BACCALAUREATE NURSING STUDENTS' EXPERIENCES WITH ONLINE CASE-BASED LEARNING (CBL) DURING THE COVID-19 PANDEMIC

by

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Abstract

In spring 2020, in-person learning for nursing students was canceled in response to the Covid-19 pandemic. All courses, including clinical courses, abruptly transitioned to online formats. A significant gap in the literature exists regarding baccalaureate (BSN) nursing students' experiences with online learning during this timeframe. The purpose of this basic qualitative study was to explore BSN students' experiences with online learning during the spring 2020 semester. Eleven BSN students from a midsized private university in the Midwestern United States participated, and data were collected using semi-structured interviews. Constructivism served as the theoretical framework. Data were analyzed using Braun and Clarke's thematic analysis. Results included nine superordinate themes (psychological distress, forced external adjustments, new and renewed coping strategies, clear perceptions of case-based learning, perceived strengths of online education, perceived weaknesses of online methods, relatable instructors' roles, a variety of challenges with technology, and positive reflection and suggestions) and 28 subordinate themes. The 28 subordinate themes reflected commonalities in participants' descriptions of their experiences, including: feeling negative emotions about missing out on in-person clinical learning opportunities; transitioning to online learning methods and challenges of using technology; having to make external adjustments; applying new and renewed coping strategies; relying on resilience; and, adjusting to relatable but minimally engaged instructors. Although descriptions were overwhelmingly negative, some strengths of online education were identified, including flexibility, reinforced learning, and enhanced critical thinking. Findings aligned with constructivism in that BSN students adapted, assimilated, and gained new insights to continue moving forward in their program during the COVID-19

pandemic; their experiences are applicable to making modifications to improve online learning should nursing education programs be required to transition entirely online in the future.

Dedication

Thank you, my Heavenly Father, who knows the plans He has for me and guides me throughout my life. I dedicate this dissertation to my immediate family: my husband, Eric, and my children, Molly and Ben. You all have made many sacrifices so that I could achieve this goal, and I appreciate your constant love and encouragement. I would also like thank my parents, Mark and Roxanne, who have always believed in me and told me that I could do anything I put my mind to. Thank you also to all my friends and family who have provided encouragement to me along the way!

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CHAPTER 1. INTRODUCTION

In March 2020, the COVID-19 pandemic abruptly halted in-person learning for higher education institutions in the United States and worldwide (Bezerra, 2020; Johnson et al., 2020). The state of emergency required administrators of colleges and universities to consider new ways to educate students while maintaining quality education (Bezerra, 2020; de Tantillo & Christopher, 2020; Van Der Wege & Keil, 2021). Healthcare students, including nursing students, were forced to put direct patient care training on hold while schools quickly found new ways to train them, resulting in increased use of online learning (Ramos-Morcillo et al., 2020) for both classroom and clinical settings. Some nursing schools had substantial online resources in place, while others struggled to transfer material online (de Tantillo & Christopher, 2020). The transfer of content to an online format requires considerable thought and intentional planning, which was not available at the beginning of the COVID-19 pandemic (Morin, 2020).

One existing teaching strategy used in nursing education as an alternative for direct patient care is case-based learning (CBL). CBL is a student-centered teaching strategy where students actively engage in the learning process to solve real-world issues (Daniels et al., 2015). CBL is successful, in part, because students are most engaged in learning when coursework applies to these types of real-world situations (Hampton & Pearce, 2016). Moreover, the American Association of Colleges of Nursing (AACN, 2021) requires that nurses demonstrate appropriate levels of clinical judgment, which is enhanced with the use of CBL (Chan et al., 2016). The research priorities in nursing education outlined by the National League for Nursing

(NLN, 2020a) include promoting learning and enhancing clinical judgment and decision making. CBL is used in multiple settings in nursing education, including online environments, and is as effective as a traditional classroom setting for enhancing students' self-learning ability and problem-solving skills (Chan et al., 2016).

The topic of this qualitative study is baccalaureate nursing students' experiences with online case-based learning (CBL) during the pandemic. Although the literature supports using CBL in the online environment, significant challenges arose during the COVID-19 pandemic because institutions had little time to transition coursework to the online format. The change was not predicted or carefully planned (Suliman et al., 2021). The uncertainty of the pandemic meant that students faced anxiety, fear of infection, and challenges of online learning (Savitsky et al., 2020). New research is emerging, but few studies have been published to date regarding nursing students' experiences related to the transition from in-person to online and their experiences learning online during the pandemic (Bdair, 2021). Understanding students' experiences learning online during the pandemic can serve as lessons for developing sustainable future educational plans (Johnson et al., 2020). The current study provides an in-depth exploration of baccalaureate nursing students' experiences of online case-based learning at the beginning of the COVID-19 pandemic. This qualitative study was designed with considerations of the review of current literature and the identification of the significant gap in understanding baccalaureate nursing students' experiences learning online during the pandemic.

Chapter 1 continues with a background of the study, including the benefits of online learning during the pandemic and challenges that nursing students experienced. The theory of constructivism and its applicability to the topic is described. Additional components of the chapter include the need, purpose, and significance of the study, the research question,

definitions of pertinent terms, description of the research design, and assumptions and limitations related to the study.

Background of the Study

The uncertainty of the COVID-19 pandemic created significant challenges for nursing students. In-person learning abruptly halted, and nursing students had to adapt as their coursework moved online. Stressors of the pandemic affected their psychosocial health, causing difficulties with learning (Michel et al., 2021). During this time, students reported anxiety (Savitsky et al., 2020; Fitzgerald & Konrad, 2021), inability to concentrate (Bdair, 2021; Fitzgerald & Konrad, 2021; Heilferty et al., 2021; Kochuvilayil et al., 2021; Singh et al., 2021; Suliman et al., 2021), lack of motivation, impaired memory (Lovric et al., 2020), and poor sleep quality (Romero-Blanco et al., 2020). Some students were fearful of contracting COVID-19 (Aslan & Pekince, 2020; Fitzgerald & Konrad, 2021; Lovric et al., 2020; Michel et al., 2021; Savitsky et al., 2020; Turkles et al., 2021) and worried that their older family members were at increased risk for infection (Fitzgerald & Konrad, 2021; Kochuvilayil et al., 2021; Lovric et al., 2020; Turkles et al., 2021). Students faced new technical issues with completing coursework, including lack of access to computers, the Internet, and software programs needed to complete their work. They were also overwhelmed by the number of online assignments. Importantly, students felt that online learning could not substitute in-person clinical experiences and they were concerned that losing in-person patient care and hands-on assessment skills would result in them being underprepared for clinical practice (Dziurka et al., 2022; Michel et al., 2021).

Though the challenges were numerous, online learning during the pandemic also had advantages. Some students noted that they had more time to study, as they saved time by not commuting (Michel et al., 2021). They could take care of their family members and children at

home while continuing their education (Michel et al., 2021). Some students found value in online simulations and were grateful that the experiences fulfilled clinical hours. The studies that have been published about CBL as an online learning strategy for nursing students during the pandemic have explored using telehealth (DeFoor et al., 2020; Jimenez-Rodriguez & Arrogante, 2020; Rutledge et al., 2020), virtual simulation (Esposito & Sullivan, 2020; Fung et al., 2021; Wands et al., 2020), and virtual unfolding video case studies (Kubin et al., 2021).

Research studies on CBL in nursing education have used constructivism as a framework (Kantar & Massouh, 2015; Li et al., 2019; Meiers & Russell, 2019). Studies in nursing education have also explored online learning through constructivist perspectives (Cobbett & Snelgrove-Clarke, 2016; Olson & Benham-Hutchins, 2020; Robinson et al., 2017; Wright et al., 2018). In constructivism, learning occurs through active assimilation and accommodation (Piaget, 1964). As learners perceive an experience, they reflect on it and incorporate it into an individualized interpretation of reality (Bada, 2015). The role of the learner is to perceive information, interpret it, and rearrange it to gain new insights or understanding (Bruner, 1961). Similarly, the guiding theory in this study was constructivism; however, this study extends and applies constructivism to the unique scenario of baccalaureate (BSN) nursing students' experiences of using CBL in the online setting during the COVID-19 pandemic.

Need for the Study

Previous literature has indicated that using CBL in nursing education is beneficial for student learning. Nursing students who used CBL have a deeper understanding of knowledge (Herron et al., 2019), improved critical thinking ability (Roshangar et al., 2020; Sanders et al., 2020), increased confidence, empowerment, and feeling prepared for practice settings (Kantar & Massouh, 2015). Students have also found CBL enhances their self-learning ability (Chan et al.,

2016) and allows for better interpretation of patient data and ability to make informed decisions (Kantar & Massouh, 2015). Students reported being more engaged in self-reflection (Kantar & Massouh, 2015).

Though CBL is beneficial, there are limitations to its assessment and use in nursing education. A nursing-specific instrument measuring critical thinking has not been developed, limiting valid and accurate assessment of nursing students' critical thinking (Carter & Welch, 2016) using strategies such as CBL. A common challenge for educators desiring to use CBL is the lack of suitable nursing case studies (Hong & Yu, 2017; Li et al., 2019). Also, psychosocial issues are rarely addressed in available case studies (Li et al., 2019).

CBL has been used in various settings in nursing education, including the online environment. In the online setting, CBL is used in synchronous and asynchronous approaches. Asynchronous online learning offers flexibility in time management, which is convenient for group discussions (Chan et al., 2016) and allows quiet and shy students to participate more readily (Chen, 2016). However, asynchronous web-based CBL lacks immediate interaction among students and the instructor (Chan et al., 2016). Synchronous online platforms allow for immediate feedback from the instructor and peers. Breakout sessions into small student groups motivate students to be active participants and engaged in critical thought (Chen, 2016). However, non-verbal cues are missed in synchronous online sessions (Chen, 2016).

Though much literature has been published about CBL and online learning in nursing education, research is limited about what students experienced during the unplanned transition to online learning in the spring of 2020 (Lovric et al., 2020). Most courses, including clinical courses, were transferred to online formats. The impact is unknown about the sudden need to learn online in situations where teachers and students were inadequately prepared (Roy et al.,

2020) compared to online learning in well-developed online courses. Many studies noted that a clear orientation to the online platform at the beginning of the course was beneficial (Chen, 2016; Swartzwelder et al., 2019); however, it is unknown if students received adequate orientation to online platforms and resources before the shift of using them unexpectedly in middle of the spring 2020 semester. Lack of time to adequately plan meant that some faculty were unprepared to teach online (Fogg et al., 2020). Students faced changes in other areas of their lives during that time, such as alterations in family schedules, childcare issues, and fear of becoming infected with COVID-19 (Fogg et al., 2020).

Purpose of the Study

The purpose of the study was to explore the experiences of baccalaureate (BSN) nursing students when transitioning to online CBL for their clinical coursework at the start of the COVID-19 pandemic. Since the COVID-19 pandemic is a recent and ongoing crisis, very few studies have been published to date on baccalaureate nursing students' learning experiences during the pandemic, creating a significant gap in the literature. Studies about the experiences of nursing students during the pandemic have focused on psychological responses (Black Thomas, 2022; Heilferty et al., 2021; Huang et al. 2020; Lovric et al., 2020; Masha'al et al., 2020; Romero-Blanco et al., 2020; Savitsky et al., 2020; Zhi et al., 2020), resilience (Drach-Zahavy et al., 2021; Keener et al., 2021) and sense of belonging to the profession (Dos Santos, 2020a, 2020b). Studies about nursing students' experiences with online learning during the pandemic explored engagement in online courses (Chan et al., 2021), attitudes and concerns (Puljak et al., 2020), telehealth (DeFoor et al., 2020; Jimenez-Rodriguez & Arrogante, 2020; Rutledge et al., 2020), and virtual simulation (Fogg et al., 2020). Some studies that explored nursing students' online learning perspectives during the pandemic occurred outside of the United States (Bdair,

2021; Kochuvilayil et al., 2021; Li et al., 2021; Masha'al et al., 2020; Singh et al., 2021; Sood, 2020; Suliman et al., 2021). Kochuvilayil et al. (2021) found wide variations in nursing students' experiences during the pandemic between students in different countries, showing that culture plays a role in students' experiences and coping. Studies conducted in the United States have been quantitative (Fitzgerald & Konrad, 2021; Michel et al., 2021) or mixed-methods surveys, including open-ended questions (Kubin et al., 2021; Michel et al., 2021; Rutledge et al., 2020). A limited amount of qualitative research has been published, however, about undergraduate nursing students' experiences during the COVID-19 pandemic (Diaz et al., 2021; Heilferty et al., 2021; Wallace et al., 2021). This qualitative study adds to the literature by providing a detailed description of baccalaureate nursing students' learning experiences using online CBL in the United States during the COVID-19 pandemic.

A leading concern during the COVID-19 crisis has been ensuring adequate clinical experiences for students (de Tantillo & Christopher, 2020). Literature about nursing students' experiences with online clinical learning during the pandemic from other countries might not apply to nursing students in the United States. For example, in some countries, nursing students continued in-person clinicals (Kochuvilayil et al., 2021; Ulenaers et al., 2021). A limited number of studies about nursing students' online clinical learning during the pandemic have been conducted within the United States (DeFoor et al., 2020; Diaz et al., 2021; Fogg et al., 2020; Kubin et al., 2021; Rutledge et al., 2020; Wallace et al., 2021; Wyatt et al., 2020). Zhi et al. (2020) found that students who had a stronger sense of professional identity and knowledge about COVID-19 reported lower perceived stress levels than those not yet taking clinical courses. This study focused on baccalaureate nursing students enrolled in their first or second

clinical course, which could potentially result in additional or different stressors compared to students who attended clinicals in previous semesters.

Significance of the Study

Understanding nursing students' experiences will guide educators in developing distance education in the future (Bezerra, 2020) and will help them identify sufficient resources that nursing students need (Ramos-Morcillo et al., 2020). This study provided insight into areas of concern for nursing students, including personal and professional stressors that they faced during the time of crisis and how they coped with the situation. The results will allow nurse educators to better support students emotionally, discuss adaptive coping strategies (Savitsky et al., 2020), and refer them to supportive resources as needed. The results of this study could help nurse educators better understand how to develop online learning activities and resources that allow nursing students to apply knowledge and clinical reasoning to realistic patient scenarios. As previous researchers emphasized, when nursing students are forced by circumstances beyond their control to learn remotely, CBL should be incorporated, as it is the closest thing to the clinical setting (Mukhtar et al., 2020).

The COVID-19 pandemic has changed the future of nursing education (Dewart et al., 2020). Clinical sites may continue to look different moving forward, as restrictions to direct patient care remain in place for some agencies (Coutre, 2020). Schools of nursing need to develop contingency plans, including increased use of online learning for clinical courses, should restrictions on direct patient care continue (AACN, 2020b) or develop in the future (Shea & Rovera, 2021).

Research Question

The study aims to explore baccalaureate (BSN) nursing students' experiences when they transitioned to online case-based learning for their clinical coursework during the spring 2020 semester. The literature supports CBL as an effective teaching strategy in nursing education (Daniels et al., 2015), and this study was designed to interview students who used CBL for online clinical learning in the setting of the pandemic. The research question was, "How do baccalaureate nursing students describe their experiences when transitioning to online case-based learning for their clinical coursework at the beginning of the COVID-19 pandemic?"

Definition of Terms

Case-based learning (CBL) is a learner-centered teaching strategy in which students actively engage in the learning process to solve real-world issues (Daniels et al., 2015). In CBL, students are given a realistic situation requiring decision making and problem solving (Roshangar et al., 2020). The desired result is that learners will think critically and creatively and apply theory to practice (Daniels et al., 2015). A set definition of CBL does not exist (McLean, 2016). However, Thistlethwaite et al. (2012) described CBL as a process of preparing students for clinical practice using authentic cases. With CBL, students use inquiry-based learning methods to link theory to practice (Thistlethwaite et al., 2012).

Coping strategies are methods to help individuals adapt during stressful events (Mariani et al., 2020). Nursing students use positive coping strategies, including resilience, humor (Labrague et al., 2017), physical exercise (Gallego-Gomez et al., 2020; Heilferty et al., 2021; Kochuvilayil et al., 2021), seeking information (Kochuvilayil et al., 2021), social support (Turkles et al., 2021), and spiritual support (Savitsky et al., 2020; Turkles et al., 2021). They also

use negative coping strategies such as mental disengagement (Savitsky et al., 2020) and overeating (Savitsky et al., 2020; Turkles et al., 2021).

The **COVID-19 pandemic** revolves around a severe respiratory virus that emerged from Wuhan, China, starting in December 2019, threatening the health and lives of persons across the globe (Meo et al., 2020). In March 2020, the World Health Organization announced SARS-CoV-2 (COVID-19) as a worldwide pandemic (Michel et al., 2021) and made recommendations for all countries to implement shut-downs to limit person-to-person contact. As a result, in-person learning was halted in higher education institutions across the globe, requiring a change in education delivery to predominantly online platforms (Peisachovich et al., 2020).

Debriefing is the reflective process following simulation in which a trained facilitator assists students to assimilate the simulation into clinical practice (International Nursing Association for Clinical Simulation and Learning [INACSL], 2016a).

Emergency remote learning is a temporary shift in instructional delivery due to a crisis (Hodges et al., 2020). Fully remote learning is used in place of education that would typically occur face-to-face or via hybrid formats. The COVID-19 pandemic caused an unplanned and abrupt change from in-person learning to emergency remote learning worldwide beginning in March 2020 (Hodges et al., 2020). The shift to online learning included clinical learning for students in health careers, including nursing.

