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The Perception of Preparedness in Undergraduate Nursing Students During COVID-19

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ABSTRACT

Background: The purpose of this study was to explore the perception of preparedness in nursing students who transitioned to online and virtual learning platforms brought about by Coronavirus disease 2019 (COVID-19).

Design: Descriptive, correlational, nonexperimental research design.

Method: Data collection was attained through Facebook groups using the Casey-Fink Readiness for Practice Survey and questions about comfort in nursing skills and multiple patient assignments. The sample size of 103 included nursing students and those with less than two years of experience.

Results: As school support during the transition increased, comfort in performing nursing skills improved. As the number of patients within a nurse’s assignment increased, comfort decreased. Participants expressed a desire for more hands-on in person education and postgraduate support. With the reduction in clinical hours during COVID-19, Learning Techniques and Trials and Tribulations revealed diminished readiness. Low scores within the Trials and Tribulations subgroup impacted feelings of comfort when performing nursing skills independently.

Conclusion: COVID-19 dramatically changed how undergraduate nurses were educated. The transition from live didactic instruction and in person clinical experience to online learning and simulated clinical experience impacted nursing students’ readiness for practice. As this topic is still evolving, additional research will be needed to fully understand the impact on healthcare.

Introduction

COVID-19 has posed an immense global impact, as the virus has been responsible for over 3.7 million deaths worldwide to date (World Health Organization, 2021). Economic and social implications of the virus will be felt for many years to come. Associate degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) programs utilize live classroom didactic learning supplemented with hands-on clinical experience to broaden students’ knowledge (Casey et al., 2011). The education of future healthcare providers has been altered during the pandemic, as COVID-19 directly impacted the education of future providers (Centers for Disease Control and Prevention [CDC], 2020). From March 1 to May 31, 2020, 42 US states and territories issued stay-at-home orders leaving many universities perplexed as to how education would continue (CDC, 2020).

Research conducted prior to the pandemic demonstrated that undergraduate nursing students expressed challenges regarding confidence in delegation, conflict resolution, physician communication, and clinical decision-making skills. Students also expressed a desire to have more hands-on clinical experience for skill acquisition (Casey et al., 2011). According to Casey et al. (2011), 30 % to 60 % of newly hired nursing staff leave the profession or change jobs within their first year. Reasons for leaving the profession include difficulties in assuming the registered nurse role, feelings of unpreparedness, challenging patient populations, and staffing shortages (Casey et al., 2011). Clinical practicums and nurse residency programs were established to aid in the transition of student nurse to registered nurse (Casey et al., 2011). Challenges also existed transitioning from student nurse to registered nurse pre-pandemic. According to Wong et al. (2018), transitional stress and displeasure with the work environment led to increased rates of new graduate nurses leaving their jobs ultimately reducing the number of available nurses to care for patients. In a two-year period, turnover rates
ranged from 6% to 14.5%. Stress secondary to a change in roles and workplace environment, high acuity patients, lack of support, difficulties establishing rapport with colleagues, problems with prioritization, and challenges communicating with physicians and senior staff were listed as reasons for leaving nursing (Wong et al., 2018). Furthermore, Monagle et al. (2018) explored the disconnect between classroom learning and hands-on clinical practice as a potential cause of transitional stress and difficulty. When communication was enhanced, support from the hiring organization improved, roles were properly defined, and care complexity addressed, transition from student to new graduate registered nurse improved (Monagle et al., 2018). With an already vulnerable new graduate nurse population, the COVID-19 pandemic disrupted the utilization of established programs and dramatically altered the nursing curriculum, leaving new nurses vulnerable to feelings of unpreparedness, increased stress, and high turnover.

As a result of COVID-19 to protect the safety of students and faculty, institutions abruptly transitioned from traditional face-to-face classroom learning to remote online learning. Due to a lack of personal protective equipment and to maintain CDC safety guidelines of social distancing, clinical rotations were changed to virtual simulations (CDC, 2020). Without proper time or preparedness, institutions struggled with implementing online learning. These unexpected changes caused students to have to adapt to different learning and communication styles.

According to Tolyat et al. (2022), nursing educators and students stated concerns in having decreased teacher-student interaction, a student-centered education versus teacher-centered, a decrease in clinical competence, and increase in stress levels. With the recent changes to education, students stated that a reduction in clinical preparation and problems with virtual education has led to insufficient clinical experience, decreased self-esteem, and a reduction in holistic care to patients (Tolyat et al., 2022).

Consequently, the changes in how nursing education is currently delivered could influence the future of healthcare. As demonstrated, the ongoing events have affected how undergraduate nursing programs prepare students for practice. Hence, a knowledge gap has been developed in which researchers can investigate the effects of online learning versus traditional face-to-face learning. The purpose of this research study is to explore the perception of readiness and preparedness in undergraduate nursing students and those with less than two years of nursing experience affected by the transition to online and virtual learning platforms brought about by COVID-19.

Literature review

Many different steps are required before a nursing student becomes a competent, experienced nurse. Traditional pre-Covid 19 programs combined classroom learning and clinical/simulation experiences; however, bridging the gap between theory and practice is challenging. Clinical preparedness depends on whether the student nurse was able to experience all dimensions of nursing during their educational career (Shahsavari et al., 2020). Assessing practice readiness has always been challenging as nursing student preparedness has become a growing concern throughout the years for educational programs (Shahsavari et al., 2020). COVID-19 dramatically changed how undergraduate nursing education was delivered, possibly altering the perception of preparedness. Nursing educators were perplexed with how to deliver the core nursing content as questions arose if students would be prepared to demonstrate the required critical thinking and practice skills of a registered nurse (Agu et al., 2021).

Registered nurse preparedness is the ability to provide safe, high-quality patient care (Shahsavari et al., 2020). Consequently, nursing schools must have programs that focus on the transition to practice with clinical learning or simulations. If nursing programs did not address this bridge well, nurses may feel a shock and not be readily equipped for their transition to a registered nurse (Davies et al., 2021). The shock could inadvertently lead to poor patient outcomes (Labrague & Santos, 2020).

