



NCSBN
Leading Regulatory Excellence

Past Event: 2024 NCSBN Scientific Symposium - Simulation: Responding to a Critical and Urgent Need: Informing Evidence-based Regulation of Simulation in Prelicensure Registered Nursing Education Video Transcript

©2024 National Council of State Boards of Nursing, Inc.

Event

2024 NCSBN Scientific Symposium

More info: <https://www.ncsbn.org/past-event/2024-ncsbn-scientific-symposium>

Presenter

Katie Haerling, PhD, RN, CHSE, Graduate Program Coordinator/Professor, University of Washington Tacoma

- [Katie] Thank you for these previous two presentations. These have been really great, and kind of a good...obviously, great in their own right. But in the lead-up to this presentation, and some of the through lines that I wrote down are this idea of as-good-as simulation. We've had some evidence to suggest that simulations can be as good as traditional clinical.

And also how this investigation and this close look shining the spotlight on simulation has really started us asking some questions about how good is traditional clinical, and what's going on there? And then also just a focus on high-quality simulation.

I'll talk a little bit later about the regulation process that we're going through, but we know that the 2014 National Simulation Study focused on high-quality simulation. And somehow that little hyphenated descriptive somehow gets left out of the conversation sometimes. So I'm going to find my slide advancer somewhere.

Here we go. And get started. Okay. So this is me. And one of the things that I wanted to kind of highlight is just this kind of balancing act of being a professor in the School of Nursing and Healthcare Leadership, and also a Pro Tem Member of our board of nursing.

And kind of trying to be this expert witness that lends an expertise to the group, creating our new simulation regulations, but also an advocate for educators in simulation. So trying to remain neutral, but also bring the evidence. So in today's presentation, I am going to spend a little bit of time talking about some definitions, and history, and kind of how we got to this place.

And then talk about, obviously, the research aims, and methods, and results. And then some time in discussion and the regulatory implications. And normally, when we come to conferences, a lot of the research that we're hearing about is really hot off...it's not even off the press yet.

But the research that I'm going to be talking about actually was published in the January 2023 edition of the "Journal of Nursing Regulation." So I'm not going to go into all the data tables, and results, and analysis, and that type of thing, but really focus on kind of the big, big picture. So please feel free to ask me questions. I've got it right here.

If you need to know any of the details, I've got a lot of it in here also. But that's my plan. So this is the third presentation in hour and a half, but I am going to go over the definition of simulation. A technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions.

So a really holistic, all-encompassing definition of simulation. I think a lot of times we think about a computerized manikin in an acute care situation. But I'd like you to think a little bit more broadly about simulation in public health nursing environment, or in a non-acute environment, thinking about standardized patients, thinking about screen-based virtual simulations, thinking about a little bit more holistic definition of simulation than what we might immediately go to.

Or at least, I'll speak for myself, what I immediately go to when I think of simulation. And then currently, in our Washington Administrative Code 246-840-534 in 2016, we adopted reflecting the 2014 NCSBN national simulation study that up to 50% of a specific content area could...required clinical hours in that area could be replaced with simulation.

And there are some wording in there trying to sort evoke high-quality simulation. But that administrative code is about the use of simulation for clinical experiences in LPN, RN, RN to BSN nursing education programs in the state of Washington. We just have seen an increasing use of simulation for all the reasons that our previous presenters have talked about, limitations in clinical placement sites, limitations in what students can do when they are in those clinical placement sites, around medication administration, or very high acuity, or transmissible diseases, these types of things.

And in addition, oftentimes, when we think about the increasing use of simulation, we think about all of the gaps that it's filling, or all of the lacking characteristics of clinical placement sites.

But I also like to think about all of the great developments we've had in simulation. It's gotten a lot better. It's gotten a lot less expensive. People have figured out how to do things well. And so there's been a lot of advances in simulation that have also led to the increased use of simulation, really since the early 2000s. And then, obviously, we just saw an explosion in the use of simulation during the pandemic.

