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The Effect of Simulation on Skill Performance: A Need for Change in Pediatric Nursing Education

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Background: This study sought to determine if student's performance of safety skills improved following a simulated educational experience.
Methods: Further analysis of data from a quasi-experimental design (n = 73) was examined to identify if student's skill performance improved following a simulated educational intervention.
Results: Students did show an improvement in skill performance, but even after the intervention over half the students did not assess patient identification, over half did not administer medications safely, and students struggled with communicating nursing recommendations.
Conclusion: Further research needs to focus on skill performance and assessing students' ability to provide safe nursing care.

PATIENT SAFETY IS a continuing concern in health care. In 2000, the Institute of Medicine (IOM) Report identified that more individuals died from medical errors in 1 year than from car accidents (IOM, 2000). James (2013) estimated that "approximately 440,000 preventable adverse events contribute to the death of patients each year" from care they received in the hospital (p. 6). Some of these preventable adverse events are medication errors, lack of patient identification, and miscommunication between health care providers. To improve the care of patients, it is imperative that nursing education begin to focus on educating nurses on providing safe care to their patients and preventing these adverse events.

To help identify the changes that should be occurring to nursing education in the area of patient safety, the Robert Wood Johnson Foundation funded the Quality and Safety Education of Nurses (QSEN) (Cronenwett et al., 2007). The Advisory Board for QSEN adopted the recommendations from the IOM to address six key areas: patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. QSEN has developed working definitions and the required knowledge, skills, and attitudes that a graduating new nurse and a practicing nurse should have related to these areas (Cronenwett et al., 2007). Safety is defined as "minimize risk of harm to patient and providers through both system effectiveness and individual performance" (Cronenwett et al., 2007, p. 128). To improve patient safety and ultimately patient outcomes, midlevel and low level simulation experiences that include QSEN skills can be incorporated into nursing courses allowing for the integration of classroom and clinical teaching. The purpose of this study was to identify if students' skill performance improved after midlevel fidelity simulations and paper/pencil case studies in the areas of patient identification, medication administration, and communicating using SBAR (situation, background, assessment, and recommendation).

Literature Review

Nursing faculty believes that the patient simulator can be used as a teaching strategy to promote safe patient care and enhance patient outcomes, but there is limited research in the area of patient simulation and students' skill performance. A literature search was conducted to identify evidence related to

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educational interventions that promote students' skill performance in the areas of patient safety. The CINAHL database, PubMed, and Google Scholar were used to search for articles using the search terms: nursing skills or clinical competence, SBAR, patient identification, and drug administration. The initial search returned 131 articles. Of these, eight articles were included in the review as they reported relevant evidence of an educational intervention using simulation to enhance students' skill performance. One article on frequency of medication errors was also included to provide information regarding the frequency of medication errors by nursing students.

Four studies compared the effects of high-fidelity simulation versus low-fidelity simulation on students' skill performance with only half the studies showing a significant difference between the two groups (Ackermann, 2009; Schwartz, Fernandez, Kouyoumjian, Jones, & Compton, 2007; Steadman et al., 2006; Wenk et al., 2009). Ackermann compared the two educational interventions of cardiopulmonary simulation using the human patient simulation (high-fidelity simulation) plus standard American Heart Association (AHA) CPR for adults review versus just the standard AHA education on skill performance in junior level nursing students. Skill performance was measured immediately following the educational experience (acquisition) and 3 months after the educational experience (retention). Ackermann reported a statistically significant increase in acquired skills ($p = .000$) and retention of skills ($p = .000$) for the group who received simulation training in addition to the standard education. Steadman et al. compared problem-based learning to high-fidelity simulation in fourth year medical students and reported a statistically significant difference between the simulation and problem-based learning group in the mean change score (difference between pretest and posttest) ($p = .04$).

