



Past Event: 2026 NCSBN Scientific Symposium - A Longitudinal Examination of Clinical Simulation in a Post-Pandemic Era: A National Survey of Prelicensure Nursing Programs Video Transcript

Event

2026 NCSBN Scientific Symposium

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Presenter

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- [Brendan] Hello, everyone. My name is Brendan Martin, and I'm the Director of NCSBN's Research Department. First, thank you for joining us all for today's symposium. For those of you who are perhaps less versed with who we are and what we do, I'd like to begin by sharing a bit about our core purpose.

NCSBN's Research Department is really here to advance the science of nursing regulation by generating valid and reliable evidence that informs decision-making for nursing regulatory bodies in support of their mission of public protection. We are a full-service research group providing end-to-end services, from research design to analysis and reporting, on a range of topics such as nurse mobility, workforce, education, discipline, and licensure.

We also administer the NCSBN grant program that provided the necessary funds to support most of the studies you have heard about today. Now, as we reach the conclusion of our program, I'm really excited to bring the event home, so to speak, by providing you with some details of one of our very own recent studies examining the long-tail effects of the COVID-19 pandemic on pre-licensure nursing education, and specifically, clinical simulation, adoption, and use.

As you'll see in short order, the results I'll cover today are part of a multi-year national survey of pre-licensure RN nursing education programs. To start my discussion, I'd like to give you a sense of what's in store. I'll begin today's presentation by providing a bit of background on the original study that really facilitated our longitudinal examination of this critical topic.

This will include high-level review of some of our prior work before diving into the details of the current study. For the current study, I'll provide a brief overview of our methods, both how we went about collecting our sample and the statistical analysis, before shifting to the core of the presentation in which I will focus on the results to underscore some of the key takeaways.

When all is said and done, I'll be happy to open things up for any questions you might have. By way of background, beginning in April 2020, NCSBN's research team collaborated to craft an expansive research agenda focused on the wide-ranging impacts of the pandemic. This included many topics such as pre-licensure education, early career in APRN practice, workforce trends.

The list really goes on and on. On the slide in front of you are some high-level details of one of our more ambitious endeavors entitled the "National Pre-Licensure RN Study. Assessing the Impact of the COVID-19 Pandemic on Nursing Education." This cross-sectional study utilized a four-phased longitudinal design to assess academic, standardized examination, and early career outcomes for pre-licensure RN students entering the core of their nursing curriculum in fall 2020 and with an anticipated graduation in spring 2022.

When considering the entire arc of the research, from July 2020 to December 2022, we conducted a 2.5-year-long study of 51 pre-licensure RN programs, including over 1,100 participants across 27 U.S. states.

This mixed-methods study ultimately leveraged more than 4,000 course observations, supplemented by hundreds of early career observations through the first 6 months of employment and the rich personal narratives of over 60 focus group participants. To establish a baseline understanding of the landscape for pre-licensure nursing education and ultimately to support the broader longitudinal analysis, we fielded a national survey in July 2020 to administrators from each pre-licensure nursing program, often the dean, director, or chair.

The survey focused on the levels of online lecture delivery and clinical instructional formats, including both high fidelity and virtual simulation, just prior to the onset of the pandemic, so think fall 2019, and what was anticipated for the fall 2020 term after the emergency phase of COVID-19 began.

It also included details on general program characteristics, student and faculty profiles, etc. In total, 526 unique pre-licensure RN programs responded to the baseline survey for a final response rate of 33%. From the results, we were able to document a significant shift to online lecture delivery and simulation-based clinical instruction across most U.S.-based pre-licensure nursing programs.

However, over a year after the end of the health crisis, there were still no studies of similar scale examining the durability of national usage trends. So in fall 2024, we set out to conduct a longitudinal examination of didactic and clinical delivery format trends ourselves.

Institutions that provided responses during both the 2020 and 2024 data collection windows were linked using unique program NCLEX codes to facilitate longitudinal analysis and to assess both within and across program change. Overall, as you can see from the slide, just over 1,200 pre-licensure RN programs participated in at least one of the two survey waves.

Of this total, 804 provided longitudinal data on their clinical and/or lecture delivery formats, including over 3,500 observations across high-fidelity simulation, virtual clinical simulation, and didactic instruction. Initial bivariate analyses by program type were conducted.

Chi-square testing was employed to determine the significance of observed differences across categorical variables. As most continuous variables presented with non-normal response distributions, non-parametric Wilcoxon rank sum tests were used for comparisons by program type for covariates with two levels.

And Kruskal-Wallis tests were similarly employed for covariates with more than two levels. For all multilevel independent factors, adjustments to account for possible Type 1 error were made when assessing all pairwise comparisons. Univariable and multivariable generalized estimating equation models, or GEE models, were then employed to examine changes in the rates of high-fidelity clinical simulation use, virtual clinical simulation use, and online lecture delivery over time.