And specifically in the use of screen-based simulations when people were isolated to their homes, in front of their computers. And then there's publications really kind of in 2016, and this one that I've quoted here, Sullivan et al., 2019, is this emerging evidence towards saying that hours spent in simulation are more efficient, or more effective than time spent in traditional clinical.

And most of the regulations around simulation, when simulation is substituted for traditional clinical, it's at a one-to-one ratio, where one hour of simulation counts as one hour of required clinical time. And so this emerging evidence is suggesting that because the time spent in simulation is more efficient or more

effective than an hour spent in a simulated clinical environment could count as two hours of required clinical time.

So this emerging evidence towards what we're calling a one-to-two ratio has really gotten a lot of people thinking. And in fact, in our state there were temporary regulations during...or temporary rules during the COVID pandemic that schools who met certain criteria were allowed to count simulation at this one-to-two ratio.

And schools really want to keep doing that. And so anyway, there's a lot of conversation about this one-to-two ratio, counting one hour of simulation towards two hours of required clinical time. And then in 2023, Washington State passed or directed our board of nursing to create rules to allow nursing education programs to use one hour of simulation to count as two hours of required clinical time.

So I have been part of the group of people who have been trying to put that down on paper. There is a question in the back of the room about, "So how do you ensure high-quality simulation?" And I was like, "Go ahead and tell me. I'll write it down," because that's what we've been trying to do, is create rules that are both feasible, that will endure, but also that really encourage high-quality simulation.

So this is where we are. So the study that I did was really just to kind of get some evidence about this one-to-two simulation ratio. And so the first aim of the study was to assess the comparative effectiveness of three types of experiential learning activities, traditional clinical experience, manikin-based simulation, and screen-based simulation.

And so we were comparing the cognitive learning outcomes, the patient care performance outcomes, and the students' perceptions of how well each of these met their learning needs. And the kind of big reveal here is that they spent four... It was just a one-shot wonder. This wasn't across a whole course, or even a whole program.

But for this specific intervention, comparing four hours of traditional clinical time to two hours of manikin-based simulation, or two hours of screen-based virtual simulation. So this is where we're getting to the as-good-as thing. The four hours of traditional clinical didn't have to be better than two hours of traditional clinical or two hours of screen-based virtual simulation.

It just had to be as good as. And then the second aim was to examine how each type of experiential learning activity informed pre-licensure registered nursing students' clinical judgments. And then to conduct a cost-utility analysis because that's a huge part of this conversation. Simulation is just...at least manikin-based simulation is extremely expensive and resource-intensive. And screen-based simulation isn't quite as expensive or resource-intensive.

And from the school's perspective, traditional clinical experiences are quite affordable. But there are some costs that are shared by other entities for that experience to take place. So we started with program selection.

We asked all of the programs in Washington State who were eligible, who met some certain criteria in terms of NCLEX pass scores, and being approved by the board to volunteer, to be part of the study. Fifteen programs raised their hand, and said that they would be willing to do it.

And we selected five trying to represent urban, rural, associate degree, bachelor's degree, public, private. Selected five, four of them ended up actually being able to participate. One had to drop out just due to COVID.

And there are other things that were going on. So I have this map of Washington State here. It only shows three counties. Two of the programs are in the same county. But one thing that's very important to know is that there's a mountain range that goes right here. So this does represent urban and rural, even though they're all essentially touching.

And we also wanted to focus on... And again, since this was kind of a one-shot wonder, we're not doing across the whole course, let alone a whole program. We're doing literally one set of learning objectives. We wanted to focus on students who are in their first acute care clinical site or course.

And we focused on four specific learning objectives that we thought were complex enough that we could see changes or improvement in them, but also simple enough that you could address them in somebody's first clinical course. So our learning objectives were identify actual potential safety hazards in the patient environment, apply therapeutic communication with patients and families, demonstrate effective interprofessional communication using Esper, and demonstrate safe medication administration.

