Past Event:

And so, when I started really doing this work, and again, influenced by the work of Pam and Dr. Smiley and all the other wonderful people who have done this work, we started saying, "Gosh, we really need to look at that. We need to look at what's happening in clinical, what's not happening in clinical." And we chose FNPs predominantly because they're the largest practitioner across the country.

And almost every program across the U.S. also has FNP programs. So, I am really excited to share some of this with you today. So, this study was funded in 2020. It was supposed to go to 2022, but like everything that the pandemic interrupted, we had to have a no-cost extension.

So, thank you to NCSPN for both funding this and giving us a little bit more time to get the sample size that we needed. So, the study purpose here was that we wanted to test the effects of using screen-based virtual sim on attaining mastery of concepts in the domains of assessment, diagnosis, treatment, and evaluation, and across the populations of peds, adults, and gero, because again, these were FNPs and these are graduate expectations.

And similarly to Dr. Moore, you know, we're facing some of the same issues in the U.S. as she noted abroad, and those are lack of clinical sites, lack of preceptors. And especially at the time the study was launched, we didn't know that it was going to happen, but the huge disruption and interruption that the pandemic caused was also impacting clinical experiences.

I would say specifically what we were hearing from our students was that they were relegated to standing up COVID clinics, doing testing. They weren't getting to see peds almost ever, weren't getting to see gero patients almost ever. But as you'll see when I get to the results of a previous study, that was already going on, it just was exacerbated by the pandemic.

But one of the things that really concerned me was that the variability and the lack of experiences in these clinical rotations created an equitable learning environment. So, our students weren't all emerging with the things that they knew to have safe patient practices and care. So, the results from a study that we had just completed where Chris was the PI and I was co-PI, really showed both the variability and the lack of clinical experiences that was happening nationwide.

So, as a background to understand the current study that I'm gonna share with you, I really have to go back a step. So, the purpose of this study, again, thank you, NCSBN, who funded this, was to develop an in-depth understanding of FNP students' clinical experiences that was occurring during their education.

We recruited students in their final clinical rotations from across the country, from accredited NP programs, and we had a final sample of 3,946. We collected data from them on the types, frequency, and depth of direct patient care experiences on the 84 specific tasks across the 4 domains, as well as across the 3 populations.

So, what we found in that study was W*nBT/F1 12 Tf.ETQEMCTm0 g0 92 reW*fms8*nBT-6(tyhey(cy(8 Tm0[BT/F1

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And so, this all resonated very much with him. And so, he did a secondary data analysis of our dataset. And what he found was that almost 30%, it was almost nearly 1200 people, these FNP students who were at the end of their clinical rotations, at the ends of their programs, getting ready to graduate in the next couple of weeks, reported experiencing 2 or fewer pediatric mental health assessments during their entire clinical rotation.

And more than half of these happen to have been required to set up their own clinical rotations. So, just kind of a aside. So, anyway, based on these findings as well as the research literature, what we proposed to NCSBN, and was funded, was that we were going to evaluate the use of 70 hours of screen-based clinical simulation experiences, and compare those to 70 hours of traditional precepted clinical experiences.

So, we chose the diagnostic readiness test, or DRT. And if any of you are involved in NP education, you know Berkeley and his whole gamut of products. It was an okay measure. If I had to do it again, I probably wouldn't choose this, but it was an okay measure. It went across the domains.

It's proctored. They were wonderful to work with. They let us have it for free. And so, I think honestly, that was why we were able to get our control group, because we did pre-post. We did it seven weeks in between. They could use it to direct what their clinical rotations were...what they were doing in their clinical rotations, said, "Hey, take this to your preceptor. Show them where you have some areas of concern. Let them use that as a tool to guide your rotations."

They also took it at the very end of their program along with our intervention group, and it was a roadmap for getting ready to study for their certification exam. So, I think that's why we got our control group. And I'm thankful for Berkeley. But as a measure, I would not recommend it to others to use. There's other things that you can use.

So, again, we administered it a week before the intervention and a week after the intervention to both groups. So, our sample. Our final sample was 98 in the experimental, 80 in the control. And, you know, if you look at the demographics, pretty much it looks like everybody in your own NP, and specifically FNP programs.

Mean age was just at 34 years, mostly female. Highest degree was predominantly bachelor's. We had a few masters prepared, predominantly white and non-Hispanic. So, back to my first research question. I want to know if there was gonna be differences in improvement scores on the domains and in the populations.

So, this is a busy table, and I apologize. But what it shows is that there were no statistically significant differences between the experimental and control groups for change in the domain scores from pre to post. The strongest effect you see was in the lab diagnostic domain with an adjusted Cohen's d of 0.18. What I want to point out is that both groups did improve over time.

However, neither group means fell in the category of strong performance according to the DRT. That would indicate mastery of material. And again, these are people getting ready to graduate within a couple of weeks. And most post scores were at or just below fair performance.

This table shows that there was a small statistically significant difference from pre to post for the adolescent population with the control group improving more than the experimental group. And again, an adjusted Cohen's d of 0.33.

Again, if you look, both groups improved over time, and in the adolescent population, both group means fell in the category of strong performance indicating mastery. They started high and stayed high. So, whatever was going on in those clinical rotations, they were seeing more adolescents than other groups. We're not 100% sure what was going on, but they stayed high.