Online learning is a technology-based method in which the Internet is used to allow student participation in, managing and tracking educational courses (Keis et al., 2017). Instruction and learning occur via the Internet; and online learning is also called 'e-learning' (Chan et al., 2021) or distance learning (Bdair, 2021).

Prebriefing is the orientation that learners should complete immediately before simulation (Badowski & Wells-Beede, 2022).

Professional identity is one's acknowledgement and acceptance of his or her own embodiment of a chosen profession and the willingness to go into it with a positive attitude and active behavior (Zhao et al., 2021). The concept of professional identity is not clearly defined, but it may also be interpreted as both an individual's self-construct of their development of desired qualities and traits of a profession and a collective representation of a profession (Wiles, 2013).

Resilience is a set of behaviors or characteristics that allow one to respond effectively, adapt positively, and be flexible when facing adversity (Heilferty et al., 2021). The term originates from psychology and is not well defined in the literature about the resilience of nursing students (Thomas & Revell, 2016). However, most authors describe resilience as facing adversity, offering personal characteristics to overcome it, and identifying a coping outcome (Thomas & Revell, 2016).

Simulation is a structured activity to portray real or potential situations to improve the skills, knowledge, and attitudes of learners. Simulation provides learners the opportunity to analyze realistic conditions and respond to them (INACSL, 2016b).

Stress is a situation where internal or external demands are difficult for an individual or exceed one's ability to adapt or cope (Labrague et al., 2017). Nursing students' stress includes heavy academic assignments, exams, a large workload, a lack of nursing skills, and unfamiliarity with patients' medical diagnoses, health history, and treatments (Labrague et al., 2017). During the pandemic, nursing students faced additional stressors of coursework moving online, trouble concentrating and participating, writing assignments, online exams, and meeting deadlines of

course assignments (Fitzgerald & Konrad, 2021). They were concerned about misinformation about the pandemic in the media and their families' health (Lovric et al., 2020).

Virtual simulation is technology-based programming reflecting scenarios representing real clinical patient-provider interactions and situations on a computer screen where learners control simulated programs (Padilha et al., 2019). In nursing education programs, students make decisions for a clinical situation in a virtual world as the simulation unfolds (Leibold & Schwarz, 2017). Virtual simulation is implemented using videos, games, or avatars (Wright et al., 2018).

Research Design

This basic qualitative study's research methodology and design used semi-structured interviews to collect data. A qualitative approach is appropriate when a detailed understanding of an issue is needed (Creswell & Poth, 2018). Basic qualitative studies focus on opinions, attitudes, and reflections of one's experiences in the world (Percy et al., 2015). Semi-structured interviews with open-ended questions provided detailed data (Patton, 2015). Questions' topics included their initial reaction of in-person clinical courses transitioning online, other changes occurring in their lives at the time, how they coped, and their experiences with online learning. Thematic analysis with an underlying theoretical orientation of constructivism was employed to identify emergent themes in the qualitative interview data. A qualitative methodology is suitable for this study, as the current study focuses on students' experiences, including their own descriptions of their opinions, beliefs, and attitudes. Since nursing students' experiences during the pandemic have not been studied in-depth (Bdair, 2021; Puljak et al., 2020), this study adds to the currently immensely small body of literature about BSN students' experiences with online learning during the COVID-19 pandemic.

Assumptions and Limitations

Assumptions

In a qualitative interview, the researcher asks questions and the participant answers in their own words (Braun & Clarke, 2013), and the participant is viewed as being capable of expressing their experiences and opinions (Lopez & Whitehead, 2013). All baccalaureate nursing students in this study were assumed to have the ability to answer interview questions honestly and comprehensively about their personal experiences with online CBL for clinical coursework at the beginning of the COVID-19 pandemic. Participants' self-reported multiple realities were assumed to be true for each participant (Creswell & Poth, 2018). Although the interviews were conducted after the timeframe of interest, it was assumed that participants would answer interview questions about their experiences during the specific time frame of March 2020 through May 2020. The specific time frame had numerous unique elements, including that little was known about the severity and transmissibility of COVID-19 at the time (Fitzgerald & Konrad, 2021), and the change to online learning was unforeseen (Singh et al., 2021). It was assumed that since the shift to online learning was abrupt and unplanned (Aslan & Pekince, 2020), participants did not anticipate having to complete clinical coursework online.

Limitations

Qualitative researchers write in a style that reflects their interpretation, position, and stance (Creswell & Poth, 2018). Therefore, they must comment on past biases, prejudices, and experiences that may have shaped their approach to and interpretation of the study (Creswell & Poth, 2018). The researcher in this study is a nursing instructor who taught BSN students in a clinical course using CBL during the spring 2020 semester when all course content was transferred online. The researcher brings firsthand knowledge of how students felt and what

students experienced to be the successes and barriers of unexpectedly changing their clinical coursework online.

In basic qualitative studies, sample size varies depending on the nature of the research question (Kostere & Kostere, 2022). The researcher should strive to obtain enough data to answer the research question (Kostere & Kostere, 2022). The recommended sample size is eight to 15 participants for basic qualitative studies (Kostere & Kostere, 2022), which aligns with the study's sample size. However, in qualitative studies, sample size adequacy is challenging because it depends on various factors, such as the participants' insightfulness and ability to effectively communicate (Polit & Beck, 2018). Although this study adhered to the recommended sample size, there is a possibility that the sample of participants did not provide enough quality data to answer the research question.

Convenience sampling was used to recruit participants from a single institution, which limits the ability to generalize results to a larger population. Convenience sampling is the weakest form of sampling because the sample may be atypical of the larger population, thus increasing the risk of bias (Polit & Beck, 2018). However, some researchers argue that generalizability is not important in qualitative studies (Lopez & Whitehead, 2013). Patton (2015) stated that the aim of qualitative research is to generate an in-depth understanding of a topic by selecting participants who will provide information-rich data. Thus, the topic's focus may be narrow (Braun & Clarke, 2013), and the study may prioritize an in-depth understanding from the sample rather than generalizability to a larger population.

The study sample of participants was homogeneous. All participants were female, 18 to 22 years old, and spoke English as their primary language. In the United States, 87% of students in prelicensure registered nursing programs are female (NLN, 2020b), and over 75% of BSN

nursing students are under age 25 (NLN, 2020c). The demographics of the study sample did not represent male nursing students, non-traditional nursing students, or students whose primary language is not English. The study sample's homogeneity limits the generalizability of results to the overall population of prelicensure baccalaureate nursing students. As previously addressed, generalizability may not be the priority in qualitative research. Rather, qualitative researchers should seek participants because they consider them to be valuable sources of information, not because they wish to generalize results to persons with similar demographics (Sandelowski, 1995).

Organization of the Remainder of the Study

Chapter 2 focuses on the literature specific to the study's theoretical orientation, synthesis of the research findings, and critique of previous research methods. Chapter 3 discusses the study's methodology, including the purpose, research question, research design, target population and sample, procedures, instruments, the role of the researcher, and ethical considerations. Chapter 4 presents the data findings and results of the analysis. Chapter 5 includes a summary and discussion of the results and conclusions based on the results. Limitations of the study's findings are thoroughly discussed, as well as implications of the study and recommendations for further research.

CHAPTER 2. LITERATURE REVIEW

The purpose of this basic qualitative study was to explore the experiences of BSN nursing students with online CBL for their clinical coursework at the start of the COVID-19 pandemic. Students' experiences during the pandemic can serve as lessons for developing distance education in the future (Bezerra, 2020). Additionally, these results will allow nurse educators to better support students emotionally, discuss adaptive coping strategies (Savitsky et al., 2020), and refer them to supportive resources as needed.

This chapter begins with a description of search strategies used to find current, relevant, and high-quality peer-reviewed literature on the topic. Next, constructivism is presented and discussed as the theoretical orientation and foundation for the study's methodology. Then a review of the literature on aspects of the scope of the topic is described, starting with a review on the advantages and disadvantages of CBL in nursing education. An in-depth review of CBL in the online environment follows, discussing engagement, orientation to new technology, and a review of synchronous, asynchronous, and virtual simulation platforms. Next, the literature review discusses evidence on nursing students' experiences during the COVID-19 pandemic. This chapter concludes with a synthesis of research findings and a critique of the research methods of the current literature.

Methods of Searching

Databases searched included Summon, Education Research Complete, Education Resources Information Center (ERIC), Google Scholar, Cumulative Index to Nursing and Allied

Health (CINAHL), PubMed Central, and ProQuest. Limitations included peer-reviewed articles published within the last seven years. Search parameters for publication year were extended to 65 years for constructivism theory sources and seminal authors' original works. The key search words were: *case-based learning, online learning, e-learning, nursing education, undergraduate, nursing student, constructivism, virtual simulation, debrief, coping, resilience, COVID-19,* and *pandemic*.

An initial database search in Summon using the terms *case-based learning, nursing education,* and *online,* yielded 196 articles. The search was then limited to the subject term of nursing education, narrowing the results to 27 articles. Eight of the 27 articles were from the United States, and the rest were from 14 other countries. Seventeen of the 27 articles were original research studies, including six on undergraduate nursing students, five on graduate nursing students, one on nurses, two on nurse educators, and three on students from other healthcare disciplines. Of the six articles studying undergraduate nursing students, three were conducted in the United States, one in the United Kingdom, one in Norway, and one was a multinational study in Sweden and Hong Kong.

In another search, the terms *COVID-19, nursing education, online learning,* and *undergraduate* yielded 26 results. Of those 26 articles, 18 were original research studies. Of those 18 studies, 14 studied undergraduate nursing students, two studied undergraduate nursing students and medical students, and two studied undergraduate and graduate nursing students. Six of the original studies were from the United States, two came from India, and two from Spain. The remaining studies were from Australia, Hong Kong, Iceland, Malta, Turkey, Norway, Canada, and Sweden. One study took place in both Australia and India. In total, 86 publications were included in the literature review.

Theoretical Orientation for the Study

Learning theories guide educators in all academic disciplines to select teacher-centered instructional strategies and student-centered learning activities (Candela, 2015). Nurse educators significantly advance the scholarship of discovery and improve their credibility when integrating educational theories in their research studies (Beccaria et al., 2018). The researcher explored the theories that guide educators who use CBL. When a learner uses CBL, they construct knowledge and actively think and apply that knowledge (Hartfield, 2010). In cognitive constructivism, a learning theory, a learner must build their knowledge using their experiences to create mental images (Kumar & Gupta, 2009). To this end, cognitive constructivism, was selected to serve as the theoretical framework for this study.

In the constructivist classroom, the teacher engages students by providing opportunities to construct skills or knowledge (Kay & Kibble, 2016). In nursing education, CBL is an active learning strategy that helps nursing students develop a deeper understanding of knowledge (Herron et al., 2019). Several research studies on CBL in nursing education have used constructivism as a framework (Kantar & Massouh, 2015; Li et al., 2019; Meiers & Russell, 2019). Studies in nursing education have also explored online learning through constructivist perspectives (Cobbett & Snelgrove-Clarke, 2016; Robinson et al., 2017; Olson & Benham-Hutchins, 2020; Wright et al., 2018). In parallel to these differing approaches through a constructivist lens, the current study extends constructivism to the unique setting of learning for baccalaureate nursing students, using CBL online during the COVID-19 pandemic.

The theory of cognitive constructivism is credited to child psychologist Jean Piaget. Piaget (1964) stated that knowledge development does not occur by looking at an object and making a mental copy. Knowledge occurs when the learner modifies or transforms the object,

understands the transformation process, and therefore understands how the object is constructed (Piaget, 1964). Two concepts that are central to constructivism are assimilation and accommodation. Active assimilation is the integration of any type of reality into a learner (Piaget, 1964). Piaget contrasts assimilation to association. In association, a stimulus causes a response; however, with assimilation, the stimulus-response process is reciprocal because the learner can integrate the stimulus as it occurs (Piaget, 1964). The focus of learning is on the learner and the transformation that occurs within (Piaget, 1964). Without assimilation, learning does not happen (Piaget, 1964).

The other concept is a process that occurs with learning referred to as accommodation. While assimilation is the incorporation of things into and within the learner, accommodation is the converse action of the environment on the learner (Piaget, 1960). The learner does not suffer the impact of the stimuli but simply modifies his or her action by accommodating to the circumstances (Piaget, 1960). Overall, Piaget (1960) defines adaptation as the equilibrium of assimilation and accommodation.

Psychologist Jerome Bruner expanded on constructivism by exploring the cognitive processes of adults and children. According to Bruner (1961), the learner is the discoverer. In this role, discovery is to perceive information, interpret it, and rearrange it to gain new insights or understanding (Bruner, 1961). Though Piaget described the reciprocal stimuli-response process, Bruner (1961) argued that while additional facts or evidence may allow the learner to rearrange or transform evidence, the process is not dependent on introducing new information. Bruner (1961) stated that the aim as educators is to give students a firm grasp on the subject while enabling them to be autonomous and self-propelled thinkers. When learners discover things for themselves, the information is more readily used for problem-solving (Bruner, 1961).

Review of the Literature

Current research builds upon previous research; thus, a literature review is necessary to determine what is known about a topic and how the current study can fill a gap in the existing literature (Braun & Clarke, 2013). The review of the literature focused on CBL in nursing education, specifically in the online setting, and nursing students' experiences with online learning during the COVID-19 pandemic. The following literature review includes: findings on CBL, including CBL advantages and disadvantages; nursing students' experiences of learning in the online environment outside of the COVID-19 pandemic; and nursing students' experiences during the COVID-19 pandemic.

Case-Based Learning

Case-based learning is widely supported in nursing education as an effective teaching strategy (Hong & Yu, 2017; Li et al., 2019; Raurell-Torreda et al., 2015; Roshangar et al., 2020). The goal of CBL is to improve learners' clinical performance, attitudes, and teamwork (McLean, 2016). CBL entails recognizing the particulars of a clinical situation, interpreting patient data to make decisions, and reflecting on experiences (Kantar & Massouh, 2015). Elements of CBL include a clinical case study; problems requiring learner thought, learning objectives, learner preparation, and measurable outcomes (McLean, 2016). CBL is used in multiple educational settings, including the classroom, simulation lab, and online environment.

CBL has been shown to have many advantages, including improved critical thinking ability, enhanced clinical decision-making, enhanced motivation to learn, increased understanding of holistic patients' needs, and a widened range of specialty learning. On the other hand, literature shows CBL has disadvantages, including limited usability, time constraints, and lack of relevant scenarios. The advantages and disadvantages are reviewed in the next section.

Advantages of CBL

Improved Critical Thinking Ability. CBL has been shown to improve students' critical thinking ability (Li et al., 2019; Roshangar et al., 2020). For example, in a qualitative study using focus groups, Kantar and Massouh (2015) found that baccalaureate nursing students felt challenged about having to solve real problems they may face in practice and discovered the meaning of the details of a case within a safe learning environment. In another study, Raurell-Torreda et al. (2015) conducted a nonrandomized control trial of undergraduate nursing students wherein the intervention group of students used CBL throughout an adult patient course, while the control group was taught by traditional lecture methods. The authors found that CBL helped students identify and interpret vital signs and symptoms indicating a problem and determine if added information was relevant to the issue (Raurell-Torreda et al., 2015). Likewise, Hong and Yu (2017) compared critical thinking among undergraduate nursing students using two case study methods. The control group completed single-episode case studies, while the experimental group used multi-episode unfolding cases. Students completed a critical thinking inventory before and after CBL. Post-scores improved in both groups but were higher in the control group, indicating that the unfolding case studies were more effective in developing students' critical thinking ability than single-episode cases (Hong & Yu, 2017).

Another factor relative to improved critical thinking is that the CBL approach enables students to consider different perspectives and construct knowledge (Li et al., 2019). In a quasi-experimental study of nursing students taking a nursing case-based learning course, Li et al. (2019) found that students were motivated to answer questions requiring critical thinking using unfolding case studies. Notably, they could predict and assess the immediate impact of their

interventions, and their predictions were validated as the next part of the case unfolded (Li et al., 2019).

Critical thinking is improved when students collaborate using CBL. Laver and Croxon (2015) described an unfolding case study of a geriatric patient used by 250 undergraduate nursing students in Australia. The authors found that when students worked together, they challenged each other's perspectives, developed shared understandings, and formed innovative approaches to managing clients' needs. However, it is important to note that Laver and Croxon (2015) did not conduct a formal study and did not indicate how they came to their conclusions; instead, this publication described observations they made throughout the unfolding case study.

Enhanced Clinical Decision-Making. Students have expressed positive feedback about how CBL enhanced their clinical decision-making ability. In focus group interviews conducted by Kantar and Massouh (2015), students reported feeling more empowered, transformed, and confident in their abilities. They also felt more confident interpreting patient data and making informed decisions and stated that they felt better prepared for the clinical setting after using CBL (Kantar & Massouh, 2015). The latter findings are consistent with the findings from Meiers and Russell (2019), where informal student and faculty feedback indicated that students were more confident and familiar with the clinical setting, resulting in increased competence in caring for patients.

In another study, Turner and Cole (2017) discussed that when students work through case studies together, they consider all aspects of the nursing process. In discussions with peers, students can openly share their thoughts about a patient’s condition without fear of making mistakes, being evaluated by faculty, or having the added pressure of having a patient’s family present (Turner & Cole, 2017). Though Turner and Cole (2017) described an unfolding case

study with considerable detail, they did not formally evaluate its effectiveness on students' critical thinking.