For several years, simulations had become a way in which to bridge the gap between classroom and clinical learning. Due to the safety concerns and stay at home orders created by the pandemic, most undergraduate nursing schools transitioned from hospital clinical learning to only virtual simulations (CDC, 2020). Simulations offered a unique teaching experience in which the students practice in a safe and controlled environment (Davies et al., 2021). According to Agu et al. (2021), skill demonstration via videos lacked the comparison to true clinical experience; however, virtual simulations demonstrated an improved clinical experience with an overall positive impact in clinical rotation completion.

Clinical skill development has been viewed as a core component to undergraduate nursing education. In a study done by Hustad et al. (2019), simulation-based learning could help students improve their assessments and management skills only if the simulation was realistic and authentic. Hustad et al. (2019), recommended that bachelor nursing programs incorporate simulation-based learning into their curriculum. Incorporating clinical practicum and externships were also used to enhance preparedness in the undergraduate programs for nursing students (Hustad et al., 2019). However, despite the implementation of these programs during COVID-19, concern for clinical preparedness remained. With the changes in clinical preparation, nursing faculty questioned if students would be prepared for their new nursing roles (Fitzgerald & Konrad, 2020).

Prior to employment, registered nurses should possess a variety of skills and perform certain procedures which were taught and practiced during clinical rotations. According to Porter et al. (2013), students must have confidence in their skills to perform well in the clinical setting. There were many different factors that can affect how a student performs including lack of experience, fear of making mistakes, and absence of support from nursing professionals (Porter et al., 2013). To perform well in clinical learning, students must have self-confidence. Research by Porter et al. (2013) demonstrated many last year students felt unprepared performing hands-on clinical skills to be able to adequately care for patients in clinical practice. The clinical setting should be a molding ground where students could practice nursing skills to prepare for the real-life environment (Porter et al., 2013). However, many students lack the skills and confidence to be able to practice due to a shortage of appropriate and ample clinical placements. Students reported feeling not qualified to be here, anxious about the responsibility, and expressing a constant state of panic; however, students who completed a high acuity clinical rotation had increased confidence as compared to those who did not (Porter et al., 2013). Consequently, Porter et al. (2013), concluded that if students have more clinical placement time, students’ fears and concerns could be diminished.

When caring for multiple patients, nursing students may feel challenged. To bridge the gap in nursing preparedness, many nurse educators had incorporated simulation based clinical learning (Davies et al., 2021). Simulations allowed educators to create a similar reality of clinical practice for nursing students. By using simulation-based learning, educators could expose students to caring for multiple patients. In a study done by Kirkman et al. (2018), providing senior nursing students with multiple patient simulation care enhanced the students’ perception of preparedness as they transition to practice. The students who participated in this study felt they were challenged in critical thinking and saw improvement in confidence in decision making skills. As a result, researchers felt that multiple patient simulations can improve nursing students’ education and enhance readiness for practice (Kirkman, et al. 2018). To help nursing students feel more prepared and understand the nursing workload reality, multiple patient simulation scenarios could offer an opportunity to enhance the education experience. Students who have participated in simulated clinical experience reported a better understanding of interacting with patients, improved clinical decision making, and incorporated better teamwork (Davies et al., 2021).
While simulations offer a supportive experimental environment, it may not capture the real time interruptions and distractions that occur in the registered nurse’s day to day (Davies et al., 2021).

According to Westin et al. (2015), didactic teaching was based on a theoretical framework. A structured curriculum helped to provide nursing students with the knowledge and skills needed to provide patient care. As a result, both theory and clinical learning should be implemented into nursing programs (Westin et al., 2015). Didactic learning could be both completed online and/or in person. Before the pandemic, many schools adopted a hybrid or online didactic teaching style. When the setup for online learning was done correctly, students experienced positive learning outcomes. For online courses to be successful, there must be adequate planning and preparation time, institutional support, technological equipment with internet access, and resources to help guarantee access to online courses (Pérez-Vilalobos et al., 2021).

Research has demonstrated when students received tutorials about a new online learning platform there tends to be a smoother transition; however, COVID-19 rapidly forced institutions to transition to online learning to maintain faculty and student safety (Agu et al., 2021). To further reduce anxiety and stress, research conducted by Fitzgerald and Konrad (2020) demonstrated good to excellent instructor support produced less symptoms associated with anxiety and stress surrounding the educational changes of COVID-19. The stability of the learning platform could also reduce anxiety and stress, and direct faculty engagement enhanced perception of support to lessen the burden of this educational transition (Fitzgerald & Konrad, 2020). In undergraduate nursing students and nurses with less than two years of experience whose curriculum changed due to COVID-19, what were the effects of online learning and virtual clinical on perceived level of preparedness?

**Method**

**Research design**

A descriptive, correlational, nonexperimental research design was utilized to explore if the transition to online learning and simulated clinical experience altered undergraduate nursing students’ perceived level of preparedness in providing quality nursing care as they begin their registered nurse career. Prior to study initiation and data collection, an Institutional Review Board approval was submitted to Simmons University with approval granted. Prior to survey initiation, a cover letter for informed consent was provided. By using the Qualtrics survey platform, anonymity was insured as there was no way to collect identifying information from participants.