The post scores in the pediatric and adult populations were at or just below fair performance, but geriatric scores fell in the extremely deficient category. So, the second research question was, are there difference in the likelihood of attaining proficiency in the domains and in the populations at post-test?

This is another busy slide, but it shows that the likelihood of attaining proficiency in the domains and populations between the experimental and control groups on this FNP diagnostic readiness tests. So,

relative to the control group, the experimental group was likely to attain proficiency in assessment and diagnosis.

And with adults, the experimental group was likely to attain proficiency in adolescents and geriatrics. So, these are just likelihoods. So, what's this all mean? So, given that the purpose of this study was to compare screen-based simulation and traditional precepted clinical experiences, what we think is our results indicate that there's no evidence that simulation is less effective than traditional clinicals in mastering the four domains and populations.

Now, while some people might say, "Ah, that's not good. You want to show difference," sometimes we need to make the argument that it is as good as, and so we're really comfortable with these findings. So, simulation is as good as traditional clinical precepted. And not only were there no differences between the groups, but I did want to point out that both improved over time.

So, that's also positive. So, in conclusion, we think that we would argue that simulation can be used as a substitute. Right now it is not. It can be used as adjunct, it can be used as add-on, but it can't be used as a substitute for NP education. But given the limited access to quality clinical sites, quality preceptors, all that shrinking, we have people who live and learn in very rural areas.

They don't have access to either preceptors or clinical sites. Simulation provides an opportunity, and especially screen-based simulation where all you're doing is plugging in your computer and you are spending time with that patient, it is accessible. Moreover, I would argue that it's equitable.

So, simulation, particularly any kinds of simulation, but I would say these kinds of simulation experiences provide an equitable opportunity for learning, and faculty can create a standardized and consistent learning environment for all students. So, finally, the data derived from simulation platforms also can be used.

And that's where I say if I had to do it over again, I would. We happen to use i-Human. I don't know if any of you have used the i-Human platform before, but literally every keystroke, every time you pause and you get into the EHR, every time you look up a lab or a test, that gets captured.

So, I can go in and I can see exactly how a student navigated the simulation. The other beautiful thing about this is that all the students saw the same five patients. And when the faculty debriefed with them at the end of the week, they had also seen those patients. So, everybody had the same kind of conversation.

It wasn't like, "I was trying to talk to you about, you know, I saw Mrs. Jones and she had, you know, a cardiac issue and all my peers 12 Tf1 0 792 repre

I'm really interested in looking at reducing diagnostic error, and where that has to start, my guess is we need to start early and often. And so, both the timing and the dosage would be really important. We just don't have that evidence right now. That's the next piece that we... At least this feels like a starting point to say it's as good as. And so, from here, now we figure out the rest, we figure out when, where, and how it works best and with what populations.

Yes.

- [Woman 2] How do you get... because this is different than pre-licensure program, and I'm very much [inaudible]. But now that I'm on regulatory side, how do you measure those so that they're are doing quality simulation, reporting the standards? That is my biggest worry, is seeing it happen in the program. But also I know the next session will do more regulation.

How are you making sure that these rules are doing what's prescribed, you know, like, best practice?

- Well, for one, on this study, I selected only schools that I knew who were deeply embedded in best practices and INACSL, and had adopted a model and had adopted DML. Then because my co-PI is Chris Dreifuerst, we of course spent a lot of time training, checking.

We did lots of DML training with our faculty debriefers. We did a lot of spot-checking, you know, throughout the study. So, I think that's key is that there is an adopted framework. It doesn't have to be a specific one, but it has to be a standardized one, an evidence-based one.

You know, one of the things with using a screen-based virtual simulation is that those products are already out there. And so, you don't have to have faculty trained in using mannequins. And the scenarios are already developed, the libraries are there. The downside of that is that you can't tailor those as nicely to nursing as you wanted.

They tend to be a little bit more medical-driven. Right now we're moving away from that. A lot of these big companies have started hiring NPs to be scenario writers. So, there were a couple things that we would find that, hey, we would say nursing would never do that, or nursing would do that.

That would be a test that we would order. That's part of, you know, the package that we would do to rule out and rule in diagnoses. So, you have to have really strong clinicians. So, you know, one of my co-PIs is a DNP, who is also an FNP, because me as a PhD, CNS, I didn't have the skillset.

So, it was kind of a beautiful harmony to work with my DNP colleague who did have that skillset. So, I think it is all those things and more to just make sure that people are using it correctly, particularly debriefing. It is not an extenuation of the clinical day, you know, it has its own reason to be and to do, and that is not it.

And so, you have to be really careful to follow best practices when you're using this.

- I guess the follow-up to that question is, for the control arm, so the students who were in their traditional clinical settings, were there trainings for those preceptors or clinical instructors similar to the way there were for the [crosstalk]?

- They didn't do anything different. They just did traditional precepted clinical. And I didn't present it as part of today, but we did both pre and post, a real, in-depth look at what they were doing in their clinical

practices. So, we knew what was happening in sim because, you know, we arranged that, but we also asked them what they were doing in their clinicals.

So, you know, were they spending those five weeks with peds or, you know, what they were doingtt13(), w