Enhanced Motivation to Learn. When nursing students use CBL, they are more engaged (Herron et al., 2019) and motivated to learn (Arrue & Caballero, 2015; Gholami et al., 2021; Yoo & Park, 2015). Arrue and Caballero (2015) used surveys to evaluate students' perceptions of CBL after completing a case study on a patient with acute confusional syndrome. Students indicated that they were interested in the topic and motivated to learn because the case dealt with a real-life situation (Arrue & Caballero, 2015). The quasi-experimental study by Herron et al. (2019) found similar results. Students who used case studies during class felt engaged because CBL was a fun learning activity that broke up a long lecture. Students used CBL with a case study presented via PowerPoint or a recorded video simulation. Students in the video simulation group felt that visualizing the patient enhanced their learning experience and helped them discover how the details of the case applied to the clinical setting (Herron et al., 2019).

In another study, Gholami et al. (2021) conducted a quasi-experimental pre-and posttest study to compare differences in undergraduate nursing students who used lecture-based learning compared to those who used CBL. Results showed a statistically significant increase in all areas of learning motivation, including attention, relevance, confidence, and satisfaction, for students who used CBL over lecture-based learning (Gholami et al., 2021). Gholami et al. (2021) found that CBL encouraged students to assimilate knowledge with skills, improving satisfaction and clinical competence. These findings are consistent with a quasi-experimental study by Yoo and Park (2015); students who used CBL had significantly higher learning motivation scores than those who learned by traditional lecture methods.

Increased Understanding of Patients' Holistic Needs. CBL includes patients' emotional experiences, not just the disease process (Li et al., 2019). Meiers and Russell (2019) obtained feedback from focus groups interviewing novice nursing students about using unfolding case studies. Students stated that they appreciated the holistic approach to care, which allowed them to understand the patient's experience in the larger context of the patient's life. They also felt familiar with the clinical setting and more confident adapting to it since they better-understood patients' holistic needs (Meiers & Russell, 2019). Another study aimed to help students understand the holistic needs of patients and family members during end-of-life care (Byrne et al., 2020). In their quasi-experimental study, Byrne et al. (2020) found that CBL helped students communicate with patients and families in hospice situations and offered them comfort.

Widened Range of Specialty Learning. When suitable clinical sites are not available, case-based learning is a practical alternative for nursing students (Sanders et al., 2020). One challenging area for clinical site placement is pediatrics (Edwards et al., 2018). Sanders et al. (2020) developed and implemented pediatric case simulations to replace clinical hours. Students then completed a simulation effectiveness survey that included Likert-style questions. Results indicated that those students felt unfolding case studies helped them apply nursing judgment and understand the perspectives of parents and family members and the stressors they face (Sanders et al., 2020). These findings are consistent with Bowman's (2017) findings where students reported that case studies helped them understand patients' and family members' perspectives and enhanced their clinical decision-making. However, Bowman (2017) did not specify how feedback was obtained and did not conduct a formal research study.

Another area where students have limited exposure in nursing school is end-of-life (EOL) care. Byrne et al. (2020) studied undergraduate nursing students' attitudes toward EOL care before and following an EOL lecture and high-fidelity simulation experience. The quasi-experimental study was conducted by having students complete a Likert-style survey about caring for dying patients before and after the lecture and simulation. In the simulation, students practiced verbal and nonverbal communication with a patient and her partner, applied knowledge, and performed nursing care. Posttest scores showed that the experience helped students prepare emotionally, know what to say, offer presence, and learn comfort skills (Byrne et al., 2020).

Disadvantages of CBL

Limited Usability. Though CBL is beneficial, there are some limitations to its use. The pretest and posttest study by Carter and Welch (2016) did not indicate the statistical significance of improved critical thinking skills in Associate Degree Nursing (ADN) students before and after using CBL. Still, the authors stated that a study limitation was not using a nursing-specific critical thinking assessment tool (Carter & Welch, 2016).

Roshangar et al. (2020) found improved critical thinking when students used CBL in conjunction with other educational methods. In their semi-experimental study using pretests and posttests, students in the control group used conceptual mapping with CBL, resulting in slightly higher critical thinking and self-efficacy scores than those who used CBL without conceptual mapping (Roshangar et al., 2020). Likewise, Edwards et al. (2018) suggested integrating other activities such as a concept map or individually graded questions. Though CBL facilitates the development of communication skills (Yoo & Park, 2015), Gholami et al. (2021) noted that case

studies are limited by not displaying patients' voices and facial expressions, possibly resulting in students overlooking nursing diagnoses related to coping and stress.

Time Constraints. Another challenge to using CBL is time constraints (Arrue & Caballero, 2015; Hong & Yu, 2017). Survey results in the study by Arrue and Caballero (2015) indicated that students felt that they were expected to study too much and that CBL took up too much time. Arrue and Caballero (2015) suggested that nursing programs use smaller-scale case studies at the beginning of the curriculum. That way, students would be familiar with them once they advanced in the program and were expected to use in-depth case studies (Arrue & Caballero, 2015).

In response to limited time constraints, faculty members need to ensure that they are implementing active learning strategies in place of traditional lectures, not in addition to them (Ignatavicius, 2018). Students need to have adequate prior knowledge before using CBL, so they must prepare ahead of time (Daniels et al., 2015; McLean, 2016). This factor can be an issue for students overwhelmed by the amount of studying expected in nursing school (Arrue & Caballero, 2015).

Lack of Relevant Scenarios. Another challenge to using CBL is the lack of relevant case studies (Hong & Yu, 2017; Li et al., 2019). Available case studies often focus on a specific disease and not psychosocial issues (Li et al., 2019). When appropriate case scenarios are not available, academic nurse educators should consider developing their own case studies consistent with student learning outcomes and concepts relevant to clinical specialties (Edwards et al., 2018). Edwards et al. (2018) described the development of six unfolding case studies used at their institution. The process of developing and implementing the case studies was not without challenges. Multiple faculty members and simulation experts needed to provide input. Edwards

et al. (2018) described the planning and implementation of their project but did not conduct a study.

Nursing Student Experiences of Learning in the Online Environment

The following section reviews the literature on nursing students' experiences using CBL in the online environment. This section then discusses engagement in online learning and orientation to online platforms. In addition, various online learning methods are explored, including asynchronous and synchronous approaches and virtual simulation.

Engagement in Online Courses

Engagement in online courses is essential for student learning and satisfaction (Martin & Bolliger, 2018). However, student engagement is often a challenge when learning online (Bdair, 2021). Students need to feel welcomed, guided, and encouraged, just as they are in face-to-face classrooms (McDaniels et al., 2016). In their survey of students from eight universities across the United States, Martin and Bolliger (2018) found that students rated an icebreaker discussion as the most effective strategy for engagement in online courses (Martin & Bolliger, 2018). Additional strategies that students ranked as important for engagement were having faculty send regular announcements and email reminders, working collaboratively with peers, and using a variety of course materials (Martin & Bolliger, 2018). Other active learning strategies to enhance engagement include collaborative group work, having students facilitate discussions, student presentations, actively sharing resources, using course assignments with hands-on components, and reflection (Martin & Bolliger, 2018). In a descriptive survey by Chen (2016), undergraduate nursing students thought that using the polling function, whiteboard, and breakout rooms enhanced their synchronous online discussions and helped them stay engaged.

Orientation to New Technology

Previous studies have shown that students have difficulty adapting to new technology because they do not know how to navigate it (Swartzwelder et al., 2019). In a descriptive survey by Chen (2016), students reported that the learning platform was overwhelming and confusing. Chen (2016) indicated that students benefit from a clear orientation to the online platform. In several other studies, students stated that a clear orientation to the online platform at the beginning of the course was beneficial (Bdair, 2021; Hampton & Pearce, 2016; Swartzwelder et al., 2019). In end-of-course surveys of graduate students, Swartzwelder et al. (2019) found that some students commented they spent more time adapting to using new technology than they spent completing assignments. Still, the student participants indicated that providing sufficient resources decreased their resistance to using new technology (Swartzwelder et al., 2019). In addition to orienting students to new technology, an orientation session allows students to meet the teacher (Chan et al., 2016).

Asynchronous Online Learning

CBL occurs through synchronous and asynchronous approaches in the online setting, both suitable options to help students effectively learn online (Banna et al., 2015). However, each approach has its strengths and limitations. Often, a combination of synchronous and asynchronous techniques facilitates student involvement and success (Hampton & Pearce, 2016).

Asynchronous online learning offers flexibility in time management and is convenient for group discussions (Chan et al., 2016). In a qualitative descriptive survey, Chen (2016) found that asynchronous learning allowed quiet and shy students to participate more readily. However, asynchronous web-based CBL lacks immediate interaction among students and with the instructor (Chan et al., 2016), which may be a barrier to creating a sense of community and

student engagement. In asynchronous courses, the teacher needs to participate in discussions and provide timely feedback (Chan et al., 2016). In a study analyzing course surveys of undergraduate students in an introductory online nutrition course, students reported that discussion boards enhanced student-to-student engagement (Banna et al., 2015).

One strategy for asynchronous CBL described by Flood and Commendador (2016) included students answering questions about the management of pediatric patients as a case study unfolded. Segments of the case study featured talking head avatars who were healthcare team members. As students clicked through the avatars, different aspects of the case, such as vital signs, lab results, and physical findings, were revealed (Flood & Commendador, 2016). The authors described their learning strategy in the article but did not conduct a formal study or include student feedback or evidence of learning outcomes. Flood and Commendador (2016) identified that research using talking avatars in case studies is limited.

In a mixed-methods study of nursing students in Hong Kong, Chan et al. (2016) studied differences among two CBL approaches. In the first semester, students used CBL in the traditional classroom. In the second semester, case studies were uploaded online and accompanied by a discussion board. Chan et al. (2016) did not find significant differences between the two approaches regarding self-learning ability, clinical reasoning, or satisfaction. Students enjoyed the flexibility that the asynchronous web-based course offered.

Another study compared two online CBL approaches. In the quantitative study by Swartzwelder et al. (2019), students indicated that they preferred asynchronous discussions over synchronous video-based discussions. They reported being more comfortable asking classmates to clarify comments in discussion threads. It was easier to give feedback and ongoing dialogue in

text-based conversations. Swartzwelder et al. (2019) noted that the findings might have resulted from students' preference for a format with which they were most familiar.

Synchronous Online Learning

Synchronous online platforms have their advantages, primarily immediate feedback from the instructor and peers. Synchronous formats are not as flexible as asynchronous courses, but learners can meet regardless of their time zone or location (Irwin & Coutts, 2015). In the study by Ramos-Morcillo et al. (2020), students liked video conferencing because it was the most comparable to a face-to-face course. In a qualitative survey, McDaniels et al. (2016) noted that graduate students found synchronous learning valuable. They were comfortable interacting with their instructor and peers in course sessions and felt that the teachers' explanations were easier to understand in video conferencing than other methods (McDaniels et al., 2016). They also had the opportunity to ask questions and have instructors clarify information. Their findings were consistent with Banna et al. (2015) that engaging in live conversation increases participation and learning. Another advantage of synchronous discussions is that instructors can use breakout sessions to divide large courses into small student groups. Breakout sessions motivate students to be active participants engaged in critical thought (Chen, 2016). Each student could be assigned a role in group discussion, enhancing their participation (Banna et al., 2015).

Synchronous online learning also has its disadvantages. Students who speak English as a second language have trouble participating (McDaniels et al., 2016). Some students dominate class discussions (McDaniels et al., 2016), while others do not participate in the discussion or type in the chat box (Banna et al., 2015). Some students have scheduling conflicts, and although instructors can offer video recordings, it is less engaging than attending the live session (Banna

et al., 2015). Synchronous classes also require strong and stable high-speed Internet connections (McDaniels et al., 2016).

Virtual Simulation

A new pedagogy in nursing education is virtual simulation (Foronda et al., 2018). Currently, research about the effectiveness of this approach on student learning is slim but expanding (Foronda et al., 2018). Thus far, nursing students have had positive attitudes about using virtual simulation (Caylor et al., 2015; Padilha et al., 2019). They found it enjoyable and preferred it over reading a textbook (Foronda et al., 2016). Students have 24-hour access to virtual simulations (Wright et al., 2018), so they can complete them when they choose. Virtual simulation also offers students immediate feedback (Foronda et al., 2016) and self-remediation (Foronda et al., 2018).

Virtual simulations can be used by individual learners or large student cohorts (Foronda et al., 2018). Tjoflat et al. (2018) found that students liked working with a partner because they learned through discussion (Tjoflat et al., 2018). However, students that had trouble using a virtual simulation program might have negatively influenced each other, resulting in minimal learning (Tjoflat et al., 2018).

When asked how virtual simulation could best be used in the curriculum, most students thought it should be a make-up for missed clinical hours (Foronda et al., 2018). This finding was consistent with Verkuyl et al. (2020), in which participants felt that virtual gaming could replace clinical hours. Very few students felt that virtual simulation should replace mannequin-based simulation, indicating that they find value in in-person simulations (Foronda et al., 2018).

Enhanced Learning. Virtual simulation helps students increase their knowledge levels (Padilha et al., 2019). In a randomized control test of students from a nursing school in Portugal,

Padilha et al. (2019) measured learner satisfaction and knowledge retention. Padilha et al. (2019) found that students who used virtual simulation had higher scores in knowledge learning satisfaction than those who used low fidelity simulation. They also had increased knowledge retention over time (Padilha et al., 2019). In another randomized pretest-posttest study, Canadian BSN students had comparable gains in knowledge and self-confidence with face-to-face simulation and virtual simulation (Cobbett & Snelgrove-Clarke, 2016).

In another study, Gu et al. (2017) measured the differences in knowledge scores between nursing students who used virtual simulation and those who did not. Gu et al. (2017) conducted a randomized control trial in China to evaluate the effectiveness of virtual simulation as a supplemental teaching strategy. Baccalaureate nursing students in the control group did not receive additional instruction with virtual simulation (Gu et al., 2017). Meanwhile, the experimental group completed virtual simulation scenarios before each lecture for ten weeks. They repeated the scenario until they met the required score. A knowledge test at the end of the semester showed that students in the simulation group received significantly higher scores than the control group (Gu et al., 2017). However, the groups did not have a significant difference in skill performance. This finding was perhaps because of differences between the Fundamentals of Nursing course in China and the United States, where the virtual simulation program was developed (Gu et al., 2017).

Other studies explored students' perceptions of how virtual simulation impacted their learning. In a mixed-methods survey by Foronda et al. (2018), students completed an evaluation of a virtual simulation program immediately after using it. Seventy-seven percent of students thought the simulation was realistic and enhanced their learning (Foronda et al., 2018). In a quasi-experimental posttest study by Wright et al. (2018), students found virtual simulation to be

realistic and felt that it fostered critical thinking, helping prepare them for clinical practice (Wright et al., 2018). These results are consistent with findings from a retrospective multi-site survey supporting virtual simulation as a strategy to meet students' critical thinking needs (Badowski et al., 2021).

In a descriptive mixed-method study, Norwegian nursing students worked in pairs to complete a virtual simulation scenario before going to the clinical unit the following week. The instructions were emailed to students a day in advance, and faculty members briefed students about how to use the program before they began (Tjoflat et al., 2018). Almost one-third of students felt that the program was challenging to use and thought that they minimally learned. Most students initially stated that their English was very good or satisfactory. Still, they also reported difficulty using virtual simulation in English (Tjoflat et al., 2018), potentially contributing to their dissatisfaction with the program. Most students said that the virtual simulation promoted learning, reinforced knowledge, helped prepare them for clinical practice, and was relevant to their role as a nurse (Tjoflat et al., 2018). The findings were consistent with other studies indicating nursing students' overall satisfaction with virtual simulation (Badowski et al., 2021; Foronda et al., 2020; Wright et al., 2018). However, it is important to note that unlike Gu et al. (2017) and Padilha et al. (2019), these studies measured nursing students' satisfaction with virtual learning rather than their actual improvement in knowledge.

Safe Environment. Virtual simulations are helpful for students to learn new clinical assessment and procedure skills, therapeutic communication, and conflict management in a safe learning environment (Leibold & Schwarz, 2017). In the mixed-methods survey by Foronda et al. (2018), some students indicated that they purposely chose the incorrect response to see how the patient would respond when using virtual simulation. Since virtual simulation is a safe

learning environment, an advantage is that there is no chance of harming an actual patient, and some students prefer the trial-by-error approach (Foronda et al., 2018). Learners can also repeat simulations, which improves skill development (Verkuyl et al., 2020).

Evaluation of Student Learning. In a qualitative study, nurse educators stated that virtual gaming should be a learning tool where students can make mistakes without being graded (Verkuyl et al., 2020). Similarly, Foronda et al. (2018) stated that given the novelty of virtual simulation in nursing and the lack of current evidence, educators need to cautiously consider whether they should integrate students' virtual simulation performance scores into course grades. In their mixed-methods study, students worked through two virtual simulation scenarios in person with a partner. They repeated them, allowing them the opportunity to enhance their learning and improve their scores. Students were not graded, though their time for completing the scenarios counted toward their clinical hours (Foronda et al., 2018).

In a similar study by Foronda et al. (2016), student pairs worked through two virtual simulations in person, completing the program's 10-minute tutorial first. Instructors incorporated the simulations into their clinical day, and students were not graded on their performance (Foronda et al., 2016). Most students felt that the virtual simulation program was easy to use and relevant to nursing (Foronda et al., 2016). Students might have had a different perception about the experience if instructors had formally evaluated them on their performance (Foronda et al., 2016).