**Sample population and setting**

The target population of this study included undergraduate nursing students enrolled in a traditional in person campus learning from 2019 to 2021 and registered nurses with less than two years of experience who underwent a transition to online learning and simulated clinical experience due to the COVID-19 pandemic. Three screening questions were utilized to achieve the inclusion criteria. The first screening question asked if participants were currently enrolled in an undergraduate nursing program. Question two of the screening determined if participants were currently employed, had prior healthcare experience, and if board certification was required prior to hire during the COVID-19 pandemic. Finally, questions regarding skill comfort obtained from the Casey-Fink Readiness for Practice Survey were asked. The skill comfort questions have construct and content validity. This portion of the study investigated students’ comfort in performing skills required by any registered nurse. The non-inclusive list of skills include: assessment skills, bladder catheter insertion/irrigation, blood draw/venipuncture, blood glucose monitoring device, central line care (dressing change, blood draws, discontinuing), charting/documentation, chest tube care, EKG/telemetry monitoring and interpretation, giving verbal report, intravenous (IV) medication administration, intravenous (IV) starts, IV pumps/PCA pump operation, medication administration, NG tube/dobhoff care, pulse oximetry, responding to an emergency/code, changing patient condition trach care/suctioning, wound care/dressing change/wound vac. On the job education will provide additional practice and further increase confidence in skill acquisition. Study participants selected three skills from the list provided they are uncomfortable performing independently. Additionally, comfort in caring for multiple patients was assessed using a Likert scale from the Casey-Fink Readiness for Practice Survey. Nursing skills and hands-on patient care have been typically assessed during live clinical rotations. With the transition to simulated clinical experience, comfort and readiness of caring for multiple patients and skill confidence could have decreased; therefore, these questions were designed to directly assess the readiness of those impacted by the pandemic. The Casey-Fink Readiness for Practice Survey was the final portion of this survey, as this valid and reliable tool was utilized to explore the transitional impact from student to registered nurse during the pandemic. Permission to utilize this tool in research was granted by Kathy Casey on the tool’s website page.

**The Casey-Fink Readiness for Practice Survey Tool**

The Casey-Fink Readiness for Practice Survey was created in 2007 to measure self-confidence of undergraduate nursing students regarding care delivery. This tool also explored their level of readiness for practice (Casey et al., 2011). The survey covered 20 statements to assess confidence in performing specific tasks. These statements ranged from asking about confidence in communication, delegation, critical thinking, and prioritizing care. Scoring of this tool used a four-point Likert scale ranging from strongly disagree (1 point) to strongly agree (4 points) to measure responses for this section. Minimal score was 20 and maximum score 80. Low scores indicated perception of less preparedness and comfort, while higher scores indicated perceptions of higher preparedness and comfort. The survey ended with a free text question regarding ways to improve preparedness for practice (Casey et al., 2011).

According to Casey et al. (2011), a panel of professional clinical
professors reviewed the Casey-Fink Readiness for Practice Survey for content and construct validity prior to use. Readiness can be measured by the questions posed in section two exploring the skills and knowledge possessed by the graduating nursing students; therefore, the tool was believed to be relevant in assessing readiness, which is the target construct desired to be measured. The 20 items in section three of the survey regarding confidence and comfort were examined after two exploratory factor analyses for internal consistency reliability. After data analysis of the four main subsections within these 20 items, the Cronbach’s alpha ranged from 0.5 to 0.8 with an average of 0.69 indicating an acceptable level of reliability. This survey tool further correlates that the 20 items within section three are measuring the same construct of readiness. Finally, an independent validation sample was utilized to explore the survey’s goodness of fit. The confirmatory fit index was 0.86 showing acceptability (Casey et al., 2011). Psychometric evaluation of the subscales for the Casey-Fink Readiness for Practice Survey reveals Cronbach’s alpha of 0.80 for clinical problem solving, 0.50 for learning techniques, 0.70 for professional identity, and 0.60 for trials and tribulations, respectively. According to statistical data analysis, the Cronbach’s alpha for this study were: 0.80 for clinical problem solving; 0.70 for learning techniques; 0.60 for professional identity; and 0.60 for trials and tribulations.

Data analysis

Data were exported from Qualtrics into Excel for review and cleaning. Data were then imported into SPSS 27.0 (IBM Corp, 2020) for data analysis. For participants with 5 % or less of missing data in the Casey-Fink Readiness for Practice Survey, individual questions were replaced with the question’s mean. Descriptive statistics were performed on all data and exploratory bivariate analysis was used to examine if the transition to online learning and simulated clinical experience altered undergraduate nursing students’ perception of preparedness in providing quality nursing care as they begin their registered nurse career. Specifically, chi-square analysis was used for nominal level data and independent t-tests were used for the Casey-Fink Readiness for Practice Survey. Statistical significance was determined by a p-values of 0.05 or less and effect sizes were calculated. Data on the open-ended question was gathered and two main themes identified. First, over one-third of the participants (n = 34, 49.30 %) desired to have more hands-on/in-person clinical practice. Second, 10(14.50 %) expressed the need for new graduate preceptorship/mentorship programs post-graduation. Out of the 103 participants, 34 did not provide an answer.

Results

Sample selection

A total of 221 surveys were collected using Qualtrics. The goal was to reach at least 100 participants for a meaningful sample size. Of the 221 surveys collected, 103 met eligibility criteria. A total of 59 participants did not meet inclusion criteria, and 59 participants did not complete the Casey-Fink Readiness for Practice Survey. Principal reasons for exclusion were participants not currently enrolled in a nursing program, or did not transition to online learning or simulated clinical experience. The final sample included 103 participants for the quantitative demographic data analysis.

