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COVID-19 Pandemic Impact on Nursing Student Education: Telenursing with Virtual Clinical Experiences

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Abstract

Introduction: The COVID-19 pandemic affected nursing students dramatically when the clinical sites and the onsite classrooms closed to physical participation. This necessitated a move to virtual classrooms and virtual clinical experiences. Some nursing schools adopted telenursing to comply with their Board of Registered Nursing direct patient care requirements. Students value the hands-on nursing in a direct care facility and clinical instructors must replicate this in a virtual setting. This article discusses telenursing and Teach-Back processes with student active engagement that facilitates learning and meets the direct care requirement. The purpose is to share best practice ideas for clinical instructors to educate when clinical settings are unavailable.

Methods: This innovation includes examples from five clinical instructors when in-person clinicals were not available due to the COVID-19 pandemic. They used virtual teaching and telenursing for nursing students which complied with clinical requirements of preconference, clinical experience, and post-conference. Telenursing combines case studies or shared documents, student collaboration, and includes a patient or patient actor via telehealth. Clinical instructors present a patient history or case study and allow students time for preparation. Socratic questioning helps students focus on determining the correct questions to ask. Telenursing call to the patient and teach-back questioning validated patient learning. Following the call, the instructor leads a post-conference debrief and students independently document the call.

Conclusion: Five clinical instructors follow the process of pre-brief, case presentation, and debrief while students develop critical thinking, strong communication skills, documentation requirements, and utilize the nursing process of assessment, diagnosis, outcome, plan, interventions, and evaluation. Students will have future opportunities to develop hands-on skills as they return to the clinical setting.

Keywords

telenursing, schools, nursing, students, nursing, clinical instructors, nursing, COVID-19, telemedicine, pandemics, patient care

Highlights

- Telenursing as direct patient care during virtual nursing student clinicals
- Includes requirements of preconference, clinical experience, and post-conference
- Evidence-based practice examples in adult, pediatric, and leadership course

With the onset of the COVID-19 pandemic in February 2020, nursing schools across the world stopped allowing students on campus and clinical settings. Timely recommendations from the World Health Organization and Centers for Disease Control and Prevention were based on the uncertainty of the prevalence, contagion rate, and transmissibility of the SARS-CoV-2 virus. Nursing schools were forced online for didactic and clinical learning accompanied by accommodations from the state boards. Clinical requirements are designated by each state's Board of Registered Nursing; many increased the simulations. In California, the clinical

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training simulation hours changed temporarily from 25% to 50%. Telenursing adoption for clinical rotations using patients or patient/parent actors complies with criteria for non-simulation clinical hours.

Background

Nursing has been around for hundreds of years. Florence Nightingale started modern nursing by formalizing training nurses using a didactic classroom approach with a clinical apprentice model in collaboration with a hospital (Egenes, 2017). The movement toward academic degrees advanced rapidly in the 20th century with the growth of baccalaureate degree programs in nursing. Nurses who served in both World Wars returned home, retired, and became mothers so the associate degree was established to ease the nursing shortage in the United States (Morin, 2014). These programs had significant clinical hour requirements for a registered nurse.

The focus was on-site, hands-on clinical training for nurses. Students felt they learned skills best by performing or seeing a demonstration; they learned knowledge best with visual presentations, taking notes, and participative learning (Cowen et al., 2018). The current modality of virtual clinical experiences emphasized participative learning while students were restricted from clinical settings during the pandemic.

Clinical learning needs include engagement, participation, collaboration, critical thinking, and strong clinical instructors (CIs). CIs must understand that the students want to be actively involved in their learning. Students anticipated being in clinical settings, so engagement in active learning was essential even in an online virtual clinical format. Focusing on promoting student inclusion with belongingness and clinical reasoning (Hunter & Arthur, 2016) combined with case studies or virtual simulations as a teaching modality can accomplish student goals for clinical. Riley et al. (2021) discuss virtually delivering an obstetrics course; changes include unfolding case studies with student participation and result in unchanged student scores and satisfaction in comparison to previous sessions. Editorials discuss clinical changes in response to COVID-19 and recommend a review of outcomes compared to traditional programming (Jackson et al., 2020; Morin, 2020). A unique study showed working with a registered nurse and feeling safe to share feelings and question created a sense of belongingness, security, connection, and acceptance (Levett-Jones & Lathlean, 2008).