Limited Application. Although virtual simulation is cost-effective, students often prefer traditional in-person simulation. Students worked through virtual and high-fidelity simulations in a randomized clinical trial by Cobbett and Snelgrove-Clarke (2016). They overwhelmingly preferred high-fidelity simulation over virtual simulation (Cobbett & Snelgrove-Clarke, 2016).

Half of the students indicated that they did not like the virtual simulation due to technical issues, slow Internet speed, and not knowing where to find things (Cobbett & Snelgrove-Clarke, 2016).

In other studies, students were discouraged with using virtual simulation programs. Students were frustrated with troubleshooting the simulation program (Foronda et al., 2016). They thought the tasks took too long, and they were hindered by the program's inability to allow them to multitask (Foronda et al., 2016). These results are consistent with Foronda et al. (2018), where students were frustrated navigating the program and knowing where buttons were located.

Orientation to Virtual Simulation. As previously noted, students find value in orientation to new technology (Bdair, 2021; Hampton & Pearce, 2016; Swartzwelder et al., 2019). The same is true of virtual simulation; an orientation to the program is essential for students' satisfaction and comfort with using it (Foronda et al., 2018). Using a convenience sample of undergraduate nursing students from two colleges, Wright et al. (2018) evaluated BSN students' satisfaction with virtual simulation. Students were instructed to review the program tutorial before completing the simulations (Wright et al., 2018). Only 76% of students felt that the program was easy to use (Wright et al., 2018), which was significantly less than the 98% of students in the study by Foronda et al. (2016), who thought it was easy to use. The difference could have been attributed to the fact that students were expected to complete the tutorial independently, unlike the study by Foronda et al. (2016). One student admitted to not going through the tutorial and struggling with navigating the program (Wright et al., 2018). Wright et al. (2018) concluded that in the future, they would do a tutorial in class with faculty present so students could ask questions.

Students become frustrated and anxious when they do not know how to use virtual simulation. In a randomized experimental study, Cobbett and Snelgrove-Clarke (2016) found

that students experienced increased anxiety when using virtual simulation, which could have been due to their unfamiliarity with the technology. Anxiety levels can be mitigated by orienting students to the software (Cobbett & Snelgrove-Clarke, 2016). Similarly, in a mixed-methods study, many students who used virtual simulation were frustrated with navigating the program, reinforcing the importance of orientation to new technology (Foronda et al., 2018). Learners suggested that faculty provide a cheat sheet and a short video orienting them to the program (Foronda et al., 2018). In a qualitative study, Verkuyl et al. (2020) found that nurse educators also identified the need to orient learners to virtual gaming to avoid students' frustration with using the program. If using a program such as virtual simulation, students want an orientation to the program provided by faculty members, even when the program has a tutorial (Verkuyl et al., 2020; Wright et al., 2018).

Prebriefing. Prebriefing is the orientation that learners should complete immediately before simulation (Badowski & Wells-Beede, 2022). Prebriefing sets the stage for learning and should include objectives, an overview of the case, the anticipated duration of the activity, and an introduction to the learning environment (INACSL, 2021a). Experts have developed standards and guidelines about how to facilitate prebriefing before simulation, but they are primarily recommendations and a collection of best practices (Rutherford-Hemming et al., 2019). Traditionally, these guidelines have focused on face-to-face simulation. However, the INACSL (2021a) Simulation Standards of Best Practice for Prebriefing recently added that an orientation to the environment includes virtual learning environments. Still, the research shows inconsistency of student prebriefing activities, methodology, data analysis methods, and instruments used (Dileone et al., 2020), leaving many questions about how to prebrief in simulation to best facilitate learning (Rutherford-Hemming et al., 2019).

One quasi-experimental explored undergraduate nursing students' perceptions of learning, effectiveness, and self-confidence with different prebriefing methods during face-to-face simulation (Chamberlain, 2017). One group of students was not prebriefed, and one group was prebriefed to learning engagement and orientation activities. A third group was only prebriefed with learning engagement activities, and a fourth group only received orientation activities. Chamberlain (2017) found that students who were not prebriefed did not like the simulation, while those who received any type of prebriefing were more confident and engaged during simulation. While these results demonstrate that students value prebriefing, Chamberlain (2017) did not find a significant difference in identifying whether orientation tasks or learning engagement activities were more important. This finding highlights the gap in the literature regarding simulation prebriefing (Chamberlain, 2017).

The research on simulation prebriefing is in its infancy (Dileone et al., 2020), which includes prebriefing in the virtual simulation environment. Guidelines are lacking about prebriefing before virtual simulation (Verkuyl et al., 2020). Even though the INACSL (2021a) Standards mentioned that simulation prebriefing recommendations extend to virtual environments, these may not suffice as a foundation for simulation learning (Dileone et al., 2020).

A couple of studies explored nurse educators' experiences with virtual simulation prebriefing (Badowski & Wells-Beede, 2022; Verkuyl et al., 2020). Verkuyl et al. (2020) conducted in-depth interviews and found that most nurse educators used prebriefing in some capacity. The majority felt that students benefitted from prebriefing. Prebriefing often included reviewing the learning objectives and information about playing the game, technology, and evaluation (Verkuyl et al., 2020). However, content and extent varied according to educators'

perspectives and whether using virtual simulation in person or at home. The participants stated that if students are not being graded, instructors should inform them that they can play without worrying about getting the correct answer (Verkuyl et al., 2020). The study was limited by a small sample of 17 nurse educators, all of whom supported using virtual simulation (Verkuyl et al., 2020). In the other study, Badowski and Wells-Beede (2022) surveyed nurse educators about prebriefing during virtual simulation. Almost half of them indicated that they prebrief synchronously, while the other half used an asynchronous approach. The authors concluded that additional research is needed to understand further the most effective strategies for virtual simulation prebriefing (Badowski & Wells-Beede, 2022).

Regarding students' perspectives, studies have found that before a simulation, students want more materials to better prepare for it (Caylor et al., 2015; Wands et al., 2020). In a pilot study, nursing, medical, and pharmacy students completed an activity where they interacted with each other in a virtual environment (Caylor et al., 2015). Caylor et al. (2015) noted that students received an online orientation manual about how to download the virtual simulation program, create an avatar, and navigate the program. In addition to suggesting that more prelearning materials be provided, students also noted that the activity could be improved if each person noted their healthcare discipline in their avatar name (Caylor et al., 2015).

In another study, baccalaureate nursing students met with their instructor via Zoom to work through video simulations together (Wands et al., 2020). Prebriefing included information about student expectations and how the session would unfold. Of the 167 student evaluations, 94% agreed that the instructor identified learning objectives before the session began, and 95% felt adequately oriented to engage in the session (Wands et al., 2020). Still, students reported that faculty members ran the sessions a little differently from each other, and they would have liked a

consistent structure for the session. Additionally, students stated that they wanted to have materials sent to them ahead of time to review them (Wands et al., 2020).

Debriefing. Debriefing is the reflective process following simulation in which a trained facilitator assists students to assimilate the simulation into clinical practice (INACSL, 2016a). Debriefing is the most critical aspect of simulation (Badowski & Wells-Beede, 2022). The INACSL (2016a) Standards of Best Practice described many debriefing models. However, those models assumed face-to-face simulation (Badowski & Wells-Beede, 2022). In response to the COVID-19 pandemic, the INASCL (2021b) decided that the Standards would also apply to virtual simulation, though recognizing future iterations of the Standards may change to incorporate rapidly advancing technology.

The INACSL (2016a) requires debriefing immediately following simulation. However, this is a challenge because students often complete virtual simulations at different times and in other locations (Badowski & Wells-Beede, 2022). Due to the recent eruption of virtual simulation, more research is warranted to determine the effective timing of debriefing for student learning outcomes (Badowski & Wells-Beede, 2022). Additionally, further research is needed about the effectiveness of remote debriefing, group sizes, duration, and self-debriefing (Badowski & Wells-Beede, 2022).

Few studies on virtual simulation include debriefing (Fung et al., 2021), creating a gap in the literature about how to best debrief in the virtual environment (Verkuyl et al., 2020). In a quantitative study by Badowski and Wells-Beede (2022), nurse educators felt that debriefing in the virtual setting was difficult and that students were less engaged online than they were in face-to-face sessions. In contrast, in a quantitative pretest and posttest study of students in Hong Kong, Fung et al. (2021) debriefed student groups via Zoom immediately following individual

completion of virtual simulations. All students reported a significant increase in their perceived competence (Fung et al., 2021). Immediate debriefing allowed students to review their knowledge and emotions related to the simulation, and group debriefing enabled collaboration and learning from peers (Fung et al., 2021). Similarly, Van Der Wege and Keil (2021) debriefed synchronously with students. However, in their informal survey, students overwhelmingly appreciated ongoing debriefing after each video segment rather than just debriefing at the end of the simulation.

Studies that have explored how nurse educators debrief in virtual simulation found an inconsistency in methods (Badowski & Wells-Beede, 2022; Verkuyl et al., 2020). Verkuyl et al. (2020) found that some nurse educators used written reflection, while others used unstructured debriefs or simply checked students' performance scores (Verkuyl et al., 2020). As noted previously regarding prebriefing, nurse educators in the study by Badowski and Wells-Beede (2022) also debriefed in various ways, with half doing a synchronous debrief and half using an asynchronous approach. In a mixed-method study, Foronda et al. (2018) designed their study with a limited debriefing session and instead used class time to let students work together and spend more time in the virtual simulation program. Foronda et al. (2018) thought that a more extended debriefing session might have improved students' perception of learning. However, Foronda et al. (2018) did not evaluate students' perceptions of the limited debriefing method.

Engagement Strategies in Virtual Simulation. Though virtual simulations are immersive and interactive, there is limited information about the extent and quality of learner engagement in virtual simulation (Cant et al., 2019). Martin and Bolliger (2018) suggested that learners engage with the content when real-world application enhances critical thinking and subject mastery. In a qualitative descriptive survey, nurse educators indicated that gaming

elements engage learners in virtual simulations, keep them interested, and promote critical thinking (Verkuyl et al., 2020).

With synchronous online learning using virtual simulation, Wands et al. (2020) collected evaluations from students following online simulation, noting that students were engaged when allowed to review content before simulation and received visually appealing materials. However, the faculty said they could not ensure student engagement when their cameras were off (Wands et al., 2020). The faculty recognized that barriers to using cameras were increased bandwidth and privacy issues related to students' living arrangements (Wands et al., 2020).

Nursing Students' Experiences During the COVID-19 Pandemic

While educators had previously implemented online learning in various capacities, the COVID-19 pandemic forced colleges and universities worldwide to transition most courses to online platforms in a short time frame (Johnson et al., 2020; Rutledge et al., 2020). Some nursing schools had substantial online resources in place, while others struggled to transfer material online (de Tantillo & Christopher, 2020). Research studies about college students' experiences during the pandemic are rapidly emerging (Fitzgerald & Konrad, 2021). However, undergraduate nursing students' experiences in the United States and their learning during this unexpected crisis are still largely unknown.

Psychological Effects of the Pandemic on Nursing Students

Anxiety. The COVID-19 pandemic heightened nursing students' anxiety levels (Kochuvilayil et al., 2021; Savitsky et al., 2020). In a cross-sectional study of nursing students in Israel, Savitsky et al. (2020) found that female students experienced more anxiety than male students. Savitsky et al. (2020) believed that females experienced more social isolation, financial strain, uncertainty about the future, and caring for children at home than male students. Savitsky

et al. (2020) did not find a correlation between searching for information about the pandemic to anxiety levels. However, a student in the study by Diaz et al. (2021) deleted social media due to the barrage of evolving information causing a negative impact on mental health.

In a quantitative survey, Kochuvilayil et al. (2021) compared the nursing students' experiences in Australia and India. They found that in their study, Australian students had higher anxiety scores than Indian students. The difference may have been caused by the fact that while the Indian students transitioned all coursework online, the Australian students continued to have face-to-face clinical in addition to the remainder of their courses transitioning online.

Situational Uncertainty. Other studies also showed that anxiety was related to the uncertainty of the situation (Dziurka et al., 2022; Michel et al., 2021; Turkles et al., 2021). In a large online survey of nursing students in the United States, Michel et al. (2021) found that the uncertainty of rapidly changing guidelines from their colleges was a significant stressor. In a qualitative study of nursing students in Turkey, Turkles et al. (2021) found that students were anxious about having limited information about the virus, uncertainty of the future, and fear of infection for themselves and family members.

Concerns About Infection. Nursing students in many studies were anxious about contracting or spreading infection (Aslan & Pekince, 2020; Fitzgerald & Konrad, 2021; Lovric et al., 2020; Savitsky et al., 2020; Michel et al., 2021; Turkles et al., 2021). In the quantitative survey of nursing students in Turkey, Aslan and Pekince (2020) indicated that over 68% of students were concerned about being infected. In a qualitative survey of 33 nursing students in Croatia, 19 students were afraid of being infected, while all 33 were concerned that older family members would contract COVID-19 (Lovric et al., 2020). Students in other studies were fearful that their family members would contract COVID-19 (Diaz et al., 2021; Fitzgerald & Konrad,

2021; Turkles et al., 2021). The multi-site survey of nursing students in the United States found that students were concerned about infection for vulnerable family members and their patients (Michel et al., 2021). Students who worked in the hospital were afraid of bringing the virus home to their families (Michel et al., 2021).

In the study by Kochuvilayil et al. (2021), Australian students were also concerned about getting infected with COVID-19 while attending clinical in the hospital. Similarly, in a qualitative study of nursing students in the United Kingdom, students had the opportunity to work in the hospital for a salary while completing clinical coursework (Godbold et al., 2021). They were anxious about being infected from working with patients who were positive for COVID-19 (Godbold et al., 2021).

Stress About Financial Impact. Another source of anxiety was financial burdens (Fogg et al., 2020; Gallego-Gomez et al., 2020; Kochuvilayil et al., 2021; Masha'al et al., 2020; Savitsky et al., 2020; Wallace et al., 2021). In a mixed-methods study of nursing students in Jordan, Masha'al et al. (2020) found that low-income families were more stressed than medium and high-income families because they faced the loss of jobs and difficulty paying the high cost of Internet services. In a quantitative survey of nursing students in Spain, Gallego-Gomez (2020) noted that stress levels were higher in students who faced financial, family, or emotional problems before the pandemic.

Changes in Sleep Schedules. During the pandemic, nursing students had trouble sleeping (Kochuvilayil et al., 2021; Singh et al., 2021). In a longitudinal quantitative study, Romero-Blanco et al. (2020) found that nursing students in Spain spent more time in bed than before the pandemic but had worse sleep quality. Romero-Blanco et al. (2020) initially planned to study the sleep habits of nursing students over time. Once the pandemic started, they changed

their study and evaluated its impact on nursing students' sleep quality. A strength of this study is that Romero-Blanco et al. (2020) had collected baseline data before the pandemic started. A large survey of medical and nursing students in India (N = 2,225) found that 42.8% of participants experienced sleep disturbances while learning online (Singh et al., 2021). Kochuvilayil et al. (2021) found significantly more sleep disturbances in Australian students compared to Indian students. Kochuvilayil et al. (2021) noted that the difference could have been attributed to the fact that Indian students were used to infectious disease epidemics while the Australian students had not previously encountered them. A student in the qualitative study by Heilferty et al. (2021) also indicated staying in bed longer, noting that a previous diagnosis of depression combined with isolation was challenging on their mental health.

Isolation. Students felt alone during the initial lockdown phase of the pandemic (Diaz et al., 2021; Dziurka et al., 2022; Fitzgerald & Konrad, 2021; Michel et al.; Wallace et al., 2021). In a quantitative survey of students in the United States, students felt isolated because of the lack of communication with their university (Fitzgerald & Konrad, 2021). Students also missed interacting with their peers (Dziurka et al., 2022; Michel et al., 2021; Suliman et al., 2021; Wallace et al., 2021) and having group study sessions (Michel et al., 2021). In a large online survey of nursing students in the U.S., some students felt they could not connect with classmates online, while others used web-based applications to communicate with their peers (Michel et al., 2021). In contrast, Fitzgerald and Konrad (2021) found that students felt supported by their peers during this time. Wallace et al. (2021) described that students met online for Zoom study sessions, which increased their sense of closeness with their peers. In another study, Suliman et al. (2021) interviewed nursing students in Jordan and found that although they connected with their peers on social media, they did not find it fulfilling.

Boredom. Students were bored when they were at home in isolation. In a quantitative survey of nursing students in Turkey, two-thirds of respondents were bored at home (Aslan & Pekince, 2020). However, although students were bored, they felt safe at home (Aslan & Pekince, 2020). In a qualitative study of student narratives, Turkles et al. (2021) found that students initially liked being home. However, as the lockdowns continued, they felt like they were starting to experience deteriorations in their psychological health (Turkles et al., 2021). In another qualitative study of student narratives, students felt that their daily routines became monotonous (Heilferty et al., 2021). Others appreciated the extra free time they had to spend more with their families (Heilferty et al., 2021).

