurement (table 3).

Self-efficacy in acute situations

A statistically significant positive evolution in self-efficacy from the pretest towards the posttest was found ($t(47) = 4.494$, $p < 0.001$). The results of the test are outlined in table 4.

In addition, the effect of self-efficacy concerning respiratory insufficiency was analyzed separately with the four items of the scale covering respiratory insufficiency. A statistically significant positive evolution in self-efficacy from the pretest towards the

posttest was found ($t(47) = 4.402, p < 0.001$). The results of the test are outlined in table 5.

Additional analyses took place to investigate whether the increase in self-efficacy was different for caregivers who attended one or two scenarios and caregivers who attended all three of the scenarios (table 6). A trend towards a significant interaction-effect was found between “time of measurement” and “amount of attended scenarios” ($F=3.441, p=0.072$). This means that the positive effect of simulation-based training from the pretest towards the posttest seems to depend on the amount of attended scenarios. More specifically the increase in self-efficacy from pretest towards posttest seems to be higher when attending more simulation-based training sessions.

Similar to the analyses mentioned above, the difference in increase in self-efficacy was researched between caregivers with five years or less experience in this NICU in comparison with caregivers with six years or more experience in this NICU (table 7). No statistically significant interaction-effect between “time of measurement” and “experience” could be found ($F=0.189, p=0.66$), although a significant main effect of experience on the self-efficacy of caregivers was found ($F=7.383, p < 0.01$).

Self-perceived leadership qualities in acute situations

A statistically significant positive evolution in self-perceived leadership abilities from pretest towards posttest was found ($t(47) = 3.846, p < 0.001$). The results of the test are outlined in table 8.

In addition, further analyses took place to research whether the increase in self-perceived leadership abilities was different for caregivers who attended one or two scenarios and caregivers who attended all three of the scenarios (table 9). A trend towards a significant interaction-effect was found between “time of measurement” and “amount of attended scenarios” ($F=3.296, p=0.076$). This means that the positive effect of simulation-based training on self-perceived leadership abilities from the pretest towards the posttest seems to depend on the amount of attended scenarios. More specifically the increase in self-perceived leadership abilities from pretest towards posttest seems to be higher when attending more simulation-based training sessions.

Similar to the analyses mentioned above, the difference in increase in self-perceived leadership abilities was researched between caregivers with five years or less

experience in this NICU in comparison with caregivers with six years or more experience in this NICU (table 10). No statistically significant interaction-effect between “time of measurement” and “experience” could be found ($F= 2.868$, $p= 0.97$), although a significant main effect of experience on the self-perceived leadership abilities of caregivers was found ($F= 2.894$, $p = 0.096$).

DISCUSSION

The aim of this study was to investigate the effectiveness of repeated high-fidelity in situ simulation-based training in a NICU in Belgium. Three variables were predetermined, e.g. self-efficacy, self-perceived leadership abilities and team performance. This study shows the positive effect of simulation-based training as currently organized in this NICU on self-efficacy and self-perceived leadership abilities among registered nurses and midwives during acute situations. Furthermore, the frequency of the simulation-based training sessions is positively correlated with an increase in self-efficacy and self-perceived leadership. Finally, experience of caregivers has shown no correlation with a higher level of self-efficacy and self-perceived leadership abilities as a result of simulation-based training. Thus, simulation-based training appears to be useful to all caregivers of the NICU, regardless of their experience.

In this discussion, the influence of the applied variables on the actual caregiving will be discussed firstly, followed by methodological strengths and constraints.

Impact on the actual caregiving

Since simulation-based training appears to be effective in increasing the self-efficacy and self-perceived leadership abilities of caregivers, the question arises if this increase of both variables has implications for better actual caregiving. Team performance was measured throughout the three scenarios, although no significant effect on this determinant could be found. It is likely that this result is partially due to the relatively small sample size. From this perspective, no relation between these two variables can be suggested, although larger studies exploring a relationship between self-perceived leadership abilities and self-efficacy on the one hand, and better actual caregiving on the other hand could recognize this hypothesis.

Within the scope of this study, the evolution in self-efficacy, self-perceived leadership abilities and team performance throughout the simulation-based training sessions was

studied, but not the influence of simulation-based training sessions on the actual caregiving. Team performance was used as an indicator for the influence on the actual caregiving, although there is no evidence of the extent to which this indicator is valid. This offers implications for further research whether team performance during simulation-based training is a valid indicator for the actual caregiving when previously simulated complications take place.

The frequency of the simulation-based training sessions probably influences the higher level of self-efficacy, although this is only a hypothesis. To be able to prove that a higher frequency induces better results in self-efficacy, further research is recommended, and preferably in an experimental design in which the study groups are exposed to a different amount of simulation-based training sessions with an equal level of difficulty.