Students identified desirable characteristics for a CI; trusting relationship, coach, experience and knowledge, and role model (Niederriter et al., 2017). The qualities in trusting relationships include being approachable and available; a coaching CI facilitates learning by allowing time and supporting students in putting the pieces together (Niederriter et al., 2017). Experience in clinical settings is essential and role models integrate experiences with the didactic course (Niederriter et al., 2017). These characteristics can transfer to virtual environments. Virtual presentation of interactive case-based scenarios delivered via slides, videos, or online commercial training help students to comprehend the entire patient experience.

All CIs must be experienced in their specialty and build collegiality with the students. Establishing a relationship with each student is more challenging without face-to-face meetings and CI and the students must incorporate realism in virtual clinical settings. Some teaching strategies measured in nursing students are being respectful to all participants, encouraging self-confidence and independence, having expert experience, demonstrating optimal practice in the clinical setting, and patiently addressing student questions and concerns (Valiee et al., 2016). The CI facilitates a safe, successful learning environment for students.

Allowing students preparation time helps them gain confidence in their knowledge and readiness to care for patients. Calling on students in a random order maintains focus and engages students in finding answers to questions during case studies. Ensuring student safety when they don't know the answer is essential for their security and demonstrates that it is acceptable to not know everything. They communicate when they do not know and follow up with how they will find the answer which helps build the practice of a nurse seeking evidence-based practice (EBP) and creating best practice processes. Evidence-based practice is based on research outcomes and is used as the foundation of building the best practice processes for over 20 years (Fineout-Overholt & Melnyk, 2005).

Clinical experiences create learning, challenge student knowledge in practice, and help them understand the reality of working as a nurse. These techniques help students develop competencies in clinical reasoning and decision making. The value of clinical placement is to practice what they have learned and apply theory (Marañón & Pera, 2015). Virtual clinical settings must allow students to apply their knowledge.

Telenursing and Teach-Back

In a foundational work, Kaminsky et al. (2009) identified five categories of telenursing; they are "(1) Assess, refer and give advice to the caller (2) Support the caller (3) Strengthen the caller (4) Teach the caller and (5) Facilitate the caller's learning" (p. 382). This comprehensive approach defined the role and goals of telenursing. Telenursing should be introduced early in the curriculum as this complex learning experience requires practice to develop competence and students appreciate the screen technology and virtual access to remote patients (Reierson et al., 2015). A systematic study summarized telenursing data including patient education, promotion of patient competence in self-care, improved mental health support, and establishment of hope in patients in a fiscally

beneficial model (Ghoulami-Shilsari & Esmaeilpour Bandboni, 2019).

Agency for Healthcare Research and Quality (AHRQ) (2017) and Tamura-Lis (2013) recommend Teach-back methodology which allows a patient to repeat teaching in their own words. A review of literature classified "5 categories: patient satisfaction; postdischarge readmission; patient perception of teach-back method effectiveness; disease knowledge and disease management improvements; and intervention effects on health-related quality of life" (Yen & Leasure, 2019, p. 286). The Teach-Back Method demonstrated a 45% reduction in 30-day readmission (Oh et al., 2019). A systematic study of patients with chronic disease showed better outcomes in self-efficacy, compliance with medical treatment, and knowledge about their disease (Dinh et al., 2016). Teach-back is a good skill for students to master and should be used to validate understanding whenever nurses are teaching patients.

Practice Change Innovation

COVID-19 changed the way faculty facilitate learning with nursing students. When the pandemic occurred and California colleges closed their campuses and clinical opportunities became scarce for students to have on-site experiences, a conversation ensued with the California Board of Registered Nursing (CA-BRN). At that time, the CA-BRN required 75% direct patient care and allowed 25% simulation. Colleges were working with the Governor's office to identify potential changes to the regulations. A discussion with the CA-BRN nursing education consultant identified telenursing as a means for direct patient care hours in lieu of on-site clinical (Figure 1).