Changes in Desire to Pursue Nursing. The COVID-19 pandemic may have caused a complex emotional response in students preparing to enter the nursing profession, so understanding the pandemic's impact on nursing students' professional identity is worthy of exploring (Zhao et al., 2021). Zhao et al. (2021) found that Chinese undergraduate nursing students had a significantly increased level of professional identity after the COVID-19 pandemic. In another study conducted in China, Zhi et al. (2020) found that students who had a stronger sense of professional identity and knowledge about COVID-19 reported lower perceived stress levels than those not yet taking clinical courses. In contrast, Zhao et al. (2021) found that senior-level nursing students had lower professional identity levels than first-year students, possibly related to the tremendous challenges that nursing students faced in their learning process. Zhao et al. (2021) addressed that a limitation of their study was the failure to address other factors potentially related to professional identity, such as social practices and socioeconomic levels. Also, Zhao et al. (2021) conducted a quantitative study, and results could have been strengthened by including qualitative strategies such as interviews or narratives.

In a qualitative study of semi-structured interviews with Korean nursing students, all participants stated that they initially wanted to join the nursing profession for financial stability. Some wanted to become nurses for a higher-level societal status (Dos Santos, 2020a). Following the pandemic's start, only two of the 58 participants intended to join the nursing workforce. Most participants felt that the stress of the profession did not compensate for the salary. They all planned to finish their degrees but not join the nursing workforce afterward.

Dos Santos (2020b) conducted a similar qualitative study in Japan. He found that Japanese nursing students had an increased sense of belonging to joining the nursing profession and serving their country, especially during the pandemic. Japanese citizens have a collectivist mentality and a sense of patriotism (Dos Santos, 2020b). Cultural factors likely strongly influence differences in results among these two studies. Additional studies from other countries showed that nursing students had an increased desire to enter the nursing profession after the pandemic (Heilferty et al., 2021; Jackman et al., 2020; Turkles et al., 2021; Zhao et al., 2021; Zhi et al., 2020), which also suggests that results from the study by Dos Santos (2020a) were likely related to cultural differences.

A study of undergraduate nursing students from five universities in the United States completed a quantitative survey (N = 772) about their perception of how COVID-19 impacted their education and continued desire to become a nurse (Michel et al., 2021). Sixty-five percent of participants indicated that the pandemic strengthened their desire to become a nurse, and 11% were considering withdrawing from nursing school, stating that they were unhappy with the lack of clinical experiences and economic strain (Michel et al., 2021). Only 1% of participants no longer wanted to become nurses (Michel et al., 2021). Similarly, in a qualitative study using narrative analysis of archived letters written as a course assignment, undergraduate nursing

students in the United States indicated that the pandemic strengthened their desire to enter the nursing profession (Heilferty et al., 2021).

Inspiration. Some impacts of the pandemic on nursing students were positive. Nursing students were inspired by the healthcare community coming together during the pandemic (Heilferty et al., 2021). They learned about the meaning of life during the pandemic and more deeply understood the value of a hug or a touch. Students also witnessed suffering from loss of jobs, economic hardships, and not being able to attend funerals (Turkles et al., 2021). Nursing students felt solidarity toward all humanity in the fight against the pandemic (Turkles et al., 2021). Turkles et al. (2021) also noted that students wanted to join the workforce as soon as possible, indicating that they were proud of their chosen profession. Turkles et al.'s (2021) study was limited to students from one university in Turkey.

Similarly, in the qualitative study by Jackman et al. (2020), nursing and medical students in rural Canada wanted to help during the pandemic. Students were in the middle of their preceptorships during spring 2020 and felt invested with the healthcare teams and communities in which they were working. They were frustrated when COVID-19 restrictions forced them to end their preceptorships early. They felt a lack of fulfillment when they passively watched from the sidelines (Jackman et al., 2020).

Resilience. The literature demonstrates that nursing students experienced resilience during the COVID-19 pandemic. Heilferty et al. (2021) analyzed narrative student journals in a qualitative study. Many students wrote about thriving by finding the positives and recognizing lessons they learned (Heilferty et al., 2021). They persevered through a difficult time in nursing school and felt that they became stronger as a result. For example, one student indicated that their other responsibilities were canceled, leaving school as their only focus, resulting in higher

grades than ever (Heilferty et al., 2021). The results of this study provided detailed descriptions of students' thoughts and feelings during the pandemic, but the study was limited by a small sample size from a single institution (Heilferty et al., 2021). Wallace et al. (2021) conducted a qualitative study of prelicensure BSN students and found that students adapted to remote learning and made the best of a challenging situation.

In the quantitative study of nursing students in Israel, personal resilience was significantly higher for senior-level students than first-year students (Drach-Zahavy et al., 2021). Drach-Zahavy et al. (2021) suggested that having real-life clinical practice experience prepared them to develop healthier coping strategies. In contrast, Keener et al. (2021) reported low resilience scores of nursing students, demonstrating the increased risk of mental health problems of young adults during the COVID-19 pandemic.

Coping. Effective coping strategies included looking at photo albums with family members, talking about memories, laughing, playing games with family members, praying, gardening, reading, and relaxing (Turkles et al., 2021). Other students exercised more and did activities they enjoyed (Heilferty et al., 2021; Kochuvilayil et al., 2021). Gallego-Gomez et al. (2020) found that students who exercised during lockdown reported lower stress levels. They binge-watched television shows, went for walks, and tried new recipes (Heilferty et al., 2021). A study by Black Thomas (2022) found that nursing students attributed their social support systems as having a significant impact on their ability to persevere through the COVID-19 pandemic. Other studies found that students coped by talking with people they trust (Kochuvilayil et al., 2021) and calling friends (Diaz et al., 2021; Heilferty et al., 2021; Turkles et al., 2021).

Ineffective coping strategies included spending too much time with technology and continuously eating, sleeping, and cooking, which led to weight gain (Turkles et al., 2021).

Savitsky et al. (2020) found that boredom and frustration associated with lockdown may have resulted in overeating. Others had difficulty eating (Kochuvilayil et al., 2021). Savitsky et al. (2020) found that mental disengagement, which included the use of alcohol, sedative drugs, and overeating, was significantly higher for students who were not married, had no children, and described their religious affiliation as secular. A study by Diaz et al. (2021) found that nursing students reported that they were unable to rely on their usual coping strategies.

Culture played a significant role in how nursing students experienced the pandemic and coped with it (Kochuvilayil et al., 2021). The differences may be attributable to how countries handled the transition to remote learning (Kochuvilayil et al., 2021). In the study comparing Indian and Australian nursing students, significantly more Australian students limited their time watching and listening to the news, including social media, compared to Indian students (Kochuvilayil et al., 2021). Indian nursing students reported sufficient knowledge of COVID-19 compared to the Australian cohort, and Australian students had significantly higher anxiety levels than the Indian students. However, the Australian students continued to attend in-person clinicals. In contrast, Indian students transitioned to online learning (Kochuvilayil et al., 2021), which may have contributed to the differences in students seeking information in the news.

Nursing Students' Experiences with Online Learning During the Pandemic

Student Satisfaction of Learning Experiences. Some of the current literature has found that students were satisfied with online learning at the pandemic's start. In qualitative studies, Lovric et al. (2020) and Bdair (2021) both reported that undergraduate nursing students were overall satisfied with distance learning during the pandemic. However, neither study discussed the different teaching strategies used. In a quantitative questionnaire of 2,520 health sciences

students in Croatia, Puljak et al. (2020) reported that most students were satisfied with the abrupt transition to online learning. This study was limited by using an author-created questionnaire.

In another online survey, Sood (2020) found that most students had excellent online learning experiences using various synchronous and asynchronous teaching methods during the pandemic. Students commented that instructors used examples from the hospital for online learning, which were easy to understand. Sood (2020) did not discuss whether students preferred synchronous or asynchronous sessions. Sood (2020) also did not include questions about how e-learning could be improved, limiting the scope of students' feedback on e-learning during the pandemic.

Many students did not like online learning during the pandemic. Michel et al. (2021) found that while nursing students generally disliked online learning, no one aspect of it stood out to them. Many students were dissatisfied because they did not sign up for it. (Michel et al., 2021). Similarly, in a quantitative survey by Keener et al. (2021), students disliked online learning because they felt that they were not prepared for it. The study by Keener et al. (2021) surveyed students from a single university in the Appalachian region of the United States, limiting the generalizability of results. Keener et al. (2021) also mentioned that many of the students lived in rural areas and had limited wi-fi, which possibly hindered more students from participating in the study.

Independent Learning. Online learning forced students to learn independently. They felt that their problem-solving and critical thinking abilities improved as they discovered how to become more independent learners (Bdair, 2021; Suliman et al., 2021; Wallace et al., 2021). For lectures, both Bdair (2021) and Suliman et al. (2021) noted that students preferred recorded lectures to review the content multiple times to understand the material. Bdair (2021) also found

that students liked listening to recorded lectures numerous times, and their grades improved as a result. Bdair (2021) and Suliman et al. (2021) conducted qualitative studies in Saudi Arabia and Turkey, respectively, limiting the generalizability of the results.

Flexibility. Nursing students also liked the flexibility of completing their coursework at their convenience (Bdair, 2021; Chan et al., 2021; Wallace et al., 2021). In the qualitative study by Bdair (2021), students who worked felt that the flexibility of online learning allowed them to manage their jobs with schoolwork. Similarly, in a focus group of Chinese nursing students, Chan et al. (2021) also found that students preferred online learning over face-to-face learning because it was convenient. Students felt online education was appropriate for them as adult learners because they are self-disciplined (Chan et al., 2021). The mixed-methods study by Chan et al. (2021) had 56 students complete the online survey, but only four in the focus group. Chan et al. (2021) stated that the pandemic limited participants' free time, resulting in a small cohort in the focus group.

Schedule Changes. During the lockdown phase of the pandemic, students remained at home. They did not have to commute, which saved them money (Suliman et al., 2021; Wallace et al., 2021) and allowed them more time to study (Bdair, 2021). They also spent more time with their families (Heilferty et al., 2021; Suliman et al., 2021; Wallace et al., 2021). While some students felt that spending more time with their families was an advantage (Suliman et al., 2021), others were dissatisfied with the challenges that arose from schedule changes for themselves or family members. They reported time management problems with balancing online classes, studying, and family responsibilities, including a lack of support from their partners and having their children home (Suliman et al., 2021). In the Fogg et al. (2020) study, student responses on an open-ended survey question found that they also experienced family difficulties, including

caring for children at home, living with parents, and a family member becoming infected with COVID-19. The study could have resulted in more in-depth responses with more open-ended questions or the addition of other qualitative components.

Nursing students had difficulty concentrating when their family members were around (Heilferty et al., 2021; Suliman et al., 2021; Wallace et al., 2021). Family members competed with students for workspace and caused interruptions (Keener et al., 2021). They could not find a quiet workspace that they needed for quality studying (Heilferty et al., 2021).

Availability of Resources. In the study by Singh et al. (2021) in India, 80% of students used mobile devices for e-learning. Only 20% of students felt that e-learning should continue after the pandemic. Singh et al. (2021) noted that there is significant disproportionate availability of digital technology between India's socioeconomic, racial, and geographic groups. In their study of nursing students in Jordan, Masha'al et al. (2020) reported similar findings. Approximately 84.5% of students used their smartphones for e-learning, noting that not all nursing courses and materials were available on smartphones (Masha'al et al., 2020). Sixty percent of students reported needing additional Internet packages, which was a financial burden (Masha'al et al., 2020). In another study conducted in Jordan, students did not have a computer or laptop or needed to share with their siblings (Suliman et al., 2021). These results may have been more applicable to developing countries, as studies conducted in the United States did not suggest issues with the availability of technological devices (Fogg et al., 2020; Heilferty et al., 2021; Michel et al., 2021).

Internet Accessibility and Connectivity. Nursing students, including those in the United States, experienced Internet access and connectivity problems during the pandemic. They felt helpless as they had issues with Internet connectivity while attending online classes, taking

quizzes, and submitting assignments (Suliman et al., 2021). Students in other studies also experienced trouble with Internet connections (Fogg et al., 2020; Keener et al., 2021; Wallace et al., 2021). Bdair (2021), Ramos-Morcillo et al. (2020), and Singh et al. (2021) also noted that students had trouble with Internet connectivity, especially in rural areas. In the study conducted in India by Singh et al. (2021), only 20% of students had wi-fi access at home. Participants in the United States also had unreliable Internet access at home and limited or no access to the Internet at computer labs, libraries, or other public places (Michel et al., 2021). The findings across these studies suggest that Internet accessibility and connectivity were problematic for students across the globe.

Impact on Academic Performance. Many students were worried about how the transition to online learning would impact their education. In their qualitative study, Suliman et al. (2021) found that students were concerned they would have lower achievement because online learning would worsen their learning experiences. Senior-level students were concerned about not graduating on time (Suliman et al., 2021). Most of the students in the study did not have previous experience with online learning (Suliman et al., 2021), which likely contributed to their concerns.

Other studies also found that students were worried that the transition to online learning would impact their grades (Heilferty et al., 2021; Keener et al., 2021). In the survey by Keener et al. (2021), 29 students out of the 76 who answered the open-ended question stated that they were concerned about how the transition to online learning would impact their grades. In the qualitative study by Heilferty et al. (2021), one student indicated that their exam scores dropped by 10%. In contrast, another student said that their other responsibilities were canceled, leaving

school as their only focus resulted in the highest grades that they had earned in nursing school (Heilferty et al., 2021).

Students felt that they could not learn clinical courses online (Puljak et al., 2020; Suliman et al., 2021; Michel et al., 2021). Nearly half of the students in the large survey study by Puljak et al. (2020) agreed that online learning could not compensate for missed clinical experiences. Students were dissatisfied with missing hands-on experiences (Bdair, 2021; Dziurka et al., 2022; Fogg et al., 2020; Michel et al., 2021). In a qualitative study including both students' and instructors' perspectives, all participants mentioned that online learning was inappropriate for teaching hands-on skills (Bdair, 2021). Similarly, in the study by Michel et al. (2021), one student commented about feeling very underprepared to do basic nursing skills because of missing in-person clinical time and a health assessment lab. Students were also unhappy about missing clinical rotations in which they were genuinely interested (Fogg et al., 2020).

Nursing students were also concerned with how the pandemic would impact their future nursing careers (Dewart et al., 2020; Diaz et al., 2021; Dziurka et al., 2022; Fogg et al., 2020; Huang et al., 2020). In a large survey in Croatia, most students were afraid that the lack of practical experience would be detrimental to their job preparedness in their future careers (Puljak et al., 2020). Similarly, in the large survey of nursing students in the United States, participants overwhelmingly indicated that they would not have the nursing skills necessary to enter the workforce (Michel et al., (2021).

Nursing students were dissatisfied with the heavy course load when learning online (Bdair, 2021; Fogg et al., 2020; Heilferty et al., 2021; Keener et al., 2021; Michel et al., 2021; Suliman et al., 2021). Sailsman and Milne (2020) obtained course feedback from an online survey and noted that students found online learning modules and simulations tedious and

exhausting. In focus groups of undergraduate and graduate nursing students in Jordan, all participants complained about the significant number of assignments during online learning (Suliman et al., 2021). In a narrative journal, one student indicated that instructors gave extra assignments they would not have assigned if they remained in person (Heilferty et al., 2021).

Impaired Concentration. Many studies identified that nursing students could not concentrate during lockdowns (Bdair, 2021; Fitzgerald & Konrad, 2021; Kochuvilayil et al., 2021; Lovric et al., 2020; Singh et al., 2021; Suliman et al., 2021), potentially affecting their academic performance. In an online survey of nursing and medical students in India, Singh et al. (2021) found that over half the participants reported a loss of concentration during online classes. Singh et al. (2021) mentioned that instructors did not frequently use innovative e-learning strategies since the sudden and unexpected shift to online learning. This factor may have contributed to students' difficulty concentrating.

In a qualitative study of nursing students in Croatia, Lovric et al. (2020) found that in addition to difficulty concentrating, students also experienced a lack of motivation and impaired memory, making learning challenging (Lovric et al., 2020). Lovric et al. (2020) conducted their study three days before the canceling regular university classes. The question needs to be asked if students were in crisis mode at that point when much about COVID-19 was still unknown. If they had conducted their research after the cancelation of classes, students' perceptions of the pandemic might have evolved, and they would have had more experiences on which to reflect. Researchers might have gotten different responses about students' perceptions of learning online during the pandemic if they waited another month or two.

Engagement. Students engaged in their online courses tend to be more satisfied with their education (Chan et al., 2021). Much effort and creativity are required to create engaging

online courses (Hampton & Pearce, 2016), which was difficult at the beginning of the pandemic because of the rapid and unexpected transition to online learning. As a result, many students struggled to engage in their online coursework. They had trouble staying engaged with their coursework and retaining information when trying to learn independently at home (Michel et al., 2021). The qualitative study by Bdair (2021) found that students had trouble engaging because online learning limited social interaction and teamwork with peers.

In a large quantitative survey in Croatia, Puljak et al. (2020) reported that undergraduate health science students, including nursing students, would have liked more online lectures with instructors than having the written text of presentations posted. When asked how e-learning could be improved, some students responded that teachers need to be more engaged and that lectures should be video recorded (Puljak et al., 2020). In a mixed-methods study by Chan et al. (2021), students also felt that engagement in the course could be improved by using prerecorded lectures but added that active learning sessions should be used afterward (Chan et al., 2021). In contrast, Heilferty et al. (2021) found that in their qualitative study, students did not like recorded lectures because they felt they did not learn from them.