Because of the considerable difference in the interaction effect of the frequency of the attended simulation-based training sessions which already shows a trend towards significance in a small sample size, it can be assumed that the other interaction effect, experience, does not influence the degree in which self-efficacy during simulation-based training increases. This is a clear indication that simulation-based training is useful for the entire team of caregivers, regardless of their experience. Further data about possible ceiling effects on the variables “frequency of attended simulation-based training sessions” and “experience” are lacking.

Methodological considerations

To attain a sufficient level of internal validity, validated questionnaires were used to measure self-efficacy and self-perceived leadership abilities. The questionnaires were, for the purpose of this study, translated into Dutch and adapted to a NICU-setting and approved by an expert panel consisting of six neonatologists. The assessments for team performance were first developed along with a neonatologist and approved by the same expert panel. However, the translation did not occur based on a forwards and backwards translation. Since validation happened through a selection of the suitable experts, no influence on the outcomes was expected.

The team composition was planned to be identical throughout the study. However, some changes were accepted if clinicians were not available. The majority of the team compositions did not change at all. Data about differences in team composition were

not collected. As differences in group compositions were rare, we do not assume that this impacted the results/outcomes of this study.

Each session was videotaped and upon completion analysed for team performance by a researcher who is also a member of the team in this NICU, which entails potential observer bias. However, the risk was restricted to an absolute minimum by developing unambiguous items to assess team performance on the one hand, and, when unclear, to consult the facilitator of the corresponding simulation-based training session on the other hand. Furthermore, using videotapes was a deliberate decision, because being present during the simulation-based training session could probably induce a certain level of obtrusiveness as well as a higher Hawthorne effect among the participants.

The commitment to participate and the response rate in this study were remarkably high, which could be considered as a strength. This is probably due to the professional relationship between the researcher and the participants, regardless of clearly emphasizing the voluntary participation in this study. No incentives were given during the recruitment and throughout the study process. The gradually decreasing response rate for the post-test and the lower amount of the last simulation-based training session is multifactorial and is probably partially caused by organizational factors during the study period, although a manifestation of drop-out was noted as well as a result of a lower level of motivation of the participants. The underlying dynamics of this tendency were not further investigated. Even so, out of the positive results concerning self-efficacy and self-perceived leadership abilities, organizing simulation-based training sessions as an obligatory type of continuous education in this NICU is recommended.

Finally, this study mainly focused on the scenario of the simulation-based training itself. Due to limited time, resources and feasibility, debriefing was not considered, although information of the previous debriefing could possibly affect the further development of the following simulation-based training. This is considered a limitation of the study because of the lack of clarity concerning how the highest learning effect could be achieved. Debriefing took place upon completion of each scenario, the implementation of which was subject to the participants' questions. No flowchart or formal strategy for the debriefing was used. This forms a risk of bias. Previous research has shown that debriefing entails a certain level of learning effect (Coppens, Verhaeghe, Van Hecke, & Beeckman, 2018; Palaganas, Fey, & Simon, 2016). During the data collection period, the NICU nurse educator explained certain complications and outlined the necessary

interventions that should occur during such complications. During some of the debriefings a neonatologist was present to further explain the theory on the one hand, and the expectations of the neonatologists towards the nurses and midwives during such complications on the other hand.

CONCLUSIONS

Repeated high-fidelity in situ simulation-based training in the NICU had a positive effect on self-efficacy and self-perceived leadership abilities for registered nurses and midwives in acute care situations. Repeated participation in simulation-based training had a positive effect on these outcomes, regardless of the number of years of NICU experience. The effect on team performance could not be confirmed in this study.

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ETHICAL APPROVAL

Ethics committee approval of Ghent University was obtained on September 6th, 2018 (Belgian registration number: BC70201837140).

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DECLARATION OF COMPETING INTEREST

None.

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Figure 1: General outline of a simulation session

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Table 1. Level of fidelity

Level of fidelity	
This level is characterized by a certain place on the continuum from low to high fidelity.	
Low fidelity simulation training	<ul style="list-style-type: none"> • Low level of interactivity; • Limited realistic character.
High fidelity simulation training	<ul style="list-style-type: none"> • Interactive; • Realistic; • Requires active participation of the caregiver during the scenario; • Usually by means of a high-fidelity simulator. <ul style="list-style-type: none"> ◦ This is a mannequin that is virtually controlled by commands (clinical signs and vitals) by the facilitator;

Table 2. Location of simulation training

Location of the simulation training	
Off site	<ul style="list-style-type: none"> • Simulation takes place at another location than the actual care setting.
In situ	<ul style="list-style-type: none"> • Simulation takes place in the actual care setting; • Coordination in this setting is a challenge; • Contributes to the physical and contextual reality of the scenarios.