Different countries and states have varied requirements for direct patient care and simulation hours for nursing students. The CA-BRN allowed students 50% direct patient care hours and 50% simulation and/or virtual clinical hours temporarily in 2020 with additional changes in 2021. These guidelines for telenursing were approved and students were able to continue their nursing program and receive credit for direct patient care hours. Clinicals continue to be a mix of virtual with telenursing and volunteer patients and on-site hands-on experiences.

Literature with EBP helped determine the process of integrating telenursing into virtual clinical settings. Faculty independently applied telenursing to their student population to create a clinical practice that meets the standards. These best practice examples demonstrate different methods for the application of telenursing and remote learning for nursing students in clinical.

Adult Health I and II: Medical-Surgical

Healthcare systems focus is shifting to community and telehealth. In the entry-level medical-surgical course, students need to learn the roles and responsibilities of the nurse. Students were perplexed with the idea of assessing a patient virtually. Clinical Instructor preparation was necessary for successful telehealth care because students required training on telehealth and telenursing to perform at an introductory level.

The introductory level consists of assessments, patient education, care planning, and providing students the opportunity to learn about abnormal findings and disorders. Students expressed feeling challenged by assessing patients virtually. Questions like; How would I listen to the lungs or the heart? How would I assess a wound? How would I feel pulses? One example is "how do I assess a wound if I am unable to inspect and palpate the skin?" The CI used Socratic questioning to facilitate learning this assessment process for the specialty of telenursing asking Socratic questions like "I understand the patient can touch the skin surrounding the wound, so how are we able to virtually assess the wound?" Students developed questions and ways to assess the post-op surgical wound in a virtual environment.

✓ Have the patient show the wound virtually for signs of infection; redness, red streaks, or purulent drainage.
✓ Ask the patient assessment questions.
✓ Do you have pain? If so, complete a pain assessment.
✓ Does it smell?
✓ Have you had purulent drainage?
✓ Is the skin cool to the touch, warm, or hot? Do you have a fever?
✓ How did your provider instruct you on cleaning your wound, and what are those directions? Please explain to me the steps of how you clean the wound. This incorporates the teach-back process by having the patient describe the previous teaching in their own words.

The clinical day proceeded with a case study, preparation time for students, structured telenursing call, and post-conference debriefing.

- Case study process
  - Preparation
    - Research the patient's chronic conditions
  - Telenursing call
    - Patient/participant consents to student participation
    - Leader was chosen to oversee the assessment process
    - 2–3 students asked assessment questions
    - Other students would observe and listen to the assessment to record subjective and objective data
- Post-conference debriefing
  - CI led debriefing of the disease or disorder, assessment process, communication, outcome of the telenursing call
  - All students document the telenursing call