Characteristics of participants

Participants predominantly identified as female (n = 97, 95.10 %) and Caucasian (n = 74, 73.30 %) with an overall mean age of 30.78 ± 7.85. Slightly more than half of the participants (n = 55, 55.00 %) attained a BSN degree, and nearly half (n = 48, 48.50 %) graduated in 2021. Over three-fourths (n = 76, 71.60 %) and almost all participants surveyed (n = 93, 91.20 %) experienced hands-on and virtual learning or simulated clinical experience. The top three skills/procedures that they were most uncomfortable with performing independently at this time. At least half of participants (n = 51, 49.50 %) identified responding to an emergency/CODE/changing patient condition as being the most uncomfortable skill/procedure to perform independently. Central line care (dressing change, blood draws, and discontinuing) ranked second with over one third (n = 37, 35.90 %) of participants feeling uncomfortable performing this skill experiences for didactic classroom learning and clinical preparation, respectively. At least two-thirds had prior experience with online learning (n = 69, 67.00 %); therefore, over half (n = 55, 54.50 %) of the participants neither agreed nor disagreed with support received during online learning transitioning. Over three-fourths of participants (n = 88,86.30 %) had a reduction in clinical hours due to the COVID-19 pandemic. Out of 103 participants, less than two-thirds (n = 65,63.70 %) had previous healthcare experience. Most participants (n = 84,82.40 %) were currently employed, as over half were (n = 55,67.10 %) required to take the National Council Licensure Examination (NCLEX-RN) before hire. Refer to Table 1 for a complete review of the participants’ characteristics.

| Table 1                                           | (n = 103)                  |
|---------------------------------------------------|----------------------------|
| Characteristics of participants                   | Statistics %               |
| Age, mean ± SD                                     | 30.78 ± 7.85               |
| Gender, n (%)                                      | 97 (95.10 %)               |
| Male                                              | 5 (4.90 %)                 |
| Race/ethnicity, n (%)                             | 10 (9.90 %)                |
| Asian                                             | 4 (4.00 %)                 |
| Black/African American                            | 12 (11.90 %)               |
| Hispanic/Latino                                   | 1 (1.00 %)                 |
| White/Caucasian                                   | 74 (73.30 %)               |
| Degree, n (%)                                     | 45 (45.00 %)               |
| ADN                                               | 55 (55.00 %)               |
| Graduation year                                   | 2019                       |
|                                                   | 1 (1.00 %)                 |
|                                                   | 2020                       |
|                                                   | 30 (30.30 %)               |
|                                                   | 2021                       |
|                                                   | 48 (48.50 %)               |
|                                                   | 2022                       |
|                                                   | 19 (19.20 %)               |
|                                                   | 2023                       |
|                                                   | 1 (1.00 %)                 |
| Prior online learning experience                  |                            |
| No                                                | 35 (34.30 %)               |
| Yes                                               | 67 (65.70 %)               |
| Clinical preparation experience                   |                            |
| Hands on clinical                                 | 4 (3.90 %)                 |
| Virtual clinical                                  | 5 (4.90 %)                 |
| Virtual and hands on experience                   | 93 (91.20 %)               |
| Clinical hours decreased during COVID-19 to only meet board requirement | 14 (13.70 %) | 188 (86.30 %) |
| Didactic course learning experience               |                            |
| Hands on learning experience                      | 1 (1.00 %)                 |
| Virtual learning experience                       | 28 (27.50 %)               |
| Virtual and hands on learning experience          | 73 (71.50 %)               |
| Support received from school during transition due to COVID-19 | 22 (21.80 %) | 55 (54.50 %) |
| Highly supportive                                 |                            |
| Neither agree nor disagree                        | 24 (23.80 %)               |
| No support                                        |                            |
| Current employment                                | 18 (17.60 %)               |
| Yes                                               | 84 (82.40 %)               |
| NCLEX requirement prior to employment             |                            |
| No                                                | 27 (32.90 %)               |
| Yes                                               | 55 (67.10 %)               |
| Previous healthcare experience                    |                            |
| No                                                | 37 (36.30 %)               |
| Yes                                               | 65 (63.70 %)               |

Utilizing a multiple response formatting, survey participants ranked the top three skills/procedures that they were most uncomfortable with performing independently at this time. At least half of participants (n = 51, 49.50 %) identified responding to an emergency/CODE/changing patient condition as being the most uncomfortable skill/procedure to perform independently. Central line care (dressing change, blood draws, and discontinuing) ranked second with over one third (n = 37, 35.90 %) of participants feeling uncomfortable performing this skill
Independently. Finally, greater than one third (n = 36, 35.00 %) were uncomfortable independently interpreting EKGs and telemetry monitoring.

When performing IV pump/PCA pump operation independently, there was an association between feelings of uncomfortableness and clinical preparedness along with level of school support. A chi-square test for independence indicated statistical significance between feelings of uncomfortableness performing IV pump/PCA pump operation independently and clinical preparation experience received, $X^2(1, n = 102) = 19.88, p = 0.00$, Cramer’s V = 0.44, medium effect size. Medium effect size would suggest that there was a moderate difference between scores with moderate clinical or professional significance. 10(10.80 %) of those who were most uncomfortable performing IV pumps/PCA pumps reported hands-on and virtual clinical preparation experience compared to 4(80.00 %) of virtual clinical preparation experience only. In addition, lack of school support had a negative impact. Specifically, a chi-square test for independence indicated statistical significance between feelings of uncomfortableness while performing IV pump/PCA pump operation independently and the support students received while transitioning to online learning. X$^2(1, n = 101) = 12.78, p = 0.00$, Cramer’s V = 0.36, with medium effect size.

Support received while transitioning to online learning during COVID-19 was associated with level of comfort performing central line care along with NG tube/Dobhoff care. Specifically, a chi-square test for independence indicated statistical significance between feelings of uncomfortableness while performing NG tube/Dobhoff care independently and the support students received while transitioning to online learning preparation experience received, $X^2(1, n = 99) = 6.33, p = 0.04$, Cramer’s V = 0.25, nearing a medium effect size. 1(9.10 %) of those who felt most uncomfortable performing NG tube/dobhoff care independently reported high support when transitioning to online learning during COVID 19 compared to 4(36.40 %) who neither agreed or disagreed and 6(54.50 %) who voiced no school support with the transition to online learning. Refer to Tables 2 through 4 to explore the perception of uncomfortableness performing statistically significant skills/procedures.

### Level of confidence in managing a patient care assignment

Multiple response formatting was utilized to assess confidence in managing a multiple patient assignment. When caring for four patients, one-third of nursing students and those with less than two years of nursing experience (n = 34, 33.00 %) felt extremely uncomfortable. Over one-fourth of participants were somewhat uncomfortable when caring for three patients (n = 28, 27.20 %). As the number of patients decreased to two, comfort increased. One-third (n = 33, 32.00 %) felt somewhat comfortable caring for two patients, and nearly one-fourth (n = 21, 20.40 %) were extremely comfortable providing care for two patients.