This GEE approach appropriately accounted for the correlation introduced by the repeated measures design. And all analyses and tables and figures that you will see in today's presentation were generated using SAS. Jumping into the results now, and initially focusing on comparisons by program characteristics, I'd like to walk you through some specific highlights.

As I move through the next few slides, I'll highlight particular sections of the manuscript tables to highlight instances in which we found the results diverged by program type. I'll then follow that with details on how we tried to account for these differences in the final modeling. First and foremost, you can see that some distinctions did emerge by program type as it related to institution type and accreditation status.

First, BSN programs were more likely to report a mix of private not-for-profit and public institution types, while ADN programs were predominantly public. Further, BSN programs were also more likely to be accredited in our sample than their ADN counterparts. Conversely, BSN and ADN programs presented with similar profiles as it relates to approval status and longevity, meaning the years since the program had initially been established.

In effect, this speaks to the good standing and stability of most of the programs under our review. However, BSN programs did report a greater proportion of full-time faculty, albeit the thresholds reported by both program types was considerably lower than we would have anticipated, at just 12% and 8% respectively.

BSN programs reported marginally larger student enrollments than their ADN counterparts, but you will note that the interquartile range for both responses overlapped considerably. The racial, ethnic, and gender composition by program type was also fairly comparable. Nonetheless, more BSN students qualified for financial assistance than ADN students at the program level.

Shifting gears a bit, you'll notice now that we've switched our table views to look at program comparisons by clinical characteristics. As before, some meaningful differences emerged. BSN programs reported higher clinical and direct patient care hour requirements than ADN programs.

Similarly, the maximum student-to-faculty ratio in clinicals was lower in BSN programs. Nonetheless, the rates of and reliance on high-fidelity and virtual clinical simulation were comparable. About 97% of BSN respondents indicated they employ high-fidelity simulation for a median of 55.5 clinical hours.

Among ADN programs, 95% of respondents indicated the same: that they employ high-fidelity simulation for a median of about 50 clinical hours. Similarly, 44% and 39% of BSN and ADN respondents, respectively, indicated they employ virtual clinical simulation.

Respondents across program type also reported similar levels of difficulty securing in-person clinical placements. What's more striking, perhaps, is that half or more reported this process was somewhat or very difficult. How programs used virtual clinical simulation varied, though.

BSN programs reported higher levels of augmented and virtual reality usage, but comparable rates of using online software packages, video review, and student-led simulation. BSN participants were also more likely to report using standardized patients, all or at least some of the time, compared with their ADN colleagues.

However, BSN programs reported lower median skills lab hour requirements versus ADN respondents. And finally, for this table, most BSN programs reported that all or at least some of their nursing faculty who led simulated clinical experiences were certified healthcare simulation educators, while just about one-third of ADN program respondents did the same.

Informed by the literature, an additional area of interest in our fall 2024 follow-up study were the twin issues of faculty recruitment and retention. While a long-standing issue, ample evidence of the deleterious effects of the pandemic on the faculty workforce had emerged in the four years between our study bookends.

So we decided to include items in our survey to better understand how these broader issues intersected, or did not, with other important outcomes. Respondents from both program types reported greater success in retaining than recruiting new nursing faculty.

Specifically, a plurality of both BSN and ADN respondents underscored fair to poor faculty recruitment. Conversely, one-quarter to a third of all respondents rated recruitment efforts as very good to excellent. The inverse was true for retention of faculty. A majority of both BSN and ADN participants rated their program as very good to excellent in retaining nursing faculty, while only a quarter of ADN and just about one in six BSN respondents indicated fair to poor.

Course delivery format, though, really remained the core focus of our study. Our prior work on this topic confirmed the proportion of lecture hours completed online presented the clearest evidence of a pandemic-driven shift. From fall 2019 to fall 2020, the median number of lecture hours completed online grew from just 2% to 62%. Strikingly, the number of programs that offered no online lecture hours decreased from 167 in fall 2019 to 21 in fall 2020.

By contrast, the number of programs that offered all their lecture hours online increased from 10 in fall 2019 to 153 in fall 2020. In fall 2024, the median rate remained elevated compared with the fall 2019 baseline, but came in far below the peak observed in fall 2020.

Both the increase, compared to fall 2019, and the decrease, compared to fall 2020, were statistically significant. Similarly, in July 2020, approximately 86% of programs also indicated they planned to incorporate virtual simulation instruction into their curriculum during the fall 2020 term, and they did just that.

The number of programs that offered no virtual simulation hours decreased from 130 in fall 2019 to just 11 in fall 2020. Year-to-year, the median number of clinical hours completed in virtual simulation increased fivefold during the COVID-19 pandemic. Specifically, the median number of clinical hours completed in virtual simulation jumped from 5% in 2019 to 25% in 2020.