Ramos-Morcillo et al. (2020) reported that in their study using semi-structured interviews, students preferred video conferences to recorded videos, podcasts, discussion threads, and submitted assignments. Students liked the immediate feedback and interaction with video conferencing. However, students noted that non-verbal cues, such as expression of doubt or confusion, were not identified in video conferencing compared to the traditional classroom (Ramos-Morcillo et al., 2020).

Interactions with Faculty. Many studies reported students' perceptions of their interactions with faculty members during the beginning of the pandemic. Some students

appreciated the support of their instructors during the pandemic (Fitzgerald & Konrad, 2021; Godbold et al., 2021; Lovric et al., 2020; Michel et al., 2021; Wands et al., 2020), while other students were dissatisfied with their instructors' online teaching strategies and communication with their students (Michel et al., 2021). The following section will further describe students' reported interactions with faculty during the pandemic.

Positive Interactions. Some nursing students were appreciative of faculty during unplanned online learning. In a qualitative study, students praised their instructors' work during the pandemic, as they felt that teachers were supportive and encouraging (Lovric et al., 2020). Wands et al. (2020) also reported that nursing students had favorable interactions with faculty members, as students appreciated their instructors' preparedness, openness, and engagement. Students were grateful to their instructors for understanding that the experience of conducting clinical coursework online was new for everyone and for being patient with them when technical issues arose (Wands et al., 2020). The study by Wands et al. (2020) was limited by collecting evaluations following simulations used at a single institution.

In a descriptive web-based survey, Fitzgerald and Konrad (2021) found that students who rated support from faculty as good or excellent had fewer sources of anxiety. In this study, students felt that teachers were supportive during the pandemic. This study is significant because it was the first quantitative study to explore sources of anxiety during the pandemic in undergraduate nursing students from the United States. In another study from the U.S., undergraduate nursing students appreciated teachers advocating for them and going above and beyond (Michel et al., 2021). The study was a mixed-methods online survey with a sample size of 772 undergraduate nursing students from the United States at five universities. To date, this was one of the few published multi-site studies from the United States about undergraduate

nursing students' experiences during the COVID-19 pandemic (Michel et al., 2021), illustrating more generalizable perspectives to the overall population of nursing students in the United States compared to single-site studies.

Negative Interactions. While many students in the study by Michel et al. (2021) were appreciative of their instructors, others criticized faculty members unprepared to teach online (Michel et al., 2021). They mentioned that faculty members were difficult to get a hold of and unresponsive to their needs (Michel et al., 2021). A limitation of this study was that students did not articulate how faculty and colleges could provide successful online education (Michel et al., 2021). This study would have been more helpful if the authors had included an open-ended question about how to improve online learning. Wallace et al. (2021) also found that nursing students reported that their instructors were not familiar with teaching online and did not respond to emails. Another U.S. study reviewed reflective journals of nursing students at the beginning of the pandemic (Heilferty et al., 2021). Some students stated that faculty were supportive, but others felt that instructors took advantage of being online by adding extra assignments and time to lectures compared to time spent in in-seat classes (Heilferty et al., 2021).

Nursing students need faculty to be available during stressful times to discuss their worries (Suliman et al., 2021). In the qualitative study by Suliman et al. (2021), nursing students in Jordan believed that interacting with their instructors is vital to their learning. During online learning, they did not receive enough support from instructors (Suliman et al., 2021). Similarly, in a qualitative study by Bdair (2021), Saudi Arabian nursing students felt that they got little feedback and interactions with faculty during the beginning of the pandemic.

Online Learning Strategies Used for Clinical Coursework

Virtual Simulation. As a result of the pandemic, virtual simulation moved to the forefront of nursing education (Van Der Wege & Keil, 2021). Van Der Wege and Keil (2021) used faculty-created virtual simulations of recorded videos made in the simulation lab. They chose to create simulations, stating the high cost of virtual simulation programs, lack of appropriate scenarios to meet all course objectives, and the potential for cheating as case study answers for commercially prepared programs are often available online (Van Der Wege & Keil, 2021). Before the simulation, students received the patient's medical history, medications, medication orders, and admitting diagnosis. They met with their clinical group via Zoom and watched the faculty members' simulation videos. The faculty facilitated discussion, answered questions, and presented additional lab and diagnostic data (Van Der Wege & Keil, 2021). Students appreciated the variety of scenarios, especially seeing tense interactions between patients and providers, and students wrote about how those experiences compared with scenarios where exchanges went well. Overall, students provided positive feedback and felt that the activity was an excellent replacement for face-to-face simulation (Van Der Wege & Keil, 2021). A limitation of this study was the small sample size at a single institution. Additionally, Van Der Wege and Keil (2021) acknowledged that they did not conduct a complete research study because the pandemic created time constraints to plan and implement it.

Similarly, Esposito and Sullivan (2020) developed and used virtual clinical simulations to teach undergraduate nursing students during the pandemic. They created five virtual simulation case studies with independent prework followed by synchronous video conferences with a small student cohort and a faculty member (Esposito & Sullivan, 2020). All students reported that they understood the material following the activity and appreciated working with their peers to have a

much-needed sense of community during the pandemic (Esposito & Sullivan, 2020). Students had one suggestion to share their care plans during video sessions to learn alternate nursing diagnoses from their peers' viewpoints.

Fung et al. (2021) used virtual simulation to replace clinical hours. Students completed four virtual simulations independently and then debriefed via Zoom with their peers and an instructor. Quantitative survey results showed that the students felt that they learned the nursing process better using virtual simulation over the traditional clinical environment (Fung et al., 2021). Fung et al. (2021) stated that the learning styles of Chinese students may have resulted in that finding. Students were dissatisfied with the virtual simulation program because they did not directly communicate with patients or other healthcare professionals. The program only allowed them to select choices pertinent to the virtual patient, which hindered their critical thinking (Fung et al., 2021).

Kubin et al. (2021) also used a virtual simulation program for clinical experiences during the pandemic. Instructors guided students through the virtual simulation scenario on a synchronous conference by sharing their screens (Kubin et al., 2021). At the end of the scenario, the instructor led a debriefing session. Students appreciated the small group learning associated with the activity, stating that it helped them redirect their thought processes and clarify concepts (Kubin et al., 2021). Shea and Rovera (2021) also used virtual as a replacement for clinical hours but did not describe students' experiences with using it. Both Kubin et al. (2021) and Shea and Rovera (2021) did not conduct formal research studies.

Wands et al. (2020) used four free virtual and online simulation resources to make up clinical hours for undergraduate students. The experiences included virtual simulation games and unfolding case studies (Wands et al., 2020). Multiple three hour synchronous Zoom sessions

were offered, including prebriefing with an orientation to the simulation and an overview of student expectations. Debriefing included what went well and could have been done differently (Wands et al., 2020). Evaluations showed that almost all students felt that the session was appropriate to their learning needs, and 95% made clinical decisions during their sessions (Wands et al., 2020). Students indicated that they wanted materials sent ahead of time to review before the simulation, and they wanted a consistent method for debriefing sessions (Wands et al., 2020).

Telehealth. Telehealth has been embraced internationally as a method to provide healthcare remotely (Lister et al., 2018). However, thus far, telehealth has been inadequately integrated into nursing curricula (Ali et al., 2015). Studies explored telehealth as an alternative to face-to-face learning during the pandemic for nursing students (Jimenez-Rodriguez & Arrogante, 2020) and interprofessional health care students (Rutledge et al., 2020). In a mixed-methods study by Jimenez-Rodriguez and Arrogante (2020), nursing students in Spain interacted with simulated patients via an online video platform in their study. All students believed the simulation experience was practical. They enjoyed it and were less nervous performing simulations in the comfort of their own homes (Jimenez-Rodriguez & Arrogante, 2020). Previous studies also reported that students had significant increases in their confidence levels when using telehealth (Lister et al., 2018; Reierson et al., 2015). Negative feedback was related to technical issues and Internet connectivity (Jimenez-Rodriguez & Arrogante, 2020), consistent with the study conducted by Lister et al. (2018).

DeFoor et al. (2020) described integrating telehealth simulation into online clinical for undergraduate nursing students. Although DeFoor et al. (2020) did not conduct a formal study, student feedback was positive. Shea and Rovera (2021) used telehealth by converting

standardized patient simulations to a virtual platform. Students met on Zoom to complete telehealth sessions and debriefed as a group immediately afterward. Shea and Rovera (2021) did not provide any student feedback, and they also did not complete a formal research study.

In a mixed-methods study by Rutledge et al. (2020), interdisciplinary healthcare students completed video sessions about telehealth etiquette, planning, and delivery. They met synchronously online to discuss interprofessional collaboration, the pandemic, and telehealth. Healthcare students' feedback was overwhelmingly positive, as they learned how telehealth is a valuable tool that they can use in their professional practice. The participants in the study by Rutledge et al. (2020) were graduate nursing students, so the results might differ for undergraduate nursing students. As the pandemic has caused a significant increase in telehealth (Rutledge et al., 2020), more studies about using telehealth in nursing education are warranted.

Other Online Clinical Learning Activities. Nursing instructors used various other activities for online clinical learning. Kubin et al. (2021) used an escape room converted to a virtual format. The escape room had interactive links, pictures, videos, and clues to guide students through the nursing process (Kubin et al., 2021). Kubin et al. (2021) also used unfolding video case studies for clinical learning. A video described a case study and asked students to answer a question by creating video clips. The instructor added other videos with unfolding pieces of the patient's case. Nursing students provided positive feedback for both activities (Kubin et al., 2021). However, Kubin et al. (2021) described the activities and student responses without conducting a formal study.

In another undergraduate nursing program, students charted in a simulated electronic health record program and completed online modules from multiple websites (Sailsman & Milne, 2020). They met virtually with their clinical groups to role-play and discuss various

predetermined topics (Sailsman & Milne, 2020). Students were assigned to video record themselves performing patient assessments on family members, stuffed animals, or pets (Sailsman & Milne, 2020). Overall, students were satisfied with course activities and felt that course objectives were met (Sailsman & Milne, 2020). However, Sailsman and Milne (2020) used online surveys to obtain student feedback and did not conduct a formal research study.

Shea and Rovera (2021) used videos in their skills laboratory courses. Unlike Sailsman and Milne (2020), who had students create a homemade video, Shea and Rovera (2021) delayed course grading. They obtained permission to enter the skills lab to complete checkoffs at the beginning of the Fall 2020 term. Both Sailsman and Milne (2020) and Shea and Rovera (2021) did not complete a full research study; instead, they described the activities used as a substitute for clinical hours.

Synthesis of the Research Findings

Research strongly supports CBL as an active learning strategy because it allows students to link course content to clinical practice (Kantar & Massouh, 2015). Through a learner-centered approach, CBL promotes the student to develop critical thinking (Laver & Croxon, 2015), confidence, and clinical preparedness (Kantar & Massouh, 2015). Case-based learning is a viable approach when clinical placement is challenging (Byrne et al., 2020; Edwards et al., 2018; Sanders et al., 2020).

Case-based learning is not without its challenges. Using CBL is time-consuming (Hong & Yu, 2017), and students must prepare ahead of time (Daniels et al., 2015; McLean, 2016). Written case studies limit the learner from seeing the facial expressions of the patient (Gholami et al., 2021). Another challenge is the lack of available case studies (Hong & Yu, 2017; Li et al., 2019). Some educators create case-based scenarios, but the process is time-consuming (Edwards

et al., 2018). While CBL is effective, Carter and Welch (2016) did not find a statistically significant difference in students' critical thinking with CBL. However, a nursing-specific assessment tool was not used (Carter & Welch, 2016). Other studies found that CBL was best used in conjunction with different educational strategies (Edwards et al., 2018; Roshangar et al., 2020).

CBL is used in numerous learning environments, including online. Web-based learning in nursing education helps students improve their clinical skills, resulting in a better quality of care and improved patient outcomes (Baristone et al., 2019). When faculty members decide what type of technology to implement, they should ensure that it helps students meet course outcomes (Foronda et al., 2018). Both asynchronous and synchronous approaches can effectively help students learn (Banna et al., 2015). Asynchronous online learning allows flexibility but lacks immediate interaction and feedback among students and the instructor (Chan et al., 2016). Synchronous video-based discussions allow for real-time conversations, and non-verbal communication can be conveyed, engaging learners (Swartzwelder et al., 2019). However, instructors might miss non-verbal cues in video chats (Ramos-Morcillo et al., 2020). Some students dominate discussions (McDaniels et al., 2016), while others do not participate (Banna et al., 2015). Students might miss class due to scheduling conflicts (Banna et al., 2015).

Engagement is challenging in the online setting (Bdair, 2021), though students are more engaged in coursework when using case studies and real-world situations (Chen et al., 2015; Hampton & Pearce, 2016; Martin & Bolliger, 2018). In online courses, engagement increases students' satisfaction, motivation to learn, and performance (Martin & Bolliger, 2018). Regardless of the type of technology used, students benefit from an orientation to the online platform at the start of the course (Bdair, 2021; Chen, 2016; Hampton & Pearce, 2016;

Swartzwelder et al., 2019). Students also benefit from introductions or ice breaker activities, announcements, email reminders, collaborating with peers, student-led discussions, and using various course materials (Martin & Bolliger, 2018).

Another approach to using CBL online is virtual simulation. Virtual simulation increases students' engagement, knowledge (Padilha et al., 2019), and clinical judgment (Caylor et al., 2015). Student feedback has been positive (Caylor et al., 2015; Foronda et al., 2016; Padilha et al., 2019). In virtual simulation programs, students can repeat scenarios numerous times in a safe environment (Cobbett & Snelgrove-Clarke, 2016). However, not all students like using virtual simulations, primarily because they experience technical issues (Cobbett & Snelgrove-Clarke, 2016). Some students think virtual simulation should be used as a replacement for missed clinical hours (Foronda et al., 2018; Verkuyl et al., 2020).

Virtual simulation is just starting to emerge in nursing education (Foronda et al., 2020). Currently, standard guidelines do not exist for virtual simulation in nursing education, including prebriefing, the learning activity, and debriefing (Verkuyl et al., 2020). Research on the effectiveness of virtual simulation in undergraduate nursing education is limited, as many studies have small sample sizes and lack control groups (Cobbett & Snelgrove-Clarke, 2016). There is little data about the extent and quality of student engagement in virtual simulation (Cant et al., 2019). Best practices are difficult to determine given the varied context and modalities in which virtual simulation is used (Foronda et al., 2020).

The COVID-19 pandemic created a situation where higher education institutions worldwide were forced to rely on online learning (Bdair, 2021). Some nursing schools had substantial online resources in place, while others struggled to rapidly transfer material online (de Tantillo & Christopher, 2020). Research studies about college students' experiences during

the pandemic are rapidly emerging (Fitzgerald & Konrad, 2021). However, undergraduate nursing students' experiences in the United States and their learning during this unexpected crisis are still largely unknown.

Some studies have indicated that undergraduate nursing students were satisfied with using online learning at the beginning of the pandemic (Bdair, 2021; Lovric et al., 2020; Puljak et al., 2020; Sood, 2020). They liked having recorded lectures that they could review multiple times, which helped them better understand course material and become more independent learners (Bdair, 2021; Suliman et al., 2021; Wallace et al., 2021). However, other students did not like online learning (Michel et al., 2021) and felt they did not learn from recorded lectures (Heilferty et al., 2021). Some students did not have the technological resources at home needed for online learning (Masha'al et al., 2020; Singh et al., 2021; Suliman et al., 2021). They also had inadequate Internet access (Michel et al., 2021) and connectivity (Bdair, 2021; Fogg et al., 2020; Keener et al., 2021; Ramos-Morcillo et al., 2020; Singh et al., 2021; Suliman et al., 2021; Wallace et al., 2021). Students also faced the stress of studying while family members were around (Heilferty et al., 2021; Keener et al., 2021; Suliman et al., 2021), changes in childcare (Godbold et al., 2021; Suliman et al., 2021; Wallace et al., 2021), and living with their parents (Fogg et al., 2020).

Students expressed dissatisfaction with the coursework as well. They thought the workload was heavy (Bdair, 2021; Fogg et al., 2020; Heilferty et al., 2021; Keener et al., 2021; Michel et al., 2021; Suliman et al., 2021). They were concerned with how the transition to online learning would impact their grades (Heilferty et al., 2021; Keener et al., 2021; Suliman et al., 2021), graduation date (Suliman et al., 2021), and future nursing careers (Dewart et al., 2020; Fogg et al., 2020; Huang et al., 2020). They were dissatisfied with learning clinical coursework

online (Michel et al., 2021; Puljak et al., 2020; Suliman et al., 2021) and missing hands-on experiences (Bdair, 2021; Fogg et al., 2020; Michel et al., 2021; Wallace et al, 2021).

Nurse educators used a variety of online learning strategies to replace in-person clinical learning. They used virtual simulations, and students gave positive feedback (Esposito & Sullivan, 2020; Fung et al., 2021; Kubin et al., 2021; Van Der Wege & Keil, 2021). Other students used telehealth as a replacement for clinical hours. Some students enjoyed it (DeFoor et al., 2020; Jiminez-Rodriguez & Arrogante, 2020), while others were dissatisfied with technological issues and Internet connectivity (Jiminez-Rodriguez & Arrogante, 2020).

Undergraduate nursing students appreciated their teachers' efforts during the pandemic (Fitzgerald & Konrad, 2021; Godbold et al., 2021; Lovric et al., 2020; Michel et al., 2021; Wands et al., 2020). Others were dissatisfied with instructors' unpreparedness to teach online (Michel et al., 2021; Wallace et al, 2021). Some felt that their instructors were difficult to contact (Michel et al., 2021; Wallace et al, 2021) and provided little feedback (Bdair, 2021).