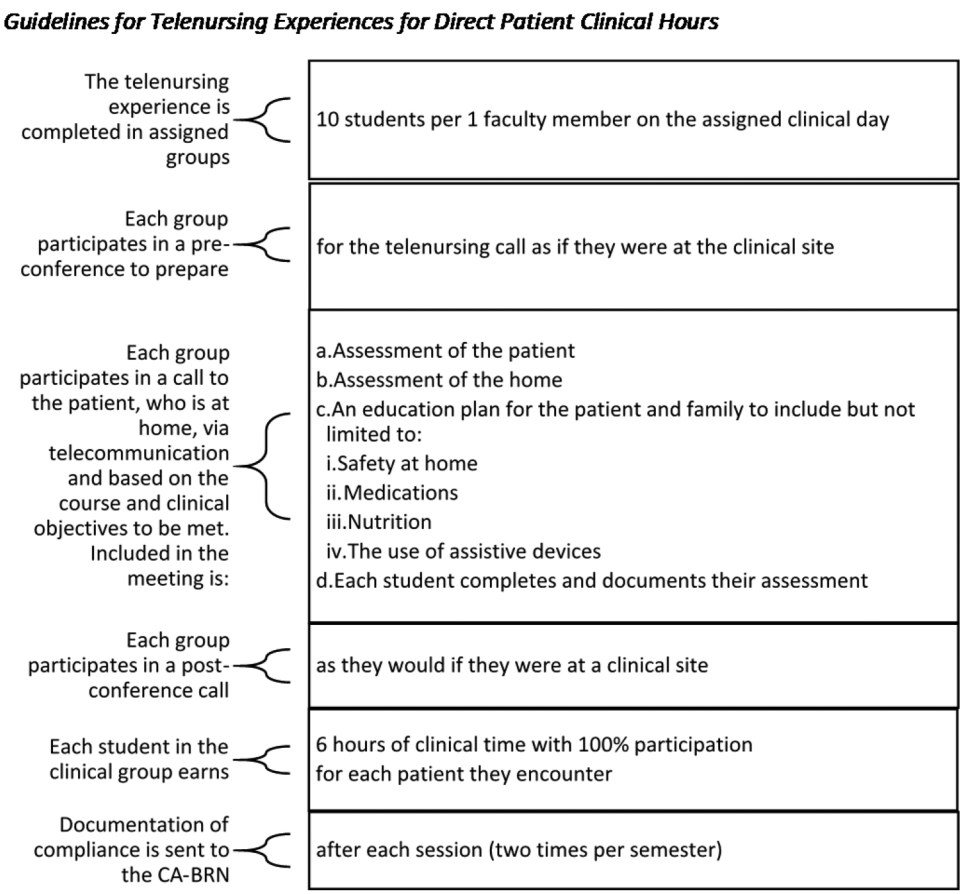

Figure 1. Guidelines for Telenursing Experiences for Direct Patient Clinical Hours.
Note. Agreement between the nursing school and the State of California Board of Registered Nursing.

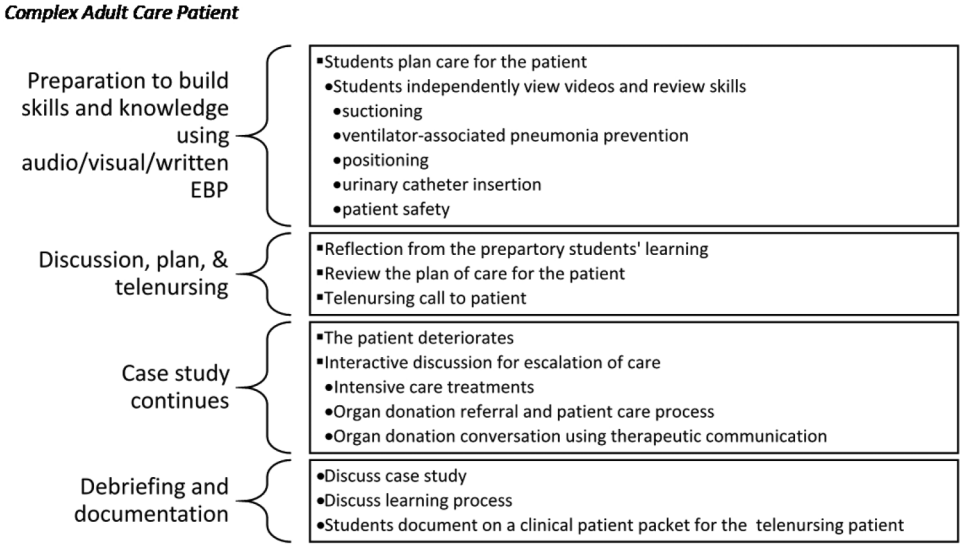

Figure 2. Complex Adult Care Patient.
Note. Telenursing process for a patient with chronic obstructive pulmonary disease receiving care who proceeds to deteriote and become an organ donor.

Thorough instruction on how to assess patients via telenursing provided the students with more confidence. Students learned the benefits of the service and how assessments were focused on problem areas identified in nursing diagnoses. Two areas of importance during the telenursing call were medication reconciliation and validating education with the patients. Students understood the need to provide instruction on when to consult with their provider, when to activate the emergency response system 911, or report to the emergency room. They became increasingly more creative with their assessment tools and researching resources provided to their patients.