In 2024, though, the rate of virtual clinical simulation use pretty much reset, as you can see from the slide in front of you. In this instance, unlike online lecture delivery, there was no meaningful difference observed between the rates of virtual clinical simulation use in fall 2019 and fall 2024. The decrease from fall 2020 levels, however, was statistically significant.

Not surprisingly, the use of high-fidelity simulation to replace traditional clinical placements also doubled during the pandemic. From fall 2019 to fall 2020, the median number of clinical hours completed in high-fidelity simulation also grew considerably, doubling from 15% to 30% year-over-year. I'm sure you're starting to see the pattern emerge here, though, a little bit, and can guess what comes next.

Following the end of the emergency phase of the health crisis, the rate of high-fidelity simulation use also reverted to pre-pandemic levels. Similar to virtual clinical simulation use trends, there was no meaningful difference observed between the rates of high-fidelity simulation use in fall 2019 compared to fall 2024. The decrease from fall 2020 levels, however, was statistically significant.

For all comparisons across online lecture delivery, virtual clinical simulation, and high-fidelity simulation, the drop-offs we documented were significant on both univariable analysis, meaning independently, and after adjustments by program type, meaning the overall interpretation of these trends was not influenced by students' enrollment in either a BSN or ADN program.

So what does this all mean when taken together? The COVID-19 pandemic had a profound impact on pre-licensure nursing education, leading to widespread disruptions that had far-reaching implications for nursing students' learning and engagement outcomes. The results of this longitudinal assessment, however, confirm that the rates of clinical simulation, both high-fidelity and virtual, reverted to pre-pandemic levels following the end of the emergency phase of the health crisis.

This, despite ample evidence of the efficacy and safety of higher simulation replacement thresholds within certain quality control parameters, of course. So what this means is that future efforts to increase adoption of emerging instructional approaches or technologies must, of course, be based on evidence, such as NCSBN's prior national simulation study, but also be prepared to overcome existing institutional barriers, such as resource availability to support investments in facilities, equipment, and staff training, faculty exposure and buy-in, and broader institutional and administrative support.

For those interested in the full study, I've provided relevant details for how to access the manuscript on this slide, which will be included among the symposium materials following the conclusion of this event. But with that, thank you for your time and attention, and I'd love to take any questions that you might have.

- [Jason] Brendan, hello. Welcome to our final Q&A.

So interesting analysis on the trends associated with clinical simulation use over time. What do you primarily attribute the decline to, following the pandemic?

- Well, that's a really great question to start off with. Thank you, Jason. You know, I think the decline that we documented in this analysis is really less a story about diminishing interests, but rather a resetting after a period of critical need. The spikes we observed and then the kind of tail-off in this particular analysis really dovetailed with other studies that we conducted during the pandemic, in particular our longitudinal analysis of the effects of the pandemic on pre-licensure RN programs specifically.

And what we found often was that administrators, program staff, faculty were often kind of pulling all the levers, pressing all the buttons that they could out of necessity. It was about survival at that point in time. It wasn't necessarily about, you know, augmentation and, you know, flourishing, etc. And so

oftentimes, these strategies were being put into place, you know, absent additional funding, absent, you know, training for faculty or a period where they could kind of get faculty buy-in.

And then, as in the case of virtual simulation methods, at least, often absent evidence. And so in a way, I think a reversion to kind of the mean or a reversion to pre-pandemic times could be anticipated for many of these methods. One of the things that I thought was particularly interesting and relevant in this analysis and for today's presentation was that in addition to virtual simulation methods resetting, we also kind of saw a regression on more vetted evidence-based high-fidelity clinical simulation methods.

And then also on online lecture delivery, which I think it's fairly safe to assume, I'm going out on a limb here a little bit, but fairly safe to assume may translate easier into kind of an online space. Those two methodologies also reverted back to pre-pandemic levels. And so I think it's kind of a two-fold story here, so to speak. I think that there's some low-hanging fruit in which programs can and potentially should make progress in kind of, you know, further adoption of, you know, vetted evidence-based high-fidelity clinical simulation.

And then there's the virtual component, which we weren't surprised at all reset. And we think some of that is likely due to the absence of some of that evidence.

- Brendan, I think here you'll be pleased with the careful reading of our various research publications. Somebody notes, "In other NCSBN publications, the phrase high-quality simulation is sometimes used." Can you comment on that? And they offer, for example, that maybe a mental health simulation might not be high fidelity.

- Yeah, I think that that's a really good question as well. And I think it offers an important moment for kind of clarification. You know, when we talk about high-quality clinical simulation, oftentimes we are specifically referring to high-fidelity simulation within certain kind of quality control safeguards or with certain quality control guardrails.