With the abrupt change in course delivery amid a global pandemic, nursing students were fearful (Lovric et al., 2020), anxious (Kochuvilayil et al., 2021; Savitsky et al., 2020), stressed (Fitzgerald & Konrad, 2021; Masha'al et al., 2020; Zhi et al., 2020), bored (Heilferty et al., 2021; Turkles et al., 2021), and had trouble sleeping (Kochuvilayil et al., 2021; Romero-Blanco et al., 2020; Singh et al., 2021). However, students' reported anxiety levels varied significantly depending on their geographic location (Fitzgerald & Konrad, 2021). This finding could have been related to cultural differences or variances in how countries handled the pandemic differently (Kochuvilayil et al., 2021). Numerous studies found that female students were more vulnerable to adverse mental health effects during the pandemic (Fitzgerald & Konrad, 2021;

Gallego-Gomez et al., 2020; Huang et al., 2020; Romero-Blanco et al., 2020; Savitsky et al., 2020).

Not all effects of the pandemic were negative. Nursing students got to spend more time with their families (Heilferty et al., 2021; Suliman et al., 2021; Wallace et al., 2021) and did not have to commute (Bdair, 2021; Suliman et al., 2021). They felt solidarity toward humanity (Turkles et al., 2021) and were inspired by the healthcare community (Heilferty et al., 2021). Some nursing students experienced resilience (Heilferty et al., 2021), while others did not (Keener et al., 2021). Many students used healthy coping strategies (Gallego-Gomez et al., 2020; Heilferty et al., 2021; Kochuvilayil et al., 2021; Turkles et al., 2021), while others used unhealthy coping strategies (Kochuvilayil et al., 2021; Savitsky et al., 2020; Turkles et al., 2021). Cultural differences likely contributed to variations in nursing students' experiences and coping during the pandemic (Kochuvilayil et al., 2021).

Student nurses may have a complex emotional response to their chosen profession as they prepare to enter the workforce (Zhao et al., 2021). The situation challenged nursing students' sense of professional identity (Dos Santos, 2020a; Jackman et al., 2020), particularly those who had not yet had clinical courses (Zhi et al., 2020) and those who were close to graduation (Zhao et al., 2021). However, nursing students reported pride in entering the nursing profession (Dos Santos, 2020b; Heilferty et al., 2021; Turkles et al., 2021; Zhao et al., 2021; Zhi et al., 2020).

Critique of the Previous Research Methods

All research studies have limitations (Dos Santos, 2020b). Numerous studies were conducted at a single site (Baristone et al., 2019; Caylor et al., 2015; Fitzgerald & Konrad, 2021; Foronda et al., 2016; Gu et al., 2017; Heilferty et al., 2021; Keener et al., 2021; Lister et al., 2018; Savitsky et al., 2020; Sood, 2020; Suliman et al., 2021; Tjoflat et al., 2018; Wallace et al.,

2021). Many studies had a small sample size (Bdair, 2021; Cobbett & Snelgrove-Clarke, 2016; Heilferty et al., 2021; Lister et al., 2018; Wallace et al., 2021). Another study did not collect demographic data to protect participant confidentiality, though this limits the ability to compare participant groups (Herron et al., 2019). In that study, students may have participated or altered their responses because the primary investigator was also the course instructor (Herron et al., 2019). Some used convenience sampling (Fitzgerald & Konrad, 2021; Kochuvilayil et al., 2021; Lister et al., 2018; Masha'al et al., 2020). Convenience sampling is the weakest form of sampling because the sample may be atypical of the larger population and increases the risk of bias (Polit & Beck, 2018).

Some studies used measurement tools with uncertain reliability (Drach-Zahavy et al., 2021; Herron et al., 2019; Wright et al., 2018) or validity (Tjoflat et al., 2018). Other studies collected data via online surveys (Aslan & Pekince, 2020; Huang et al., 2020; Kochuvilayil et al., 2021; Puljak et al., 2020; Zhao et al., 2021), which are likely to have responder bias (Kochuvilayil et al., 2021). Keener et al. (2021) also used an online survey, noting that limited or unstable Internet could have prevented some participants from accessing the survey.

Other studies were limited by exploring student satisfaction (Baristone et al., 2019; Jiminez-Rodriguez & Arrogante, 2020; Sood, 2020). Studies about student satisfaction did not assess increased knowledge or improved student outcomes (Jiminez-Rodriguez & Arrogante, 2020). Some studies measured students' perceived academic performance rather than their actual performance (Foronda et al., 2018; Fung et al., 2021). Romero-Blanco et al. (2020) explored students' self-reported sleep measures and not objective measures.

When COVID-19 lockdowns immediately halted in-person learning, nursing students were thrust into the world of virtual clinical learning (Badowski et al., 2021). Virtual simulation

is a novel approach requiring further research about how to best use it (Verkuyl et al., 2020). There is a gap in best practice for prebriefing, the actual simulation activity, and debriefing when using virtual simulation (Verkuyl et al., 2020). Researchers used a wide variety of design approaches. Results for some studies may have varied if students had completed the tutorial before the simulation (Cobbett & Snelgrove-Clarke, 2016; Wright et al., 2018). Foronda et al. (2018) noted that their design for the debriefing method could have been a limitation. Caylor et al. (2015) used two different online platforms, which may have distracted participants. Another study had a facilitator guiding them through virtual simulations to help troubleshoot issues (Foronda et al., 2018). Some studies measured results from a single virtual simulation scenario (Padilha et al., 2019; Wright et al., 2018).

Qualitative studies are critiqued by whether the researcher has documented an analytic process and consistently followed it (Polit & Beck, 2018). Heilferty et al. (2021) did not disclose the analytic process. Additional qualitative studies had limited generalizability to other populations of nursing students (Lovric et al., 2020; Turkles et al., 2021).

Study results may not be transferable to nursing students in different countries. Some results may have been culturally biased (Masha'al et al., 2020). For example, Gu et al. (2017) mentioned that the fundamentals nursing course and skills taught in China differed from the course content and skills taught in the United States. Language barriers caused Norwegian students to have difficulty navigating an American-made virtual simulation program (Tjoflat et al., 2018). Dos Santos (2020a, 2020b) conducted two similar studies in different countries and found very different results, likely attributed to cultural differences. Not all nursing students worldwide had to transfer online for clinical coursework (Kochuvilayil et al., 2021; Ulenaers et al., 2021). Kochuvilayil et al. (2021) found different results for nursing students in two different

countries, one group continued in-person clinicals, and the other group transferred all coursework online.

The context of the pandemic limited some studies. Masha'al et al. (2020) identified that the pandemic's novelty was a limitation due to the lack of studies on the topic to compare their findings. Dos Santos (2020a, 2020b) noted that the pandemic limited the ability to conduct in-person interviews and focus groups. Dos Santos (2020b) also acknowledged that the pandemic limited participants' willingness to participate in quantitative research. Keener et al. (2021) suggested that low participation rates could have been because students were too stressed or overwhelmed to respond. Numerous sources did not conduct formal research but described learning activities and student feedback that was received (DeFoor et al., 2020; de Tantillo & Christopher, 2020; Esposito & Sullivan, 2020; Fogg et al., 2020; Kubin et al., 2021; Sailsman & Milne, 2020; Shea & Rovera, 2021; Van Der Wege & Keil, 2021). Van Der Wege and Keil (2021) acknowledged that they did not conduct a complete research study because the pandemic created time constraints to plan and implement it.

A limitation of other studies was cross-sectional designs. Cross-sectional designs collect data at a single point in time, which poses problems about inferring changes over time (Polit & Beck, 2018). Cross-sectional designs could not determine a complete picture of students' experiences as the pandemic unfolded (Drach-Zahavy et al., 2021). For example, Lovric et al. (2020) conducted their study three days before canceling regular university classes. If they had completed their research after the cancelation of classes, students' perceptions of the pandemic might have evolved, and they would have had more experiences on which to reflect. Since the COVID-19 pandemic may have impacted nursing students' professional identity, a cross-

sectional study about professional identity may have recall bias before the pandemic compared to results after the outbreak of COVID-19 (Zhao et al., 2021).

Summary

Chapter 2 provided a comprehensive literature review of online case-based learning in nursing education and nursing students' experiences when transitioning to online CBL for their clinical coursework during the COVID-19 pandemic. As constructivism was the theoretical framework for this study, the literature review and synthesis findings related to key constructivism concepts. The literature showed that nurse educators used a variety of online activities for online clinical learning (DeFoor et al., 2020; de Tantillo & Christopher, 2020; Esposito & Sullivan, 2020; Fogg et al., 2020; Kubin et al., 2021; Sailsman & Milne, 2020; Shea & Rovera, 2021; Van Der Wege & Keil, 2021). However, many educators did not conduct formal research studies, leaving many questions unanswered about student learning and satisfaction with their approaches. The literature review confirmed the gap in understanding baccalaureate nursing students' experiences with online CBL during the COVID-19 pandemic, thus confirming the necessity of this study. Chapter 2 concluded with a synthesis of the current findings and a discussion of the limitations of the current literature.

Chapter 3 will discuss the methodology for this study in detail. Chapter 3 includes the research question, research design, population, sample, procedures, participant selection, and protection of participants. Chapter 3 also describes data collection, data analysis, the role of the researcher, interview questions, and ethical considerations of the study.

CHAPTER 3. METHODOLOGY

Chapter 3 will discuss the study's qualitative methodology in detail. This study used a basic qualitative methodology to answer the research question, "How do baccalaureate nursing students describe their experiences when transitioning to online CBL at the beginning of the COVID-19 pandemic?" Basic qualitative research provides insight to factual responses about how people feel (Colorafi & Evans, 2016); thus, a basic qualitative research design is well suited for this study since the aim was to understand the specific experience of baccalaureate nursing students at the start of the COVID-19 pandemic. This chapter also describes the purpose of the study and the research design in detail. The target population is discussed, as well as the process for participant selection in this study. Chapter 3 includes the procedures used and instruments for data collection. This chapter concludes with ethical considerations of the study.

Purpose of the Study

The purpose of this study was to explore how baccalaureate nursing students describe their experiences with online CBL for their clinical coursework at the beginning of the COVID-19 pandemic. Students' experiences during the pandemic can serve as lessons on how to develop sustainable future educational plans (Bezerra, 2020; Johnson et al., 2020) and will help nurse educators identify sufficient resources that nursing students need (Ramos-Morcillo et al., 2020). Students in higher education are expected to use higher-order thinking and take personal responsibility for their learning (Daniels et al., 2015), which are necessary attributes for using CBL. Nursing education has utilized CBL as a strategy to actively engage students in the

learning process (Byrne et al., 2020; Carter & Welch, 2016; Laver & Croxen, 2015; Meiers & Russell, 2019; Sanders et al., 2020). The AACN (2021) requires that nurses demonstrate clinical judgment, which has been shown to be enhanced with the use of CBL (Chan et al., 2016). The research priorities in nursing education outlined by the NLN (2020a) included promoting learning and enhancing clinical judgment and decision making.

With an increased use of online modalities during the pandemic, an in-depth exploration of effectiveness from the users' perspectives is needed (Bdair, 2021). This study addressed a significant gap in the literature, given that very few studies have been conducted regarding specific learning strategies used by nursing students as a replacement for clinical learning during the pandemic. The results of this study could help nurse educators better understand how to develop online learning activities and resources that allow nursing students to apply knowledge and clinical reasoning to realistic patient scenarios. This study's results offer insight to the personal and professional stressors that nursing students faced during time of crisis, which could allow nurse educators to better support them emotionally, discuss adaptive coping strategies (Savitsky et al., 2020), and refer them to supportive resources as needed.

Research Question

The research question was, "How do baccalaureate nursing students describe their experiences when transitioning to online case-based learning for their clinical coursework at the beginning of the COVID-19 pandemic?"

Research Design

This research study used a basic qualitative design. Basic qualitative studies explore opinions, attitudes, and reflections of one's experiences in the world (Percy et al., 2015). In addition, basic qualitative designs focus on how people interpret and make meaning of their

experiences (Merriam & Tisdell, 2016). In this study, baccalaureate nursing students were interviewed to explore how they described their experience when transitioning to online case-based learning for their clinical coursework at the beginning of the COVID-19 pandemic.

Prelicensure baccalaureate nursing students were interviewed using a semi-structured interview guide with open-ended questions. Open-ended questions align with basic qualitative designs because the aim is to minimize predetermined responses (Patton, 2015). As the interviews were semi-structured, an interview guide was used so that all participants were asked the same questions related to the research question. In semi-structured interviews, a large portion of the interview is guided by questions aiming to explore specific issues (Merriam & Tisdell, 2016). Semi-structured interviews allow researchers to respond to the situation according to the emerging views of the participant (Merriam & Tisdell, 2016). While all participants were asked the same guiding questions, follow-up questions were asked as well.

Target Population and Sample

Population

The population for this study was prelicensure nursing students in an accredited baccalaureate nursing program. Baccalaureate (BSN) nursing students are enrolled in a four-year Bachelor of Science in Nursing program (AACN, 2020a). Standard baccalaureate nursing programs are designed for high school graduates with no previous professional nursing experience (AACN, 2020a). The BSN degree includes an educational and experiential knowledge base for entry-level professional nursing practice (AACN, 2020a). There are more than 996 baccalaureate nursing programs in the United States (AACN, 2020a).

Sample

A convenience sample of prelicensure baccalaureate (BSN) nursing students from a midsized private university in the Midwestern United States participated in this study. Inclusion criteria were age 18 or older, enrolled in a prelicensure baccalaureate nursing program, enrolled in their first or second clinical course during the spring 2020 semester, and used case-based learning for their clinical course after it transitioned online. Exclusion criteria were nursing students enrolled in a program other than a baccalaureate nursing program and licensed registered nurses (RNs) enrolled in a RN to BSN program.

Procedures

This section describes the step-by step approach used to conduct this basic qualitative study. Procedures include participant selection, protection of participants, data collection, and data analysis. This study and its procedures were approved by the Capella University Institutional Review Board (IRB) and site permission was obtained by the university's assistant director of undergraduate nursing programs.

Participant Selection

The researcher contacted the assistant director of undergraduate nursing programs at a midsized private university in the Midwestern United States to obtain permission for recruitment. The assistant director granted site approval and agreed to send the researcher's recruitment email to prospective participants on three separate occasions. The prospective participants were students who were in their junior and senior year of the nursing program, which included approximately 100 students. They would have been in their first or second clinical semester in spring 2020, which was approximately 18 months before data collection began. Emails sent to the prospective participants by the assistant director were the only means of recruitment.

Prospective participants voluntarily enrolled in the study by first responding via the researcher's email address, which was included in the recruitment letter. When contacted, the researcher emailed interested prospective participants the screening questions to determine if the prospective participants met inclusion criteria.

Once the researcher confirmed that the participants met inclusion criteria, the researcher emailed them the IRB-approved informed consent form. Each prospective participant had 24 hours or more to review the information on the consent form before the interview. The consent form stated the purpose of the interview (Patton, 2015), which was to gain understanding of the experiences of baccalaureate nursing students when they transitioned to online case-based learning during the pandemic while in their first or second clinical course. The consent form informed participants that they may withdraw from the study at any time, that the study had minimal risk (Creswell & Poth, 2018), their interview would be confidential, and their data would be deidentified (Patton, 2015). Participants were informed that the expected length of time for the interview was 30 to 60 minutes. Participants were notified that they would not receive compensation, but that their contribution will help others understand what they experienced and how to improve online learning in the future.

After the recruitment email was sent out two times, however, the recommended sample size had not been obtained. The researcher requested a modification to the IRB to offer a $10 coffee gift card, which was approved. When the recruitment email was sent out a third time, additional participants responded, and the recommended sample size was achieved. All participants, including those who had already completed the study, were emailed the $10 gift card incentive when they completed their portion of the study.

Each participant signed the informed consent electronically and securely using DocuSign. DocuSign has policies and guidelines in place to protect users' personal information (DocuSign, Inc., 2022). A copy of the informed consent was emailed to the participant through DocuSign for their records. The researcher and the participant communicated via email to schedule the interview and the researcher sent a Zoom meeting invitation. The researcher instructed each participant to schedule their interview for a time when they were in a quiet location where they were comfortable sharing their personal viewpoints.

Protection of Participants

In this study, participants reflected upon their experiences with online learning during the pandemic, which is an activity that is considered as minimal risk to human subjects. Participants were consenting adults over the age of 18 who were capable and willing to be interviewed. However, the topic may be sensitive in that participants may have experienced a range of emotions during the pandemic, including exhaustion, anxiety, and feeling burned out (McMurtie, 2020). Discussing their experiences may have caused uncomfortable feelings to resurface. Because of the nature of the emotions, participants may not have provided honest answers.

Participants were protected from harm throughout the research process. The researcher obtained permission from the assistant director of undergraduate nursing programs at the participants' university, who agreed to send the recruitment email. Because participants directly contacted the researcher via e-mail, their participation was unlikely to be known to anyone outside of the study. As mentioned, the informed consent form indicated the purpose of the study, prospective research benefits, potential risks, discomforts, and who to contact with questions about the research or their rights (American Psychological Association [APA], 2017). They were not coerced to participate and were assured that confidentiality would be maintained

(U.S. Department of Health and Human Services [HHS], 1979). Participants signed a consent to be interviewed for the study and have the interview audio recorded (APA, 2017). The interview was conducted and recorded on the online application Zoom, which has passcode protection to join meetings and secured encryption for meetings (Zoom Video Communications, 2021). Participant data was stored on the researcher's encrypted and password-protected USB drive using participant numbers as the only participant identifier. During data analysis and in the final report, steps were taken to deidentify participants (APA, 2017), by using participant numbers and leaving out any identifiers such as names and school affiliation.