And again, similar to one of the other studies that was presented, we had this really well-controlled simulation environment for two of our arms. And then we had clinical. And we had no idea what was going to go on in clinical. We did, again, try to have learning objectives that can reasonably be addressed in first acute care, clinical. And also provided training for those clinical instructors to try to get some continuity around pre-briefing facilitation and debriefing across the screen-based virtual, the manikin-based simulation, and the traditional clinical experience.

So really trying to compare the times, and the modality that students were exposed to. So this is what the students did. We had our group of pre-licensure nursing students. And before going into their activity, they did a pre-test, just a cognitive knowledge pre-test of 20 questions for...I'm sorry, five, addressing each of those four learning objectives.

And then they were randomized to either do four hours of traditional clinical experience, two hours of screen-based simulation, or two hours of manikin-based simulation. And again, trying to keep as much control around the variables in terms of pre-briefing facilitation and debriefing, and really having that modality. And then, obviously, the time difference.

So the four hours of traditional clinical versus the two hours of each of the simulation. And then once they were done with those activities, they did a post-test knowledge exam. Again, different questions, but five addressing each of the four learning objectives. And then a patient care performance assessment.

So for this, students individually went in, and there was videotape so that somebody could assess it later, a standardized patient encounter where they took care of a patient. And each of these learning objectives were addressed. So we had a trained actor. They were videotaped. Students went in individually. And then we later on, a masked viewer, somebody who didn't know what group the student was in, rated those patient care performance using the Lasater Clinical Judgment Rubric, which has the four concepts of noticing, interpreting, responding, and reflecting.

And then the Creighton Competency Evaluation Instrument, which looks at patient safety, assessment, communication, and clinical judgment. And then this was all part of their coursework. So, of course, wanted to give everybody an equal shot at everything. So then after they had done those assessments, that was our outcome data primarily, all the students eventually did all of the activities.

Not on the same day. This happened over a course of several weeks. But everybody eventually got to do all of the activities. That makes the IRB really happy, and it's just the right thing to do. And then once they had done everything, then we did a survey where we asked them. So there's the Clinical Learning Environment Comparison Scale that we used, and students were able to go in, and assess how well they thought each environment...now that they'd experienced them all, how well each environment met their learning needs.

And then a subset of students also came in and did a cognitive task analysis interview, to get some ideas of how well each learning environment helped them become better clinical judgers... improve their clinical judgment.

Any questions about this? I feel like sometimes it makes perfect sense to me, but I've not explained it very well. [inaudible]. Yeah?

- [Male] What were you using for the performance assessment? The pre-test and post-test?

- Those were items that Elsevier gave us. And they were multiple choice items. Yep. Yeah?

- [Female] I have just one question about the manikin. Is it high fidelity, or just...

- They were high fidelity. Yep. Across the sites, I'm not sure if there was variability in exactly which model, but they were high fidelity. Yeah. Great. Okay, so our results. A lot more than 152 students did part of this study, but that's how many students did the whole darn thing, and that we actually were able to use the results for.

59.21% were the private institution, 88% in urban location, 59.21% were BSN, so obviously the corollary would be ADN. Forty-six percent had prior health care experience. Most had English as a first language.

Eighty-two percent were female, and the age range was kind of what you'd expect. In fact, I think that might be the exact number that we saw previously. I think 53 was the highest age that we saw in a previous slide. So this was our sample, and this is what we found. So the first aim to assess the comparative effectiveness of the three types of experiential learning activities, measuring cognitive learning, patient care performance outcomes of students who participated in either four hours of traditional clinical, two hours of manikin-based simulation, or two hours of screen-based simulation.

So we've got pre-test, post-test. There was no difference between the groups. So again, as good as. We're not looking for significant improvement. And then with the patient care performance outcomes. So this is supposed to represent the little video camera with their standardized patient encounter.

I'm having fun with Microsoft icons. There were no significant differences between the students who participated in the four hours of traditional clinical, two hours of manikin-based simulation, or two hours of screen-based virtual simulation. I said that wrong.