Differences in comfort level depending on the number of patients and clinical preparedness were identified. A chi-square test for independence indicated statistical significance between feeling somewhat comfortable when caring for two patients and having hands-on and virtual clinical preparation experience, $X^2(1, n = 102) = 6.59, p = 0.04$, Cramer’s V = 0.25, nearing a medium effect size. 32(89.90 %) of those who felt somewhat comfortable providing care for two patients reported hands-on and virtual clinical preparation experience compared to only 4 (11.10 %) of those reporting virtual experience only. Whereas a chi-square test for independence indicated statistical significance between feeling extremely comfortable when caring for four patients and hands-on and virtual clinical preparation experience, $X^2(1, n = 102) = 11.52, p = 0.00$, Cramer’s V = 0.34, medium effect size. 92(92.00 %) of participants who reported hands-on and virtual clinical preparation experience felt a lack of extremely comfortable care for 4 patients when compared to 3(3.00 %) with hands-on clinical experience only and 5 (5.00 %) with virtual clinical experience.

### Differences between comfort level with caring for two patients and didactic course learning experiences

Differences between comfort level with caring for two patients and didactic course learning experiences were found. A chi-square test for independence indicated statistical significance between feeling extremely comfortable when caring for two patients and hands-on and virtual didactic course learning experience, $X^2(1, n = 102) = 9.90, p = 0.01$, Cramer’s V = 0.31, medium effect size. 29(87.90 %) of those who

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### Table 2

| Hands on and virtual | Virtual only | X$^2$ | p value | Cramer’s V |
|----------------------|-------------|------|---------|------------|
| Clinical preparedness | 10(10.80 %) | 4(80.00 %) | 19.88 | 0.00 | 0.44 |

### Table 3

| Hands on and virtual | Virtual only | X$^2$ | p value | Cramer’s V |
|----------------------|-------------|------|---------|------------|
| High support | Neither Agree nor Disagree | No Support | X$^2$ | p Value | Cramer’s V |
| Level of school support transitioning to online learning | 4(28.60 %) | 2(14.30 %) | 8(57.10 %) | 12.78 | 0.00 | 0.36 |

### Table 4

| Hands on and virtual | Virtual only | X$^2$ | p value | Cramer’s V |
|----------------------|-------------|------|---------|------------|
| High support | Neither Agree nor Disagree | No Support | X$^2$ | p Value | Cramer’s V |
| Level of school support transitioning to online learning | 1(9.10 %) | 4(36.40 %) | 6 | 54.50 | 6.33 | 0.04 | 0.25 |
felt extreme comfort providing care for 2 patients reported hands-on and virtual didactic course learning experience compared to 1(3.00 %) of hands-on only experience and 3(9.10 %) of virtual only didactic course learning experience. Furthermore, chi-square test for independence indicated statistical significance between feeling somewhat comfortable when caring for two patients and hands-on and virtual didactic course learning experience, $X^2(1, n = 102) = 6.00, p = 0.05$, Cramer’s $V = 0.24$, nearing a medium effect size. Out of the 36 participants who felt somewhat comfortable providing care for two patients, 21(58.30 %) reported hands-on and virtual experience with didactic course learning experience compared to 15(41.70 %) of those with virtual didactic course learning experience only. Differences in extreme comfort in caring for three or four patients and type of didactic course learning experiences were found. Specifically, a chi-square test for independence indicated statistical significance between feeling extremely comfortable when caring for three patients and hands-on and virtual didactic course learning experience, $X^2(1, n = 102) = 9.57, p = 0.01$, Cramer’s $V = 0.31$, medium effect size. 10(83.30 %) of those who felt extremely comfortable providing care for three patients reported hands-on and virtual didactic course learning experience compared to only 1(8.30 %) of those reported hands-on only and virtual only didactic course learning experience, respectively. This changed when caring for four patients. A chi-square test for independence indicated statistical significance between feeling extremely comfortable when caring for four patients and hands-on and virtual didactic course learning experience, $X^2(1, n = 102) = 50.69, p = 0.00$, Cramer’s $V = 0.71$, large effect size. 72(72.00 %) of participants who reported hands-on and virtual didactic course learning experience expressed a lack of extreme comfort when caring for 4 patients compared to 28(28.00 %) of virtual only didactic course learning experience. Tables 5 through 10 provide the statistically significant data to explore the level of confidence in managing a patient care assignment.

**Casey-Fink Readiness for Practice Survey**

The Casey-Fink Readiness for Practice Survey is divided into four subscales: clinical problem solving, learning techniques, professional identity, and trials and tribulations. All the following data were from the 103 participants. The clinical problem-solving mean was 18.56 ± 3.14. The learning techniques mean was 3.96 ± 1.52. The professional identity mean was 14.03 ± 2.33, and the trials and tribulation mean was 15.17 ± 2.74. Table 11 summarizes these data.

There were statistically significant mean differences in subscales when comparing those that did or did not experience a decrease in number of clinical hours. This included a significant difference in scores for those who experienced a reduction in the number of clinical hours ($M = 3.78, SD = 1.36$) to those who did not experience a reduction in the number of clinical hours ($M = 5.00, SD = 2.08$), $t = 2.87, p = 0.01$ (two-tailed) and learning techniques subscale. The magnitude of the differences in the means (mean difference = 1.21, 95 % CI: 0.37 to 2.06) was moderate (eta squared = 0.08). A difference was also found in the trials and tribulations subscale. An independent t-test was conducted to determine if there is a statistically significant difference in the mean scores for the two groups (if a reduction in required clinical hours differed significantly in terms of trials and tribulations scores within the Casey-Fink Readiness for Practice Survey). There was a significant difference in scores for those who experienced a decrease in the number of clinical hours ($M = 14.89, SD = 2.64$) to those who did not experience a decrease in the number of clinical hours ($M = 16.93, SD = 2.87$), $t = 2.66, p = 0.01$ (two-tailed) regarding trials and tribulations. The magnitude of the differences in the means (mean difference = 2.04, 95 % CI: 0.52 to 3.57) was moderate (eta squared = 0.07). No other Casey-Fink Readiness for Practice subscales were statistically significant with those that experienced a decrease in number of clinical hours.