The students broadened their understanding for finding resources in the community to help patients with chronic health conditions and the promotion of health. They researched EBP articles for chronic health conditions to successfully educate their patients. Students collaborated with their peers on assessment tools after using telenursing tutorials and educational sessions and determined who would assess the patient with questions and who would observe and document. Subsequently, students debriefed with their CI focusing on what went well or could be improved, and what they perceived the patient gained from the encounter.

Adult Health III, Complex Care

The CI expected that when using various teaching tools and opportunities for the virtual environment, the students would benefit from practicing nursing in a non-threatening, yet productive and conducive to learning, environment. An empathetic CI is essential and critical in preforming quality patient care (Ekman & Krasner, 2017). An example case study process for a patient with chronic obstructive pulmonary disease (Figure 2).

Although virtual clinicals were uncertain and challenging at the beginning, this practice environment allowed them to be successful and productive. Students shared that the patient with a deteriorating condition that warranted decision making on the end of life care and organ donation was beyond what they would encounter in the hospital setting with patients who are mostly stable and progressing toward recovery. Students embraced being able to practice therapeutic communication in a non-threatening environment. The role-play and rehearsal of difficult patient situations and subsequent reflection about the experience promotes resilience and confidence (Davis, 2018).

Pediatrics

The CI incorporated telenursing and Teach-back with clinical case studies. The process included three elements, preparation work, clinical day, and post-conference debriefing. Preparation work included initial learning about telenursing and the Teach-back process (AHRQ, 2017, December). Students designed a group process for telenursing and Teach-back to be used for each telenursing call. Students used shared documents to create a template for each telenursing call. For each patient, the students collaboratively added questions, teaching, and concerns to the template. This level of preparation increased student confidence.

Creating documentation that is precise and reflective of the patient situation is essential in providing safe and accurate patient care. The students prepared by reading a document about effective and thorough documentation (RN.com, 2015); students submitted a reflection of learning points and legal aspects of documentation.

- Case study process
  - Patient case study using visuals, patient orders, lab results, multiple assessments, change in patient condition, complications, situation-background-assessment-recommendation (SBAR) communication
  - CI called on students to ensure engagement and individual input
  - Students developed a plan for communication with parent of the child while in hospital, at discharge, or weeks after discharge
  - Two to three students completed the telenursing visit with an adult actor
- Post-conference debriefing
  - Students contributed in group debrief using assessment, diagnosis, plan, intervention, evaluation (ADPIE) template and SBAR communication on a shared document
  - CI and students debriefed the learning methodology from the case study, telenursing, and Teach-back
  - Students completed and submitted a narrative note for the telenursing call

Patients included diabetic ketoacidosis with pneumonia in a 6-year-old child. A COVID-19 positive, ill, 2-year-old patient complicated with a metabolic disorder and significant developmental disabilities discharged on oxygen with saturation parameters called a week after discharge. Students learned how to teach a family to wean oxygen off when the saturation is adequate. The students stated that they end up with more knowledge than they expected to learn in clinical settings.

Community and Public Health

The community course encompasses public health and the vast array of community health opportunities and needs. The students use the knowledge they gained from medical-surgical and specialties, to assess the healthcare and health promotion needs of populations across the spectrum of age, need, abilities, as well as provide care to individuals, families and groups in community settings. This example of telenursing in virtual clinicals focuses on home health virtual visits (Figure 3).