Wenk et al. (2009) evaluated medical student's skill performance between a group of students taught with the human patient simulator and a group taught through problem-based group discussion and found no statistically significant difference ($p > .05$). Wenk et al. did have a small sample size ($N = 32$) which may have resulted in not finding statistically significant results. Schwartz et al. (2007) evaluated the effect of simulation training versus case-based learning in fourth year medical students. Schwartz et al. reported no statistically significant difference between the two groups (MANOVA; Hotelling's T^2 [3, 98] = .053, $p = .164$).

The literature supports that nursing students frequently do not assess patient identification prior to medication administration. Gantt and Web-Corbett (2010) and Cazzell and Howe (2012) both identified that at least 25% of the time, students did not assess patient identification prior to medication administration. Gantt and Web-Corbett reviewed evaluation data collected during simulations of senior nursing students. The simulations focused on student competency in the areas of blood administration, tracheostomy suction, and intravenous therapy with patient identification imbedded throughout the simulations. Following the initial results, changes were made to the course and patient safety issues of proper identification were again reviewed with the senior level students. Following the further education and reemphasize of proper patient identification, 22% of the students continued to omit patient identification ($n = 102$) (Gantt & Web-Corbett, 2010).

The current literature further supports that nursing students frequently commit medication errors by not following the five rights of medication administration. The five rights of medication administration include the right medication, right dose, right time, right route, and right patient. Harding and Petrick (2008) conducted a 3-year retrospective review of 77 medication errors committed by nursing students in a 4-year nursing program, which admits 32 students a year. Of the 77 medication errors, 66% were identified as having violated one of the rights of medication administration. The other 34% of medication errors were error of omission (medication not given). Henneman et al. (2010) found that 100% of senior nursing students ($N = 50$) committed at least one medication error when independently caring for a simulated patient. The most frequent error committed was patient identification (Henneman et al., 2010).

Campbell (2013) conducted a quasi-experimental quality improvement project to identify if students who received four 90-minute high fidelity simulation exercises ($n = 15$) had a higher level of skill performance in the areas of patient identification and medication administration when compared to students who just received the traditional clinical experience ($n = 12$). No significant difference was found between the two groups and no significant increase in performance was found following the simulation experiences (Campbell, 2013).

The literature supports that even though students have been taught and at some point in time have demonstrated safe and effective care, nursing students will still not provide safe and effective care to patients, either real or simulated. Further research is needed to identify whether simulation is an effective teaching strategy for students that will result in students independently providing safe and effective care to a simulated patient. In nursing, simulations that lead to learning include low fidelity simulation (static mannequins, task trainers, and paper/pencil case studies) midlevel fidelity simulation (have some features that mimic reality), and high fidelity simulation (sophisticated, computerized mannequin that mimics a real live patient) (Meakim et al., 2013).

Methods

This paper focuses on skill performance findings associated with data from a larger study (Bowling, 2011). The complete study included data collected during a nonequivalent control group pretest posttest design comparing two education interventions, midlevel fidelity simulation and paper/pencil case study on student's knowledge, self-confidence, and skill performance. Four instruments were used to collect the data for the larger study: a demographic questionnaire, knowledge test, self-confidence in learning using simulations scale, and mini Objective Structured Clinical Examination (OSCE) to measure skill performance. The two educational

interventions that were used in the larger study are described below. This paper focuses on analysis of the data collected from the mini OSCE instrument.

The initial sample consisted of seventy-seven students enrolled in a pediatric nursing course at a Midwestern University during one quarter. Prior to beginning the study all students were notified of the educational interventions and the evaluation of the learning strategies. Students were also notified of the potential for the summary of the data to be presented to the larger nursing community. All students were required to participate in one of the two educational interventions and the evaluation of the interventions, all pass/fail course requirements. Any student unable to participate due to an excused absence was given a written make-up assignment. The students who missed any portion of the study were excluded from the study.

IRB approval was obtained for the study and confidentiality of students responses were maintained throughout the study. Study instruments only included the subject identification number and there was no master list of subject names. The IRB approved a waiver of informed consent since the informed consent would be the only record linking the subjects to the research.