The students who participated in the virtual or manikin-based simulation did as well or significantly better, depending on which item we're looking at, than the students in the four hours of traditional clinical. The one thing that...and this has been important for the regulatory conversation, is the students in the screen-based virtual simulation did not perform as well in the area of patient safety.

So that is one thing that has kind of come up again and again, when we tried to say what can be counted using this one-to-two ratio to replace traditional clinical. And then the second aim.

Examine how each type of experiential activity informs nursing students' clinical judgments. So again, this Clinical Learning Environment Comparison Survey is where the students look at after they've done all the activities. So again, first outcome data is all from after they've only done one of the activities. But then after they've done all of the activities, they were able to tell us how well they thought that each of the learning activities met their learning needs.

And the way I like to describe the results from this piece is that the grass is always greener on the other side. So students who did clinical first thought that the manikin-based simulation was significantly better. Students who did the manikin-based simulation thought that traditional clinical met their learning needs better.

And nobody really preferred the screen-based virtual simulation. And then the cognitive task analysis interview. This just got some themes out. What is it? What is it about the each of the learning environments that you thought was better or worse? And I've got a couple of quotes that I wanted to share with you. The first theme was around the advantages of simulation.

And one of the students said, "Simulations are more..." Or one of the themes is that simulations are more active than traditional clinical. So a student said, "When you're in simulation, you're constantly doing something. We were constantly debriefing on what we could do better." And then another advantage was that clinical is less focused and has more wait time.

So an example of a quote was, "I feel that I learned most about the nurses and their daily routine in their shift, but I don't feel like I am learning a lot about clinical judgment, or how they make their choices for their patients." And then the second kind of overarching thing was the simulation had some disadvantages. And so one of the quotes that a student said, "It's always better to have something that's real. Anything that can give you those initial clues. With a manikin, you can only do so much, but then you're trusting that the scenario runs some other way to make up for the nonverbal cues that you miss."

And I thought, "Well, I don't think I could say it better myself." That's exactly the advantages and disadvantages of the simulations, at least that they did as part of this study. And I should say that the screen-based virtual simulations were open source ones that are available online, where there's live action, and then you pick kind of a branching scenario of what will happen next.

And then the third aim was to conduct the cost utility analysis, comparing the three types of experiential activities. And this kind of inverted triangle here is just... Manikin-based simulation is super expensive. And even though it was shown to be as effective, or by some measures, more effective than the traditional clinical, the costs completely obliterated that in terms of the cost utility.

And then the screen-based simulation is less expensive, but also a little bit less effective than the manikin-based simulation. And then clinical is quite affordable from the perspective of the nursing education program. So when you look at things in terms of the cost per unit of utility, it switches things

up a little bit. And certainly, when you're thinking about a program director or dean, who's trying...if you count an hour spent in simulation as two hours of required clinical time, you're kind of getting double bang for your buck.

But it's even more expensive than double. Yeah?

- [Female] What was your clinical faculty-to-student ratio?

- Super, super good question. For the clinical, it was 8-to-10-ish. We have another publication that's coming out. I'm pretty sure that it's around that, 8-to-10. Whereas for the manikin-based simulation, and even the screen-based simulation, it was four-to-five.

So that makes a huge, huge difference in this cost-utility analysis. We think about the equipment and the facilities, albeit expensive, but people are really expensive too, high-trained people, to be clinical instructors, or to be simulation facilitators. So yeah, this has been a huge part of the conversation in the rule-making process. And I guess I'll just tell you.

One of the things that we've kind of boiled down to, there's some evidence, one recommendation from Kurl et al., 2016, was to have a faculty-to-student ratio of, I think, it was one-to-five. In the Sullivan et al. article, the students that were followed, it was actually a very small number of students who were...that data were collected on who were participating in the simulation study.

And finally, what we're thinking at this time, we're still in the middle of the rule-making process, is that it needs to be driven by the learning needs of the student, and we need to document that the student's learning needs are being met. So if you have a really good observation tool, or something like that, that active observers are using, maybe that can increase your faculty-to-student ratio.