**Table 5** Perception of Feeling Somewhat Comfortable Caring for Two Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Clinical preparedness | 32(89.90 %) | 4(11.10 %) | 6.59 | 0.04 | 0.25 |

**Table 7** Perception of Feeling Extremely Comfortable Caring for Two Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Didactic course learning experience | 29 (87.90 %) | 1(3.00 %) | 9.90 | 0.01 | 0.31 |

**Table 8** Perception of Feeling Somewhat Comfortable Caring for Three Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Didactic course learning experience | 21(58.30 %) | 15(41.70 %) | 6.00 | 0.05 | 0.24 |

**Table 9** Perception of Feeling Extremely Comfortable Caring for Three Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Didactic course learning experience | 10 (83.30 %) | 1(8.30 %) | 9.57 | 0.01 | 0.31 |

**Table 10** Perception of Feeling Lack of Extreme Comfort Caring for Four Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Didactic course learning experience | 72(72.00 %) | 28(28.00 %) | 50.69 | 0.00 | 0.71 |

**Table 11** Casey-Fink Readiness For Practice Survey Subscales

|                          | $\bar{x}$ | SD  |
|--------------------------|-----------|-----|
| Clinical problem solving  | 18.56     | 3.14 |
| Learning techniques       | 3.96      | 1.52 |
| Professional identity     | 14.03     | 2.33 |
| Trials and tribulations   | 15.17     | 2.74 |

**Table 12** Permalink of Feeling Lack of Extreme Comfort Caring for Four Patients

|                | Hands-on virtual | Virtual only | $X^2$ | p value | Cramer’s V |
|----------------|------------------|--------------|-------|---------|------------|
| Clinical preparedness | 92(92.00 %) | 3(3.00 %) | 11.52 | 0.00 | 0.34 |
Mean differences in the trials and tribulations were also found between not and being most uncomfortable with performing bladder catheter insertion/irrigation independently. An independent t-test was conducted to determine if there was a statistically significant difference in the mean scores for comfort independently performing bladder catheter insertion/irrigation and the Casey-Fink Readiness for Practice Survey subgroup trials and tribulations scoring. There was a significant difference in scores for those who were most uncomfortable performing bladder catheter insertion/irrigation independently (M = 14.91, SD = 2.65) to those who were not most uncomfortable independently performing bladder catheter insertion/irrigation independently (M = 16.60, SD = 2.92), \( t = -2.25, p = 0.03 \) (two-tailed) regarding trials and tribulations. The magnitude of the differences in the means (mean difference = -1.69, 95 % CI: -3.18 to -0.20) was small (eta squared = 0.05). No other skills comfort and Casey-Fink Readiness for Practice subscales were statistically significant. Tables 12 through 14 describe the statistically significant differences in means of the obtained results.

**Ways to Enhance Preparation to Enter the Nursing Profession**

Participants had the option to provide subjective comments regarding how preparedness into the nursing profession could have been improved via a free text box without word count limitations. For example, participant No. 18 stated “We need in person clinicals and labs. It is not helpful at all to do virtual simulations in place of clinical and labs. In my fundamental rotation, we only got 4 days in the hospital, so I do not feel comfortable performing fundamental skills that we should have learned during that rotation.” Participant No. 86 also mentioned needing “more hands-on practice with skills in clinical. I didn’t have as much clinical time as other cohorts due to the pandemic and feel shorted in opportunity to practice as well as experience different units to find the area I wanted to pursue.” Participant No. 84 added “I feel grossly unprepared thanks to the changes during COVID.” Participant No. 6 states that “In my current department, my unit is short staffed and my preceptor and I are assigned 6 patients at a time. I haven’t learned a thing and have become so nervous and anxious I don’t even want to be a nurse anymore. I’ve only been working for a month.” Participant No. 53 further supported the need for new graduate preceptorship by stating a desire to have “extended orientations with preceptors on unit, additional education opportunities, mentorship, and support.” Table 15 provides common themes identified and specific participants’ responses.

**Discussion**

COVID-19 brought about many global changes including how nursing education was delivered. Educators have a duty to ensure nursing theory is taught well for a smooth transition into practice so healthcare providers can deliver quality, competent care. However, with the rapid transition to online learning and virtual clinical simulations, nurses’ perception of preparedness has been negatively impacted. This study revealed that perceived nursing skill comfort and the level of confidence in managing multiple patients is impacted when nursing programs reduce clinical hours, provide limited school support, and resort to simulated clinical experience only.

The study also revealed that at least two-thirds of participants had prior experience with online learning showing that most schools have been transitioning to hybrid learning programs. Online learning can be extremely beneficial if established correctly. While students’ perceptions of support may have been biased, having previous online experience could have led participants to answer that they neither agree nor disagree on support received as they transitioned to online learning. Nevertheless, this study concluded that the perceived level of preparedness and the transition to the professional role is affected by a reduction in clinical time.

**Personal comfort in skill/procedure performance**

Skill comfort was negatively affected as students’ clinical preparation experience was dramatically impacted by COVID-19. According to Porter et al. (2013), students who experienced high acuity clinical settings had increased skill confidence with a decrease in fears and concerns as the number of clinical hours increased. This research showed that students who experienced both hands-on and virtual clinical felt better prepared to independently operate an IV/Pump and PCA, as compared to those who only had virtual clinical. Ensuring students receive the maximum clinical hours possible with both hands-on and virtual clinical preparation provides the best outcomes.