Seventy-three students completed both the educational intervention and all study instruments during the evaluation process. The four students who did not complete the entire study either were absent on the day of the educational intervention or evaluation and were excluded from the data analysis. Of the total sample, 52% (n = 38) were 22 years of age and under, 30% (n = 22) were between the ages of 23 to 30 years and 18% (n = 13) were over the age of 31 years; 84% (n = 62) were female and 16% (n = 12) were male.

Further analysis of the data was conducted for the entire sample of 73 students to determine improvement in the student's performance on specific safety skills measured using the mini OSCE. These skills focused on safe patient care and included SBAR, patient identification, and safe medication administration.

Procedure

One of the major threats to internal validity in the study was the risk for diffusion of treatment. To decrease the risk of students discussing the educational interventions with students who were in the other group, students were randomly assigned by clinical groups into one of the two groups (midlevel fidelity simulation or paper/pencil case study). The procedure for data collection consisted of students completing the pretest mini OSCE during the first week of their pediatric clinical experience (orientation) and the posttest mini OSCE during the third week of the student's hospital experience. During the second week of hospital clinical experience, all students received an educational learning experience, paper/pencil case study (comparison group) or midlevel fidelity simulation (experimental group).

Experimental Group: Midlevel Fidelity Simulation Education

The midlevel fidelity simulation experience consisted of ten groups of three or four students participating in a simulation focusing on a pediatric patient in respiratory distress. The objectives of the simulation learning experience focused on the assessment of a hospitalized child with asthma, determine appropriate nursing interventions based on the assessment findings, and then to implement and evaluate the nursing interventions. The simulation scenario was developed and implemented using the NLN's Simulation Design Template (Childs, Sepples, & Chambers, 2007). Students actively provided the nursing care to the simulated patient. Each simulation experience lasted 30 minutes followed by 20 minutes for a planned group debriefing experience.

Comparison Group: Paper/Pencil Case Study Education

Students in the comparison group participated in a paper/pencil case study that also focused on caring for the pediatric patient in respiratory distress. The scenarios for the midlevel fidelity simulation and paper/pencil case study were identical. Students, working in nine groups of three, four, or five, had 30 minutes to complete the case study followed by a planned 20 minute debriefing session. The objectives of the simulation learning experience were similar to the midlevel fidelity simulation except students only identified what nursing interventions they would provide, they did not actively provide the nursing interventions and were not able to evaluate the effectiveness of their nursing interventions. The two debriefing sessions (midlevel fidelity and paper/pencil case study) covered similar content.

Instrument: Mini Objective Structured Clinical Examination (OSCE)

The mini OSCE provides an objective evaluation of student's ability to provide safe and therapeutic care to a simulated patient. In the original study, the mini OSCE consisted of 9 seven-minute stations with a 1-minute gap to allow students to rotate to the next station. Each station required the student to assess the simulated pediatric patient and then provide appropriate nursing interventions to the patient. This paper specifically focuses on data collected from four of these stations that focused on safe patient care interventions and required students to properly complete patient identification, safe medication administration, and SBAR communication of change in the patient's status to a physician. All of the patients in the scenarios were simulated using midlevel fidelity simulators and nursing clinical instructors served in the roles of parents and physician.

For the communicating with physician station, the student had previously assessed Michelle, a 3 month old infant who was admitted yesterday with bronchiolitis and respiratory syncytial virus. After assessing and treating Michelle's increased respiratory distress, the student was instructed to call the physician using SBAR and notify the physician of

Michelle's change in assessment findings and increase in oxygen requirements. The fluid bolus station consisted of a simulated patient, Keith, a 12-year old boy, who required the student to administer a fluid bolus of 500 ml of normal saline over 1 hour using an intravenous pump. Prior to administering the bolus, the student was to assess the patient's identification. The intravenous antibiotic administration station had the student administering an antibiotic to the simulated patient Keith, same patient as in the fluid bolus scenario, using a syringe pump. Again, the student needed to identify the patient prior to administering the antibiotic, ensure that the antibiotic was a safe dose, and explain to the patient why they were receiving the antibiotic. The last station was pain medication administration. The student was to assess the simulated patient, Mary, who is 5 years old and was admitted the day before for dehydration and pneumonia. She was complaining of chest and abdominal discomfort. The student needed to assess her pain and administer pain medication, but prior to administering pain medication, the student needed to identify the patient.