So we're talking about, you know, the amount of clinical training hours that are part of the program. We're talking about rigorous debriefing. We're talking about proactive faculty training and orientation, you know, to what constitutes, you know, high-quality clinical simulation methods and instructional approaches. And so when we talk about high-quality simulation, oftentimes we are, in particular with historical...like, you know, kind of prior studies, referring to high-fidelity clinical simulation.

I think, again, you know, similar to my answer to the first question with virtual clinical simulation, I think we're in a less developed space. And so while there could be high-quality components or high-quality versions of virtual clinical simulation, such as augmented or virtual reality, you know, what's available to the masses and what's being more broadly adopted by the masses is not quite at that level yet.

- Perfect. So I think I'm asking something different here, but if I'm asking essentially the same, you can let us know. So you've just talked through high-quality simulation. Can you also clarify high-fidelity simulation and what's meant by that phrase?

- Yeah. So, you know, if you think about, you know, utilization of standardized patients, utilization of simulation labs, you know, where they have real-life mannequins, where students are actually in a physical space where they're confronted with some of the similar realities that they would confront in a clinical practice space, that's usually what constitutes and distinguishes high-fidelity simulation.

Virtual simulation is more when it's either kind of like a, you know, kind of an augmented or virtual reality in which it's the student might not be in an actual physical space touching things, etc., etc. It might be more kind of a virtual kind of environment surrounding them, but nothing actual, like tactile, so to speak.

- I think that works. Now, you talk about strategies to increase uptake moving forward. Why is that important?

- Well, you know, I think it's the intersection of two of the themes that we've really seen throughout today's symposium agenda, and that's the scarcity of direct patient care, clinical placements, and pre-licensure education and sustainable workforce planning. You know, when we think about changing kind of population demographics, what folks always hear about is this, you know, increased demand and need for healthcare services and nursing services in particular as the population ages.

And yet there is kind of a blockade or a barrier in certain instances to educating some of these pre-licensure students due to the scarcity of clinical placements. And so high-fidelity simulation, you know, we just spent a couple of questions there kind of really triangulating and defining high-fidelity, high-quality simulation methods. There's longstanding evidence to support, you know, at certain preset thresholds with certain, you know, kind of preset high-quality guardrails.

There's evidence to support the safe, and reliable, and effective replacement of high-fidelity simulation for some of those direct patient care hours. And so when we think about it within the context of increasing demand for nursing services, increasing demand for healthcare services, an aging population, growing patient needs across the United States, you know, I think if there was ever a time to adopt evidence-based methods, which really alleviate some of those pressure points and make sure that we're training as many safe and effective new nurses as humanly possible, I think that that time is now.

- Brendan, thank you. I think we have time for one last one, maybe. We've got just over two minutes. It depends how much you have to say about it. But here come some words we hear a lot. AI, augmented reality, virtual reality. You note in your paper that this is a rapidly evolving space.

From a research perspective, how do you keep research current and relevant and sort of make sure that you're ahead of the curve with all that?

- Yeah, no, I think it's a good point. And this has come up in a lot of the discussions today. You know, AI, evolving technology, that's kind of the elephant in the room as it relates to pre-licensure education and clinical practice, etc., really, you name it. I'll give the short self-serving answer, which is we need more research. But then I'll make a couple of plugs and I'll try to be brief here.

You know, one is if you were a participant today, which you should have been since you're attending this presentation, but you missed my colleague, Dr. Nancy Spector's presentation on the "Annual Report Database," I would highly encourage you to go back and review it. That is an incredible resource. It is census-level information for pre-licensure programs located across more than 40 jurisdictions in the United States, including the types of simulation methods they use, the usage levels, etc.

So that's one way to keep your finger on the pulse for this important topic. And if you're a regulator in the State Board of Nursing and your state isn't yet participating, I would highly encourage you to think about that. And then the other piece is if you liked what you saw in today's symposium, we administer a

grant program that provided funding for the majority of the presentations and studies that you heard about today.

And so I would absolutely encourage you, if you are interested in these topics, these topics that are critical to the nursing workforce, the nursing profession, nursing regulation, and patient safety, to seek us out as a possible funding source in the future. We would love to review your submission, and we would welcome the opportunity to collaborate with you. So I think that that's it.

You really need more research on these emerging, kind of ever-evolving topics. And I think that there's a couple ways in which we can really help facilitate that.

- Well, Brendan, I think with that, we are coming to the end. So I want to thank you, obviously, for your session and for sticking around for the Q&A. This really is then the conclusion of the 2026 NCSBN Scientific Symposium. Thank you to all the presenters for their time and expertise.

And we thank you, our audience, for joining us. Videos from all the sessions will be available for the next 30 days. So please feel free to come back and watch any sessions you were unable to attend. Thanks again, and we'll see you next time.