Institutional support with planning and preparation through the online learning transition has demonstrated positive learning outcomes and a smoother transition (Pérez-Villalobos et al., 2021). When introduced properly, research by Pérez-Villalobos et al. (2021) supports online didactic education and clinical simulation; however, COVID-19 did not allow for a smooth educational transition. In addition to improving comfort with specific skill/procedure attainment, faculty support can reduce feelings of anxiety and stress surrounding the transition into online learning platforms (Fitzgerald & Konrad, 2020). Research findings
### Table 15
Students comments

| New grad/preceptorship program (n = 10, 14.50 %) |
|------------------------------------------------|
| “More clinical experience and e learning was horrible, one teacher completely abandoned us” – Participant 32 |
| “More clinical experience and e learning was horrible, one teacher completely abandoned us” – Participant 32 |
| “More practicals” – Participant 35 |
| “More hands on experience in nursing school.” – Participant 39 |
| “More clinical time in other areas and 1 on 1 guidance.” – Participant 40 |
| “Offering additional clinical opportunities over school breaks.” – Participant 55 |
| “More hands on experience and less simulation.” – Participant 58 |
| ‘Literally more hands on experiences—we were solely taught to pass the NCLEX—I feel as if I have no idea what I’m doing now.” – Participant 59 |
| “More simulations and skills labs. More hands on in clinical” – Participant 60 |
| “I wish more in-person hours at school and in the clinical setting were offered to help familiarize me with nursing. I don’t feel that the online simulations and case studies furthered my learning or prepared me to become a nurse. I feel very uncomfortable treating patients alone.” – Participant 61 |
| “More in person clinical experience” – Participant 62 |
| “In person clinical time.” – Participant 63 |
| “I personally think nursing curriculum as a whole should focus more on delegation skills and communicating with patients, families and providers. Though simulation was semi-helpful in my opinion, nothing is like touching and communicating with a real-life patient.” – Participant 64 |
| “More individualized, hands-on experiences” – Participant 65 |
| “Having more in person clinicals” – Participant 67 |
| “More time to practice skills. Better clinical opportunities that allowed me to apply what I was learning in class” – Participant 69 |
| “Not transitioning to solely online learning and instead allowing students to accept risk and participate in in person clinicals if they choose” – Participant 76 |
| “Having more in person clinicals and hands on skills practice. Not skipping pediatric and L&D clinicals. Having more lecture time instead of having to teach myself. Having the staff mentor that was assigned to me actually do something. Too much else to even remember right now. I know nursing is where I want to be. I feel grossly unprepared thanks to the changes during covid.” – Participant 84 |
| “I really needed hands on clinical experience or a preceptorship (both were expected prior to covid)” – Participant 85 |
| “More hands on practice with skills in clinical. I didn’t have as much clinical time as other cohorts due to the pandemic and feel shorted in opportunity to practice as well as experience different units to find the area I wanted to pursue.” – Participant 86 |
| “More hands on experience.” – Participant 91 |
| “More hands on experience.” – Participant 92 |
| “Way more clinical time, facilitating team building activities so trust is built between instructors and students, orientation to what the clinical experience should be, accountability that specific skills are practiced, equity of who gets to work on what floor each week, more robust preceptor training, nursing schools building rapport with preceptors to create more buy-in, more meaningful debriefing after clinical experiences, having clinical instructors seek out and advocate for meaningful experiences for students during the clinical day.” – Participant 100 |
| “More hands on / in person practice” – Participant 103 |
| “A one on one preceptor while at work in an environment where they are fully staffed. In my current department, my unit is short staffed and my preceptor and I are assigned 6 patients at a time. I haven’t learned a thing and have become so nervous and anxious I don’t even want to be a nurse anymore. I’ve only been working for a month.” – Participant 6 |
| “It would have been nice to have a longer orientation period when I started at my job and to have check ins as I began on my own. I would have also liked to have more practice with assessment and interpreting what it means. Additionally, more real life nursing scenario practice” – Participant 29 |
| “Longer residency program” – Participant 36 |
| “Wishing that I was given the opportunity of having a senior externship.” – Participant 38 |
| “The nurses on the units are so busy and burnt out and staffing levels are low, so I would ideally have more time to learn on the unit.” – Participant 41 |
| “Extended orientations with preceptors on unit, additional education opportunities, mentorship and support” – Participant 53 |
| “More clinical hours being able to follow nurses around as well as a preceptorship.” – Participant 70 |
| “I am a recent graduate (July 2021) with some in-person clinical experience but definitely not enough to feel prepared and confident. I started a new hospital job a month after graduation but left after 5 weeks because my employer only gave us 5 weeks of orientation training and when I requested more training offered 2 more orientation shifts. I was a straight A student but seeing patients in person vs on paper required more critical thinking. My preceptor was a new preceptor and was very impatient and not helpful when I asked questions, and she often left me alone for most of the shift. Her common response to my questions was ‘whatever you think you should do, it’s your license on the line.’ My preceptor during my capstone would have a discussion where I could explain my thought process and get her input, and I was able to learn through that dialogue. The preceptor at my job was so awful I quit that job outright. I think preceptors and other current employees need to understand that new grads are not getting much clinical experience and even interacting with patients may still be awkward and intimidating, much less performing nursing skills. We are willing to learn and desperate for training but still need guidance and pointers.” – Participant 83 |
| “More job shadowing opportunities during in person clinicals. We spent a lot of time doing paperwork rather than following a nurse |

(continued on next page)
Table 15 (continued)

| Feedback Area                      | Feedback Comments                                                                                                                                 |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| More simulation time/more support | “If instructors made clinical more relevant to real situations as nurses” – Participant 13                                                                 |
| Time management                   | “I don’t know if it was related to missing clinicals for covid, since it’s all I know.” – Participant 99                                                                 |
| Professor issues                  | “The professors actually trying to help us through the ordeal, instead of assigning lectures and leaving us to figure things out.” – Participant 25 |
| Clinical staff and instructors: more interaction and feedback | “If the NCLEX could be less stressful! I mean come on… we just graduated nursing school and could barely celebrate that achievement since the NCLEX determines our status as an actual nurse!” – Participant 20 |
| Miscellaneous                     | “Help from professional organizations for new grad, or from the board of nursing with resources, meetings for new nurses, legal information/resources about how to protect our license.” – Participant 97 |

were consistent with the evidence. When students received no school support during the transitional period, uncomfortableness was expressed when performing IV pump/PCA operation, central line care, and NG tube/dobhoff care. This study demonstrated that school support is vital for comfort in performing required nursing skills in the clinical setting.