Patient Identification

Patient identification is a required component of safe medication administration. Patient identification was a required component of three of the mini OSCE stations with required identification of the patient prior to administration of a fluid bolus, an intravenous antibiotic, and a pain medication.

Safe Medication Administration

Safe medication administration consists of students assessing all medication for the five rights: right person, right medication, right time, right dose, and right route. Completion of the five rights was assessed on two of the mini OSCE stations prior to administering the antibiotic and the pain medication to the simulated patients. As part of clinical preparation, students are required to review all of their patient's medications, identify why their patient is receiving the medications, identify side-effects, and determine if the medication dosages are safe for their patient. Students are routinely required to complete this preparation prior to being allowed to administer medications to their patients.

Explaining the purpose of the medication was specifically measured during one mini OSCE station, antibiotic administration. The antibiotic was Ceftriaxone, which was the same antibiotic that had been used during the simulation experience the week prior to the post evaluation process. All student groups, both midlevel fidelity and paper/pencil case study groups, looked up this antibiotic and identified the safe range, what the antibiotic was routinely prescribed for, and how to administer the antibiotic. The midlevel fidelity simulation group administered the antibiotic during the simulation experience and the administration of this antibiotic was reviewed during the debriefing process for safe and proper medication administration, including the five rights of medication administration.

Situation, Background, Assessment, and Recommendation (SBAR)

As part of the educational experience during both the midlevel fidelity simulation and paper/pencil case study, SBAR was reviewed by all students. SBAR is an acronym that is used to communicate a change in status with another health care provider, in this case the physician (nursing clinical instructor). SBAR allows healthcare providers to communicate in a standardized format in order to provide safe care to patients and improve patient outcomes. SBAR is consistently being used in all the local hospitals where students participated in the clinical experiences and was taught to the students during their nursing skills course, 9 months before participating in this study. One student from each midlevel fidelity simulation group actively performed the skill and called the physician when a change in the patient's respiratory status (decreased oxygen saturation level) occurred indicating a need for respiratory treatments. During the mini OSCE students for one station were expected to call the pseudo physician (nursing faculty) and using SBAR, report a change in the status of a 3 month old infant's respiratory status (Table 1). Table 1 is the data collection instrument used to identify if students used SBAR appropriately. The total score for this station was 13 points with one point for calling physician, one point for history, two points for background, six points for assessment, and three points for response. Students received one point for each item they correctly reported to the physician.

Results

For the larger study, a repeated measures ANOVA was conducted to investigate skill performance differences between the two simulation groups. The results indicated a significant differences between the pretest and posttest for both groups [$F(1,71) = 156.3$, $p < .0001$] but no significant differences between the two groups [$F(1,71) = 2.718$, $p = .104$]. For this paper, the frequency of yes and no responses was reported for the safe patient care items on the OSCE. A yes score indicated that the student performed the specific item on the mini OSCE accurately and safely. A no response indicated that the student either performed the specific skill inaccurately or not at all. The results were analyzed for percentage of change, increase or decrease, between the pre OSCE and post OSCE for both groups.

Patient Identification

Patient identification did increase between the pretest and posttest mini OSCE with a higher increase for the midlevel fidelity group (37.9, 35.1, and 43.3%) than the paper/pencil case study group (11.1, 13.9, and decrease of 11.1%). Still, over half of the students (55.7%) did not assess the patient identification prior to administering the patient's medication (Table 2). All students in this study had previously administered medications in a local area hospital during their clinical experience. Also, during their nursing skills course, students did demonstrate during all their skills check offs the verification of the identity of the patient. A significant

Table 1 Station SBAR: communicate assessment findings with physician.