Table 3. Medians and interquartile ranges of team performance per scenario

Team performance	Median	IQR
Scenario 1	0.77	[0.66;0.91]
Scenario 2	0.72	[0.63;0.80]
Scenario 3	0.72	[0.69;0.74]

Table 4. Self-perceived self-efficacy from pretest vs. posttest

Self-perceived self-efficacy	Mean	SD	t-statistic
Pretest	39.51	5.59	
Posttest	43.06	6.78	
			4.494

Table 5. Self-perceived self-efficacy for respiratory items from pretest vs. posttest

Self-perceived self-efficacy (respiratory)	Mean	SD	t-statistic
Pretest	14.66	2.08	
Posttest	16.02	2.21	
			4.402

Table 6. Self-perceived self-efficacy: time of measurement X amount of attended scenarios

Self-perceived self-efficacy				
Time of measurement		$F = 3,422$	$P = 0,072$	
x amount of attended scenarios				
		Mean	SD	95% CI
Pretest	< 3 attended scenarios	37.62	6.19	[34.49, 40.74]
	3 attended scenarios	40.21	5.34	[38.25, 42.17]
Posttest	<3 attended scenarios	39.00	10.03	[35.41, 42.56]
	3 attended scenarios	44.79	4.24	[42.554, 47.02]

Table 7. Self-perceived self-efficacy: time of measurement X years of experience

Self-perceived self-efficacy		
Time of measurement x years of experience	$F = 0.189$	$P = 0.666$
Years of experience	$F = 7.383$	$P = 0.009$

Table 8. Self-perceived leadership qualities from pretest vs. posttest

Leadership	Mean	SD	t-statistic
Pretest	29.60	3.79	3.846
Posttest	31.70	4.64	

Table 9. Self-perceived leadership qualities: time of measurement X amount of attended scenarios

Self-perceived leadership qualities				
Time of measurement x amount of attended scenarios		$F = 2.296$	$P = 0.076$	
		<i>Mean</i>	<i>SD</i>	<i>95% CI</i>
Pretest	< 3 attended scenarios	28.46	3.53	[26.48, 30.44]
	3 attended scenarios	30.30	3.56	[29.06, 31.55]
Posttest	<3 attended scenarios	28.92	5.88	[26.51, 31.33]
	3 attended scenarios	32.94	3.55	[31.43, 34.45]

Table 10. Self-perceived leadership qualities: time of measurement X experience

Self-perceived leadership qualities		
Time of measurement x years of experience	$F = 2.868$	$P = 0.97$
Years of experience	$F = 2.894$	$P = 0.096$

Author contributions (according to CrediT author statement)	
Gudrun Maenhout	Conceptualization, methodology, formal analysis, investigation, resources, data curation, writing -original draft, visualization.
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Highlights

- Simulation-based training has the potential to increase the sense of self-efficacy and self-perceived leadership abilities of neonatal nurses and midwives.
- The frequency of simulation-based training is positively correlated with sense of self-efficacy and self-perceived leadership qualities of neonatal nurses and midwives.
- The experience of caregivers shows no association with the increase in self-perceived level of self-efficacy and self-perceived leadership qualities. Thus, regardless their experience, simulation-based training is useful for caregivers in the neonatal intensive care unit.

Phase 1: Preparation and explanation

- ☐ Arrival of the participants in a neonatal box where the simulator is installed based on a prescription of a physician;
- ☐ Informing the participants about the current condition of the patient (hand-over);
- ☐ Participants receive nursing file and prescription.
- ☐ *Explanation*
 - ☐ Participants need to act as they do by the start of their shift;
 - ☐ Decision of the role of primary nurse/midwife during the scenario;
 - ☐ Other participants observe;
 - ☐ Other participants can be involved when the primary nurse/midwife calls for help.

Phase 2: The scenario

- ☐ Exploration and check-up of the medical equipment and the current condition of the patient;
- ☐ Complication arises;
- ☐ Detection of the problem by the participant;
- ☐ Participant calls for help of a colleague;
- ☐ Nursing intervention to solve the problem seems to be insufficient;
- ☐ Occasionally, a third colleague is called for help;
- ☐ Physician gets called by one of the participants;
- ☐ Physician diagnoses and gives orders to the participants;
- ☐ Participants act upon the orders. If necessary, another participant gets involved for extra help;
- ☐ Patient stabilises.

Phase 3: Debriefing

- ☐ Review of the progress of the scenario;
- ☐ Discussion about the mutual expectations of the role of the nurse/midwife and the physician;
- ☐ Theoretical background of the occurred complication.

Figure 1