Level of confidence in managing a patient care assignment.

Juggling multiple patients can be challenging for an experienced registered nurse; however, registered nurses on an adult medical-surgical unit are expected to care for a minimum of four patients each shift. Again, while simulation learning should be one part of the overall nursing educational experience, research has demonstrated that simulations do not capture real time interruptions and distractions that occur in the registered nurse’s day to day (Davies et al., 2021). Simulations, however, can bridge the gap in nursing preparedness as this technique can provide a way for students to care for multiple patients. Research conducted by Kirkman et al. (2018) revealed an increase in confidence regarding decision making skills when caring for multiple patients virtually. Didactic learning is imperative to provide nurses with the correct theory in which to develop safe patient outcomes (Westin et al., 2015). Research findings were consistent with the evidence. Participants who received hands-on and simulated clinical experience and didactic learning felt more comfortable caring for two patients as opposed to four patients. This study concluded that as the number of patients increased, comfort decreased, regardless of clinical and didactic preparation.

Casey-Fink Readiness for Practice Survey

Utilizing the Casey Fink Readiness for Practice survey and when clinical hours were reduced, two subgroups were impacted. Within the learning technique subgroup, results of the study revealed low scores of decreased preparedness with simulated clinical experience and
reflective journaling. Within the trials and tribulations subgroup, results of the study revealed high scores indicating a lack of comfort delegating tasks, difficulty prioritizing care, documentation challenges, conflict with ethical dilemmas, and failure to recognize changes in patient condition.

Therefore, a reduction in clinical hours could result in patient harm. While on orientation, nursing educators should focus on delegation and prioritization of skills with increased education regarding assessing for critical changes in the patient’s condition. Reviewing how to combat ethical dilemmas and proper documentation skills can also be beneficial.

Comfort in performing nursing skills independently was also expressed by high scores within the Trials and Tribulations subgroup of the Casey-Fink Readiness for Practice Survey. When rating questions regarding skill delegation, documentation challenges, care prioritization, handling ethical issues, and identifying changes in the patient’s condition, participants reported feeling the most uncomfortable performing bladder catheter insertions and irrigations independently. When the perception of preparedness was achieved, low scores within this subgroup should occur. Again, these skills need to be directly assessed during nursing orientation ensuring skill comfort is attained for optimal patient outcomes.

Enhancing Preparation to Enter the Nursing Profession

Research by Porter et al. (2013) has demonstrated that more clinical time can reduce students’ fears and concerns and increase confidence regarding decision making skills. Nearly half of the participants surveyed desired more direct hands on/in person clinical experience. Many stated how unprepared with reduced confidence they felt entering practice, as COVID-19 altered their educational experience. The concept of transition shock and gaps incorporating theory and practice were evident by their statements. Participants expressed the desire to have additional new graduate preceptorship/externship to enhance their feelings of preparedness. These results corroborate with previous research done by Hustad et al. (2019) stating that the use of externships enhances preparedness. Nursing educators and upper management hiring nursing graduates who transitioned to simulated clinical experience need to be aware of the feelings of unpreparedness. They possess a duty to ensure these new nurses receive the proper education required to increase comfort in performing skills independently and confidence in taking care of multiple patients.

Limitations

While this study provided valuable information about nursing preparedness, overall limited research regarding COVID-19 and its impact on nursing education exists due to the novelty of this topic. Additionally, due to limited research, the long-term reduction of clinical hours has yet to be determined regarding feelings of preparedness and its impact on patient outcome. The initial format of the survey posed challenges. Due to the placement of the assessment tool, the Casey-Fink Readiness for Practice Survey, several qualified participants were excluded since these participants stopped the questionnaire before answering the assessment tool. Once the tool was moved within the questionnaire, more participants answered the survey; however, this occurred late in the data collection process ultimately reducing the number of eligible participants. Finally, many other healthcare disciplines were impacted by the educational changes of COVID-19; however, the results of this research focused only on registered nurses; therefore, generalizability was limited. COVID-19 introduced research gaps regarding if online learning and simulated clinical experience are adequately preparing future providers to deliver competent nursing care. These gaps demonstrate the need for research surrounding the perception of clinical practice preparedness.

Recommendations for future research and nursing practice

Further research is needed to assess how new graduate nurses coming into the profession post COVID-19 pandemic to analyze nurse satisfaction. We hope that our research findings will trigger more studies to be done to investigate preparedness in undergraduate nurses post the COVID-19 pandemic. We hope that nursing educators will explore different avenues to teach and prepare nurses as the healthcare system continues to evolve.

Conclusion

Nursing institutions possess a duty to graduate highly skilled and knowledgeable nurses by thoroughly preparing them for clinical practice. COVID-19 dramatically impacted undergraduate nursing education. As the pandemic forced the transition from live didactic education with clinical experience to fully online learning with simulated clinical experience, feelings of unpreparedness resulted. Participants reported a reduction in comfort in performing common nursing skills independently and decreased comfort when caring for a multiple patient assignment. With the reduction in clinical hours due to COVID-19, results within the subgroups of the Casey-Fink Readiness for Practice Survey revealed diminished readiness for clinical practice. As COVID-19’s impact on education continues to develop, additional research is needed to adequately assess its impact on preparedness and discover if patient outcomes will be negatively influenced.

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