Steps	Performed	
	Yes	No
Assess respiratory status of infant		
1. Page physician 1 Point		
2. Explain to physician patient history: 3 month old infant admitted yesterday with bronchiolitis and RSV. 1 Point		
3. Explain background. Deep suctioned by respiratory herapist 2 hours ago and oxygen saturation level had been 95% on 1 liter per nasal cannula. 2 Points		
4. Explain current assessment: lungs have expiratory wheezes throughout lung fields even after suctioned with BBG. 2 Points		
5. Mild intercostal retractions and nasal flaring noted. 2 Points		
6. Capillary refill is 3 seconds and no color change noted. 2 Points		
7. Wanted to make you aware of the patient's increased oxygen requirement and see if a respiratory therapist could reassess the patient and possibly deep suction her again. 3 Points		
Total score out of 13 points		

Note. Set-up of the room: orders with number to call are on the bedside table outside patient's room with phone to call and have physician answer. Instructor answers call. SBAR (situation, background, assessment, and recommendation) hanging on wall across from phone. Scenario and instructions given to student: Michelle's oxygen level has increased to 93% on 2 L per nasal cannula but she still has an increased work of breathing and respiratory rate of 64. Notify the physician of Michelle's assessment findings.

time lapse occurred between these two previous nursing courses and the current nursing course: 9 months since the skill course and 4 months since the previous clinical experience.

Safe Medication Administration

During the post mini OSCE, half of the students (53.4%) did not administer the medication following the five-rights of administration and a third of the students (75.3%) did not state the purpose of the medication or how to administer it (Table 3). The medication should have been administered using a medication infusion pump over half an hour. Students instead administered the medication by IV push over 1 to 2 minutes. This lack of retention of knowledge is a surprising finding and causes the researcher to wonder if this lack of retention trend with students needs to be addressed. If so, identifying ways to increase the retention of medications that are routinely used when caring for pediatric patients is critical.

SBAR

Because this study was a pretest posttest design and students received an educational intervention, the expectation was that students would have an increase in their ability to correctly use SBAR between the pretest and the posttest. This increase did not occur and as a group, the overall scores for history (20.6%) and background (24.6%) decreased while assessment scores increased (15.8%) (Table 4). This finding was consistent within both groups as well as in the overall group findings. This variance may have been a result of the intervention as the educational experiences focused on nursing assessment and nursing interventions and not on discussing the patient history. The overall scores for the recommendation component of SBAR increased slightly (11.9%) between the pretest and the posttest with most of the change due to notifying the physician of the infant's increased oxygen requirement (43.9%) (Table 4). During the educational interventions, both the midlevel and the paper/pencil case study, students typically stated they would call the physician immediately after the patient's oxygen saturation level decreased to 88% on room air. Students wanted to call the physician prior to completing any further assessment or

Table 2 Patient identification.

Assess patient identification		Frequencies				%
		Pre OSCE		Post OSCE		Change
		Yes	No	Yes	No	↑ or ↓
Fluid bolus	Midlevel fidelity	7	30	21	16	↑ 37.9
	Paper/pencil	15	21	19	17	↑ 11.1
Antibiotic	Midlevel fidelity	2	35	15	22	↑ 35.1
	Paper/pencil	5	31	10	26	↑ 13.9
Pain medication	Midlevel fidelity	7	30	23	14	↑ 43.3
	Paper/pencil	13	23	9	27	↓ 11.1

Note. ↑ = increase in percentage between the pre OSCE and post OSCE; ↓ = decrease in percentage between the pre OSCE and post OSCE.

Table 3 Medication administration.