But that's a big part of the conversation. Thank you for asking that. So the big takeaway for students who are in their first clinical course, again, kind of narrowing down the generalizability of this a little bit, focusing on the four study-related objectives. Those who participated in two hours of high-quality manikin-based simulation performed as well or significantly better on measures of cognitive learning and patient care performance than those who participated in two hours of high-quality screen-based simulation, or four hours of high-quality traditional clinical activities.

And this is supposed to be a pie, but I couldn't find the appropriate icon. But the point that I'm trying to make here is that this is one very tiny slice of an entire pie of conversation around regulating simulation, regulating that you're applying the one-to-two simulation, talking about faculty-to-student ratio.

And this is the publication, the top one that's in the "Journal of Nursing Regulation." The second one will be coming out in "Journal of Nursing Education" someday. And then we are in the rule-making process for SB 5582 in Washington State. So stay tuned.

And that's my email address. And I thank you all very much. Oh, and thank you to all of these people, the Washington Board of Nursing, Northwest University, Seattle University, Tacoma Community College, and Yakima Valley College, and to NCSBN Center for Regulatory Excellence. So I'm happy to take questions. I see we're dialing down here on the clock. Yeah?

- [Female] [inaudible] I'll come to the mic. I'm wondering, from board of nursing perspective, as a past educator, I guess, working in academia, and now with board of nursing, what was the compelling

evidence, or body of compelling evidence that was the impetus for, "Hey, board of nursing, you need to make rules surrounding one-to-two ratio versus one-to-one."

- I would love to know. But I guess the conversation that I have tried to tell all of our stakeholders, and interested parties as they come and giving us input, is we have this much evidence to support the one-to-two ratio. So we are in the weeds, and trying to extrapolate from that to help guide the rules from the board of nursing, if that makes sense.

- Yeah, absolutely. I mean, this is exactly where I am living, because I'm living in this world, sort of watching and waiting [inaudible] sort of, and using what we have [inaudible] national council, as sort of our guardrails, if you will, while we're sort of

[inaudible] it out.

- Yeah. And we do have the healthcare simulation standards of best practice. We do have the ability to ask people to evaluate how this is going. Because yeah, it's a pretty small body of evidence.

- Thank you for your work.

- Yeah. Yeah.

- Thank you for digging in and doing the hard work.

- For sure.

- [Barbara] Hi, Barbara Blozen, [SP] New Jersey and Area 4 director. So first, thank you for this simulation work. I'm reading everything simulation right now. I'm doing my homework. Because we are looking at making a statement about how much simulation we allow in New Jersey.

So one of the questions I have for you is, in the article, in the original watershed study done by NCSBN, that was for programs...the 50% was for programs that had 600 hours or over of clinical time.

So do any of these programs have clinical time that's less than 600?

- Yes.

- Okay. And you're still applying the same standard?

- I wish I'd brought my stakeholder slides, because I have got this whole pie chart of how for LPN programs, who require significantly less than 600 hours, this is what it's going to do to the contact time. I don't want to say it wrong, but I think BSN is 600, ADN is 500, and LPN, I think, is 300. Don't quote me on that.

But yeah, when you take 50% of that, it gets really small.

- Okay. Thank you.

- Yeah.

- [Rebecca] Hi. I'm Rebecca from Mississippi. Out of education now, I'm with a private stakeholder. So my question is, we're talking about the time in simulation versus time in clinical. And we're very rigid, and we want to regulate what we do in SIM.

And I'm sure you've probably clearly defined it in your study. Did anyone dare to clearly define what you did in clinical?

- In the study, yes. The clinical instructors came to a facilitation training where we went over basically what we go over in pre-briefing facilitation, debriefing, very short but just to provide some standardization across those experiences. And there is a whack around requirements for clinical instructors and those types of things.

But I think you ask a great question, is that we're getting down to the nitty-gritty around simulation, but what's going on in the clinical environment. That's great. And we're out of time, so if people need to go on to the next thing, I'm happy to stick around and answer questions, but I also don't want to...