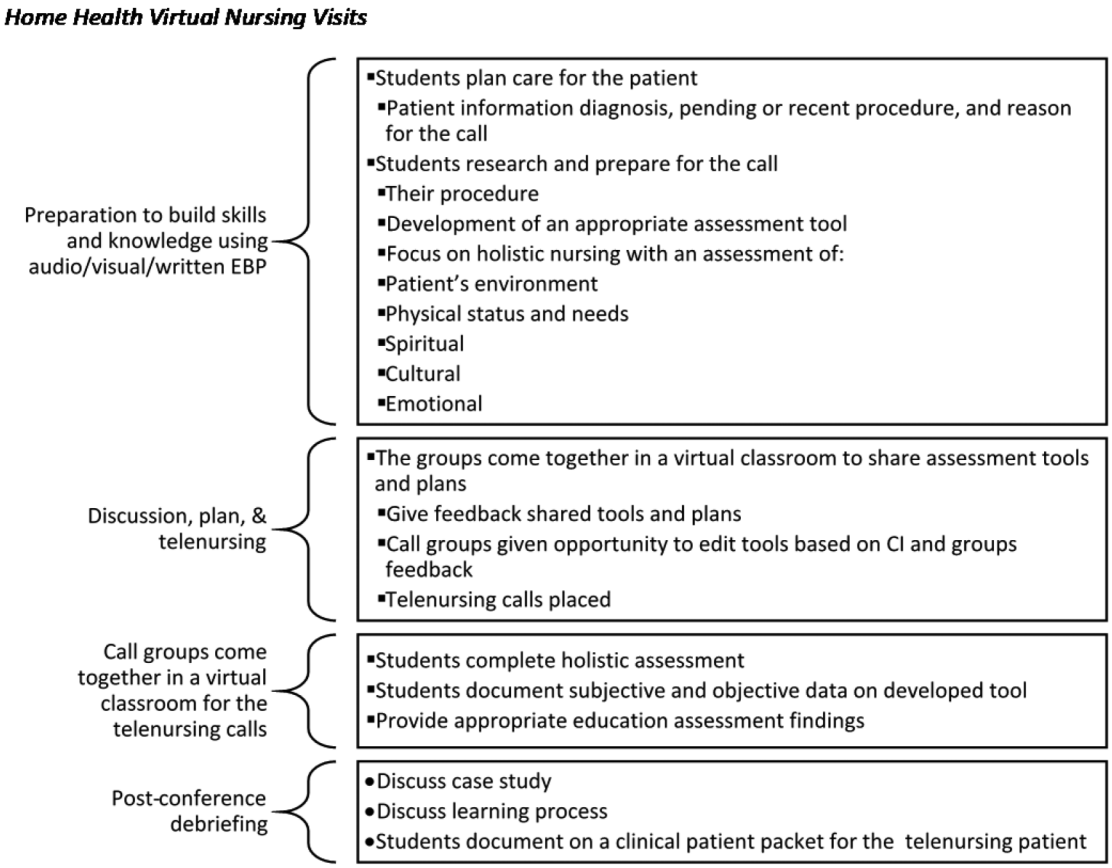

Figure 3. Home Health Virtual Nursing Visits.
Note. This telenursing in virtual clinicals focuses on home health virtual visits by students.

During debriefing, students expressed the benefits of sharing tools and education points with other groups and provided the opportunity to identify elements to enhance their tools. Students stated that having the patient synopsis in advanced allowed time to research the diagnosis and procedure and be more confident in preparing an initial education plan.