		Frequencies				%
		Pre OSCE		Post OSCE		Change
		Yes	No	Yes	No	↑ or ↓
Explain purpose of antibiotic	Midlevel fidelity	0	37	9	28	↑ 24.3
	Paper/pencil	2	34	9	27	↑ 19.4
Antibiotic—five rights	Midlevel fidelity	4	33	22	15	↑ 48.7
	Paper/pencil	6	30	23	13	↑ 47.2
Pain medication—five rights	Midlevel fidelity	4	33	15	22	↑ 29.7
	Paper/pencil	6	30	8	28	↑ 5.5

Note. ↑ = increase in percentage between the pre OSCE and post OSCE; ↓ = decrease in percentage between the pre OSCE and post OSCE.

performing any basic respiratory interventions, such as raising the head of the bed or applying oxygen.

Discussion

Patient Identification

The omission of assessing patient identification prior to medication administration is a safety concern. Assessing the patient identification should be part of the routine when administering medications. All students should have routinely assessed the patient's identification prior to administering any of the medications. Three explanations seem possible for the omission. First, students may not have considered the mini OSCE a real situation and did not perform as they normally would. A second potential explanation is that when students administer medications independently without the instructor present, they may forget to perform vital steps in the medication administration process. A third explanation is that students just have not had enough practice with medication

Table 4 SBAR (situation, background, assessment, and recommendation).

Item Focus		Frequencies				%
		Pre OSCE		Post OSCE		Change
		Yes	No	Yes	No	↑ or ↓
Situation—History	Midlevel fidelity	26	11	22	15	↓ 10.8
	Paper/pencil	25	11	14	22	↓ 30.5
Background—Deep suctioned	Midlevel fidelity	16	21	9	28	↓ 18.9
	Paper/pencil	15	21	8	28	↓ 19.5
Background—oxygen level	Midlevel fidelity	16	21	4	33	↓ 32.4
	Paper/pencil	12	24	2	34	↓ 26.8
Assessment—wheezes	Midlevel fidelity	14	23	19	18	↑ 13.6
	Paper/pencil	18	18	26	10	↑ 22.2
Assessment—wheezes after sx	Midlevel fidelity	2	35	7	30	↑ 13.5
	Paper/pencil	1	35	13	23	↑ 33.3
Assessment—retractions	Midlevel fidelity	0	37	9	28	↑ 24.3
	Paper/pencil	0	36	4	32	↑ 11.1
Assessment—nasal flaring	Midlevel fidelity	0	37	3	34	↑ 8.1
	Paper/pencil	0	36	0	36	No change
Assessment—capillary refill	Midlevel fidelity	4	33	13	24	↑ 24.3
	Paper/pencil	2	34	9	27	↑ 19.4
Assessment—color change	Midlevel fidelity	2	35	6	31	↑ 10.8
	Paper/pencil	0	36	3	33	↑ 8.3
Rec—increased oxygen	Midlevel fidelity	15	22	36	1	↑ 56.8
	Paper/pencil	21	15	32	4	↑ 30.6
Rec—respiratory to reassess	Midlevel fidelity	8	29	7	30	↓ 2.7
	Paper/pencil	11	25	13	23	↓ 5.6
Rec—respiratory to suction	Midlevel fidelity	6	31	3	34	↓ 8.1
	Paper/pencil	10	26	6	30	↓ 10.8

Note. ↑ = increase in percentage between the pre OSCE and post OSCE; ↓ = decrease in percentage between the pre OSCE and post OSCE.

administration to have the stage of patient identification become an automatic part of their medication administration process. In the future it is imperative to clarify during the debriefing process why students omit identifying their patient.

Safe Medication Administration

During the post evaluation mini OSCE, students did not routinely administer the medication following the five rights for medication administration. Students in both groups had limited previous exposure to the syringe pump with all students having been shown the syringe pump during their skills course. The syringe pump was available to all students to use to administer the antibiotic to the simulated patient during the pre mini OSCE, but most students were unclear on the pump's purpose. Students in the midlevel fidelity simulation group had their "true" first opportunity to administer an antibiotic using a syringe pump during their educational simulation. Students who were in the paper/pencil case study only discussed that the antibiotic would be administered over 30 minutes using a syringe pump. Students in the paper/pencil case study group were never shown, prior to the post mini OSCE, how to use the syringe pump. All students were shown how to use the pump after the completion of the research study.

The omission in administering the antibiotic correctly may have occurred because students held incorrect knowledge that medications in a syringe are always given IV push over a short period of time. Antibiotics that are administered to pediatric patients are typically administered in a syringe by a syringe pump. Some students did state that they gave the medication over 1 to 2 minutes because this is how they had seen nurses give medications that were in a syringe, pain medication and Lasix, in their previous medical/surgical clinical. For students to retain the correct information they had to identify that their current knowledge was flawed and correct their knowledge. To correct their knowledge they needed to understand that medication in a syringe can be given by either IV push or by using a syringe pump. When dealing with pediatric patients, antibiotics and other medications are routinely given using the syringe pump. Correcting inaccurate knowledge requires brain connections to have to be severed and new connections made which is a much harder process than just creating new knowledge (Zull, 2002). Since forming connections for new knowledge is easier, it is imperative that nurse educators ensure that during the initial assessment and skills courses, students develop an accurate understanding of how to safely administer medications to their patients including pediatric patients.

SBAR

During the simulation experiences, both groups of students reviewed SBAR with the experimental group actually calling the pseudo physician (nursing faculty). Student scores on the items that measured ability to use SBAR were expected to have increased between the pretest and posttest. Students' scores did not increase for all these items and as a group, the overall scores for history (20.6%) and background (24.6%) decreased while assessment scores increased (15.8%). These results may have been a result of the intervention as the educational simulation experience focused on nursing assessment and nursing interventions and not on discussing the patient history. Two specific limitations of the educational simulation were identified. During report, all students in both the midlevel fidelity simulation and the paper/pencil case study received a detailed patient history from the researcher, but students were never required to use or communicate any of the pertinent history findings. Students never received feedback during the preassessment mini OSCE as to what they had done well and what they had not done well.

For the recommendation step of SBAR, the overall scores increased slightly, 11.9%, with most of the change due to notifying the physician of the infant's increased oxygen requirement (43.9%). Physician notification was a nursing intervention that was either performed or reviewed during the simulation or case study experience. The simulation experience may have caused students to focus more on the assessment and intervention portion of SBAR than a complete communication pattern including the patient's history and making recommendations to the physician for care for the patient based on the assessment. Students did struggle with the recommendation aspect as they typically wanted to call the physician the minute the patient had an increase in oxygen requirement prior to performing any assessments or interventions. This rush to call the physician may be a result of the lack of experience that the students have in dealing with a patient in mild respiratory distress. Students need to have repeated exposures to situations wherein they must deal with a child in mild respiratory distress and then using SBAR to notify the physician to changes in the patient's status.

Implications for Nursing Education

Future research needs to focus on skill performance and assessing students' ability to independently provide safe nursing practice in a safe clinical setting. Students have been identified to have the knowledge on how to safely administer medications but still occasionally do not follow these rights. Future research is needed to identify the barriers that prevent students from providing safe patient care. Multi-site studies are needed to identify the educational strategies and level of fidelity that are necessary to ensure that students are independently providing safe real care to their patient.

Conclusion

The results of this focused analysis of the mini OSCE data indicate that students do not routinely provide safe care to the patient in the areas of patient identification, safe medication administration, and use of SBAR to communicate a change in patient status to the physician and these

findings are consistent with the literature. These findings point to the great need for students to be repeatedly exposed to simulated experiences that require the student to independently care for a patient and demonstrate the ability to provide safe care to the simulated patient.

Nursing education has shifted in the last 50 years to focus more on clinical reasoning skills and less on skill mastery. Health care facilities are consistently stating that new graduates are not well prepared to provide care to the patients in the healthcare facilities and require an extensive orientation to the role of the "registered nurse." A nursing education to practice gap currently exists in the nursing workforce. To decrease this gap, nursing education needs to again focus on students' mastery of nursing skills prior to focusing on mastery of clinical reasoning skills. This will facilitate new registered nurses being ready to practice.

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