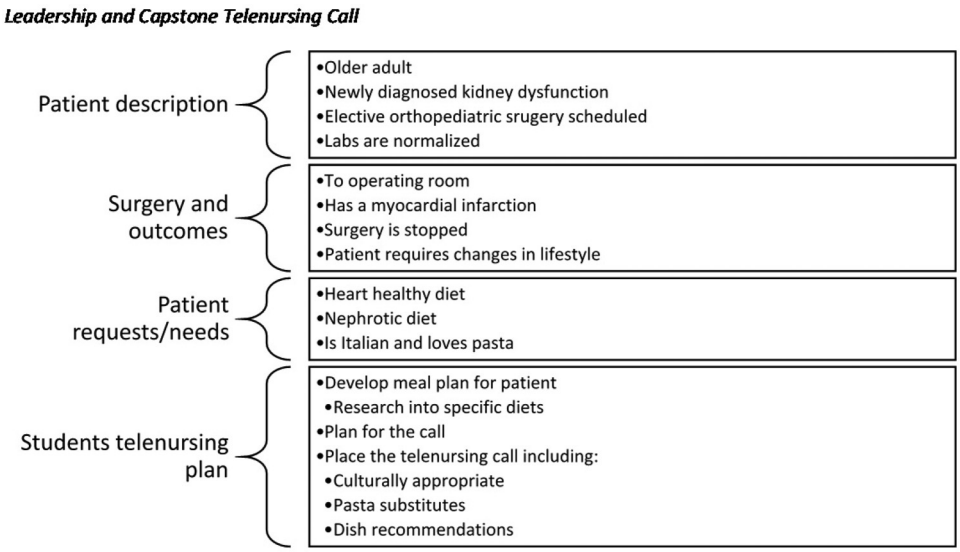

Figure 4. Leadership and Capstone Telenursing Call.
Note. Example of the process for virtual patient including preparation, student work, and content for telenursing call to the patient.

Leadership and Capstone

This example is a senior-focus telenursing experience with a volunteer patient who has the listed disorders and experiences. The goals for this clinical were to use multidisciplinary methods, find resources, develop a diet plan, confirm cultural competence, and demonstrate leadership and professionalism. This clinical experience focuses on experienced students and enhances their independence, collaboration, and leadership skills.

- An example case study process for an older adult with newly diagnosed kidney disease needing elective orthopedic surgery (Figure 4)
- Post-conference debriefing
- Students discuss success of the call, level of cultural competence applied, and patient satisfaction
- Students submit written documentation of the call

The students enjoyed being the ones to choose what exactly to discuss and how to honor a patient who identifies strongly with a specific culture. The CI allowed the students time for appropriate research into the disease, gather resources, and discuss with fellow students while creating the plan. Allowing this preparation time increased their feeling of confidence, competence, and highlights their communication and leadership skills.

Importance to Student Nursing Practice

Socratic questioning with students helped them form the process for a telenursing call to patients of all types and allowed them to master virtual assessments. According to Knight and Prettyman (2020), students learned to address gaps in the healthcare system using telehealth and build student confidence in skills for virtual assessments of patients. Students had telehealth experience which expanded their skills to treat patients virtually at home (Knight & Prettyman, 2020).

Virtual telenursing developed strong communication skills and a strong ADPIE process for patientd. Students completed independent and group searches for EBP to apply to specific patient conditions. Students missed the direct touch and contact with patients and nurses, and they missed the flow of the unit and hands-on experiential learning. Students think that more time in clinical settings equals more learning (Lee et al., 2018). CIs emphasized that the experiential learning results in the development of competency in telenursing and communication as well as critical thinking and problem-solving with the specific patient population.

The use of audio, visual, and written online EBP like an online simulated patient or case study in conjunction with instructor-guided pre-brief and debriefing enhanced the students' virtual clinical learning. The pre-brief preparation allowed students' time to review the diagnosis, treatments, skills, medication, patient safety, and patient care. Students needed time to learn and practice telenursing and Teach-back processes. Telenursing calls were more successful if students collaborated before contacting the patient, which allowed them to work together and identify the best questions and teaching before calling the patient.

The students miss hands-on, in-person experience with children and families as well as communication with the interdisciplinary team. The CIs emphasized that this learning prepared them for practice by increasing their knowledge, problem-solving ability, and critical thinking. Letting students talk and reflect on experiences helps facilitate resilience (Lopez et al., 2018).

Conclusion

During the COVID-19 pandemic, telenursing was a successful process for students to learn and demonstrate appropriate patient care, leadership skills, and communication. Working in telenursing required thoughtful consideration of the patient and conversation about diagnosis, teaching, and responses to questions and requests. Clinical settings that incorporate telenursing will help prepare students for the future of nursing. CIs believe that when the epidemic recedes students will become competent in hands-on skills as they return to clinical settings or when they are hired as registered nurses. The examples herein encompass the goals for clinical teaching of preconference, learning, communication with patients and families, and post conference.

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Declaration of Conflict of Interests

We have no conflict of interest or funding source. This manuscript has been approved by Chamberlain University College of Nursing.

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