Data Collection

Interviews were conducted via Zoom. At the beginning of the interview, the researcher reviewed all information from the consent with the participant to make sure that the participant understood. Then, semi-structured interviews were conducted using predetermined open-ended questions. Interviews were audio recorded to preserve all responses for analysis (Merriam & Tisdell, 2016). Following each interview, the researcher listened to the recording and transcribed it verbatim. The interview transcript listed a participant number instead of a name for participant confidentiality. Transcripts were emailed to participants for member checking validation of correct transcription and meaning of what was said. Member checking is the process of having participants verify that the researcher's interpretation of the participants' experiences is credible (Braun & Clarke, 2013). All participants agreed that the transcription and preliminary interpretation were accurate. The interviews were conducted between September 2021 and November 2021 and ranged from 20 to 35 minutes in length.

Data Analysis

Data analysis was conducted using Braun and Clarke's thematic analysis (TA) as a guide. TA is a flexible method that can be used to answer nearly all types of research questions and analyze almost any type of data (Braun & Clarke, 2013). Since TA can be used to develop a descriptive account of an experience (Braun & Clarke, 2013), it is the acceptable method to analyze data in this study. The researcher began by preparing data for analysis by transcribing it. Recordings were listened to in very short segments and typed up. Next, the researcher read and become familiar with the data, taking note of items of interest to the research question. The researcher coded across the entire dataset, again looking for anything relevant to answering the research question. Codes were examined to see cohesive categories that emerged. Next, the researcher searched for themes or patterns, making note of patterns that were most meaningful to the research question. Themes were reviewed noting the relationships between them. Again, the researcher went back to the data to make sure that themes made sense. Then, the researcher defined and named themes. Lastly, a final analysis was written. Extracts of each theme were selected tell a story of each theme.

Instruments

The Role of the Researcher

Researchers bring their own perceptions, histories, assumptions, and values to the research process. They select topics that are interesting to them and reflect who they are (Braun & Clarke, 2013). A researcher may have biases when developing and conducting the study based on such experiences, and, thus, should comment on past experiences and perspectives that may have shaped the study's approach and interpretation (Creswell & Poth, 2018). The researcher in this study was a nursing instructor who taught BSN students in a clinical course using CBL

during the spring 2020 semester when all course content was transferred online. The researcher had previous firsthand knowledge of how students felt, what online platforms that were used, and what students reported as being the successes and barriers of the experience of unexpectedly changing their clinical course online. The researcher did not teach students in their first clinical course, but rather their second clinical course; therefore, the researcher acknowledges that participants' experiences may differ from the experiences of the second semester students.

Preunderstandings include the researcher's knowledge about the topic from the literature review and possibly from personal experience and interactions with people in situations like those of the study topic. The researcher must understand what their preunderstandings are but remain open-minded when interviewing participants without assuming that they know what the participants are going to say. The researcher should disclose the process by which preconceptions surfaced and were set aside (Patton, 2015). The researcher must address any sources of bias, including why they care about the issue, the implications of caring, and how to deal with bias (Creswell & Poth, 2018). The researcher must also comment on past biases, prejudices, and experiences that may have shaped the approach to and interpretation of the study (Creswell & Poth, 2018).

Guiding Interview Questions

Research has shown that semi-structured interviews with open-ended questions result in detailed data (Patton, 2015). Likewise, interview questions are informed from previous research (Braun & Clarke, 2013). Thus, a semi-structured interview guide with open-ended questions was developed based on a review of literature. A review of the interview guide by experts outside of the research team helps assess that the interview guide is appropriate and comprehensive related to the study's aims (Kallio et al., 2016). Before data collection began, a panel of three doctoral-

prepared nursing education research experts reviewed and approved the interview questions. In addition, the interview guide was field-tested with one nursing student, not involved in the study, to ensure the time estimate for conducting the interview was accurate. The interview questions were:

1. Tell me about your reaction when you found out that in-person clinical experiences were being canceled and replaced with online learning.
2. What other changes occurred in your life at the time? Examples include isolation, changes in your work schedule, financial changes, childcare, online learning for children, online learning for yourself, and other members of your household having schedule changes.
3. Did you drop any courses during the spring 2020 semester? If so, why?
4. How would you describe your coping strategies during the time when you were completing all your coursework online?
5. Describe the clinical learning activities and assignments that were used online during your clinical course.
6. Tell me about the strengths of the activities and assignments that were used.
7. Tell me about the limitations of the learning strategies that were used.
8. What was the instructor's role during online learning for clinical practice?
9. What strategies were used by the instructor to engage learners during the time of unplanned online learning, and were these effective?
10. What type of technology was used for the clinical course? Examples include discussion boards, individual or group virtual discussions, and virtual simulations.
11. How familiar were you with the type of technology that was used?

12. What kind of orientation, if any, did you receive about using new technology?
13. How would you describe the instructor's familiarity with technology used in the course?
14. What did you enjoy most about online learning in your clinical course?
15. What could have made the experience better?

Ethical Considerations

This study adhered to the basic ethical principles for research participants, which are respect for persons, beneficence, and justice (HHS, 1979). Participants were consenting adults over the age of 18 who were capable and willing to be interviewed. Respect for persons was followed, as the researcher respected each participant's values and opinions (HHS, 1979) throughout recruitment and data collection processes. The principle of beneficence, which is to do no harm, maximize possible benefits, and minimize harm (HHS, 1979) was also followed. In this study, students reflected their experiences with online learning during the pandemic, which is an activity that poses minimal risk. However, the topics discussed in the interview may have been sensitive in that participants may have experienced a range of emotions during the pandemic, including exhaustion, anxiety, and feeling burned out (McMurtie, 2020). Discussing their experiences may have caused uncomfortable feelings to resurface. Because of the nature of the emotions, participants might not have provided honest answers. Participants were informed of possible risks and that they could withdraw from the study at any time for any reason.

The principle of justice, which is fairness in distribution (HHS, 1979) was followed, as all participants were treated equally by the researcher throughout recruitment and data collection. The researcher obtained permission by the assistant director of undergraduate nursing programs at the participants' institution to send a recruitment email to students. The email detailed the

study and its inclusion criteria, and participants then contacted the researcher to voluntarily enroll in the study. Because participants directly contacted the researcher via e-mail, their participation is unlikely to be known to those outside of the study. An informed consent indicated the purpose of the study, prospective research benefits, potential risks, and discomforts, and who to contact with questions about the research or their rights (APA, 2017). Participants signed a consent to be interviewed for the study and have the interview recorded (APA, 2017). They were not coerced to participate and were assured that confidentiality would be maintained (HHS, 1979). Participant data is stored on the researcher's encrypted and password-protected USB drive using only participant numbers as the only participant identifier. In this study, steps were taken to deidentify participants (APA, 2017), by using participant numbers and leaving out information such as names and school affiliation. Recorded interviews will be stored for seven years on an encrypted and password-protected USB drive in a lockbox at the researcher's home office. After seven years, the USB drive will be taken to a licensed incinerator for destruction, in accordance with the guidelines from the U.S. Department of Commerce (Kissel et al., 2014).

Summary

A basic qualitative methodology was used in this study to explore baccalaureate nursing students' experiences with online CBL during the COVID-19 pandemic. Currently, very few studies have explored the experiences of baccalaureate nursing students who abruptly and unexpectedly transitioned from in-person classes to online learning for all coursework, including clinical coursework, at the beginning of the COVID-19 pandemic. In this study, the researcher sought to gain a deeper understanding of how baccalaureate nursing students felt, interpreted, and made sense of their experiences during this unprecedented time.

Participants were recruited from a midsized private university in the Midwestern United States using a recruitment email. The informed consent and data collection processes adhered to strict IRB-approved guidelines. Interviews were conducted via Zoom using a semi-structured interview guide, followed by transcription and member-checking by participants. Then, steps of thematic analysis were followed to identify major themes and codes across the data.

CHAPTER 4. PRESENTATION OF THE DATA

The purpose of the study was to explore the experiences of baccalaureate nursing students when transitioning to online CBL for their clinical coursework, at the start of the COVID-19 pandemic. This chapter begins by describing an overview of the study and the researcher, followed by a detailed description of the study's sample. This chapter explains how the basic qualitative methodology was applied to data analysis. Finally, a detailed analysis of the data is presented, which outlines major categories and themes that emerged from the participant interviews.

Introduction: The Study and the Researcher

The aim of this chapter is to present the research findings from semi-structured interviews focused on baccalaureate nursing students' experiences during the COVID-19 pandemic. This study used a basic qualitative methodology. A qualitative approach was selected to learn about the experiences of baccalaureate nursing students during unplanned online learning at the beginning of the COVID-19 pandemic with the intent to gain insight about the perspectives and experiences of baccalaureate nursing students during that challenging time. Basic qualitative studies explore how people interpret their experiences and give meaning to them (Merriam & Tisdell, 2016). Since research about baccalaureate nursing students' experiences during the pandemic is limited (Lovric et al., 2020), this study will add to a body of

literature about student experiences with learning during the pandemic that is currently immensely small.

In qualitative research, the primary instrument for data collection and analysis is the researcher (Merriam & Tisdell, 2016). Advantages are that the researcher can clarify information with participants and explore any unanticipated responses, though a potential disadvantage is that the researcher might have biases that impact the study (Merriam & Tisdell, 2016). Rather than trying to eliminate bias, researchers should identify them and use a review of current literature as a theoretical framework to inform the research study's data collection and interpretation (Merriam & Tisdell, 2016). The researcher's experience of teaching baccalaureate nursing students online during the spring 2020 semester, when all coursework unexpectedly transitioned online due to the COVID-19 pandemic, led to an interest in studying the topic. Prior experiences included teaching baccalaureate nursing students in a traditional clinical hospital setting and in courses that were designed to be online. The researcher decreased bias by acknowledging personal experiences and increased objectivity by using current peer-reviewed literature as the foundation for developing this study.

Description of the Sample

The participants were nursing students in a traditional four-year prelicensure baccalaureate nursing program at a midsized private university in the Midwestern United States. Thirteen potential participants expressed interest in participating in the study, and 11 of them met inclusion criteria of being age 18 or older, enrolled in a prelicensure baccalaureate nursing program, enrolled in their first or second clinical course during spring 2020 semester and used case-based learning for their clinical course after it transitioned online. The 11 participants were enrolled in their first or second clinical course during the spring 2020 semester and used case-

based learning when all their coursework, including clinical coursework, transitioned online at the beginning of the COVID-19 pandemic. The demographic makeup of the sample was homogeneous, as they were all female, between the ages of 18 and 22, and spoke English as their first language. In the United States, 87% of students in prelicensure registered nursing programs are female (NLN, 2020b), and over 75% of BSN nursing students are under age 25 (NLN, 2020c). Thus, the demographics of the study sample did not represent male nursing students, non-traditional nursing students, or students whose primary language is not English. To protect and maintain patient confidentiality, the participants were assigned a participant number according to the order in which they enrolled in the study.

Research Methodology Applied to the Data Analysis

Data analysis was conducted using Braun and Clarke's (2013) stages of thematic analysis to find themes within and across the data set. The first stage of thematic analysis is transcription (Braun & Clarke, 2013). At the conclusion of each semi-structured audio interview, the interview recording was transcribed verbatim into a Word document, which included the researcher's preliminary interpretation of the participants' response to each question. Each document was emailed to the participant for member checking of the correct transcription and meaning of what was said in their interview. Member checking was done to ensure that the participants' understanding of their experiences matched the researcher's interpretation of the participants' experiences (Braun & Clarke, 2013). All participants agreed that the transcription and preliminary interpretation were accurate.

The next stage of thematic analysis is immersion in the data (Braun & Clarke, 2013). The researcher read through the interview transcripts several times, noticing phrases and statements pertinent to the research question. The researcher organized participant responses for each

interview question. The next stage, complete coding, involved identifying all data that answered the research question (Braun & Clarke, 2013). Key words and phrases with similar elements were grouped together as codes. Braun and Clarke (2013) asserted that enough codes should be included to capture the pattens and diversity of the data. Next, the researcher noted relationships between the participants' responses to search for themes. Codes were combined, defined, and named, resulting in 28 subordinate themes. The subordinate themes were reviewed and further grouped together as nine superordinate themes. The final stage of thematic analysis involved writing an analysis (Braun & Clarke, 2013), which is presented in the upcoming section.

Presentation of the Data and Results of the Analysis

Results from thematic analysis are presented in a summary table and in narratives that describe specific participant responses about their experiences with online CBL during the COVID-19 pandemic. The results are organized according to each major category of questioning in accordance with the interview guide. Upon thematic analysis, it was determined that the interview data from 15 questions in the interview guide naturally divided into five major categories of questioning: Initial reactions, adjustments, online learning experiences, experiences with technology, and overall perceptions. Nine superordinate themes and 28 subordinate themes emerged from the qualitative data collected from the 11 interviews (see Table 1).

Table 1

Superordinate Themes, Subordinate Themes, Key Words/Phrases

Superordinate Themes	Subordinate Themes	Key Words/Phrases
Psychological distress	Negative emotions Missed opportunities Concern about impact	Feelings related to the change (11) Missing out on learning opportunities (8) Concern about impact on future education/career (6)
Forced external adjustments	Moving home Isolation Impacted job/finances/hobbies Studying modifications	Family members home/adjusting to family schedules (9) Difficulty finding quiet study space (3) Isolation (5) Impact on job/finances (5) Did not drop any courses (11)
New and renewed coping strategies	Negative emotions Positive emotions Resilience	Relied on support system (7) Relaxation strategies (7) Negative mental effects (5) Difficult to adapt (3) Couldn't rely on usual coping strategies (3) Positive mindset (4) Focused on studies (2)/internship (1)
Clear perceptions of case-based learning	Identified types of case-based learning	Basic case studies (5) Clinical log/write-up (4) Virtual simulation (10) Zoom (3)
Perceived strengths of online education	Reinforced learning Minimal learning	Reinforced sequence of nursing actions (7) Enhanced critical thinking (2) Minimal or no strengths (5)
Perceived weaknesses of online methods	Ineffective learning Negative emotions Missing elements	Wasn't helpful/minimally learned (9) Difficult to adjust (3) Challenging to achieve desired score (3) Time consuming (3) Missed hands-on skills (4) Missed communication skills (3)
Relatable instructors' roles	Supportive/resource Source of grading and feedback Minimal engagement Non-familiarity with technology	Were a resource/support (9) Graded/gave feedback (7) Minimal role (4) Limited engagement (4) Engaged via Zoom (4) New to using technology (7) Unsure of instructor familiarity with technology (3)
A variety of challenges with technology	Non-familiarity with technology Minimal orientation/instructions Technical issues	Never used virtual simulation (9) Never used Zoom (4) Learning curve (7) Did not receive orientation or received log-in instructions only (10) Technology limitations (9)/connectivity issues (4)
Positive reflection and suggestions	Flexibility Break from clinicals More collaboration More critical thinking exercises More resources	Flexible schedule (4) Break from waking up early/wearing scrubs (3) More collaborative learning (3) More case studies/critical thinking (4) Supplies to practice at home (2) Unsure (4)/university did the best they could (2)

Initial Reactions

One of the main categories of data collection within the semi-structured interview guide referred to the students' initial reactions to the change from in-person to online education and aligned with the first question posed to interviewees, "Tell me about your reaction when you found out that in-person clinical experiences were being canceled and replaced with online learning." The superordinate theme identified from participant responses was *psychological distress*. Psychological distress is defined as maladaptive psychological functioning when encountering stressful life events (Abeloff et al., 2000). Subordinate themes that emerged in relation to *psychological distress* included: *negative emotions*, *missed opportunities*, and *concern about impact*.

All 11 participants experienced *negative emotions* in response to the change from in-person to online courses. Specific words used by one or more students to identify *negative emotions* included: shock (3), upset (3), worry (2), frustrated (2), surprised (2), confusion (1), overwhelmed (1), nervous (1), disappointed (1), mad (1), anxious (1), cheated/unfair (1), alarming (1), and concerning (1). Moreover, the phrases used reflected a combined concern about psychological distress with feelings of missed opportunities and the impact on their learning and future profession. Descriptions of *psychological distress* according to participants were:

Negative Emotions. Participant 11 stated, "I was so upset. I had just gone to my orientation for clinical and I was super excited, so I immediately started crying."

Negative Emotions. Regarding online clinical coursework, Participant 9 stated, "I didn't know how it was going to work, I didn't know what the plans were, and so I was probably a little bit anxious about that."

Negative Emotions. Participant 4 stated,

> It was something that we had never experienced before, so it was kind of like, 'Oh, could this happen next semester and in the future if COVID doesn't go away?' So it was just kind of alarming and a little concerning for the uncertainty that the future was going to hold.

Eight participants described *missed opportunities* and four participants described *concern about impact* as it related to missing out on learning experiences or the impact on their education and career. Specific descriptions according to participants were:

Missed Opportunities. Participant 10 stated, "I was worried that I wasn't going to get all I could out of clinical."

Missed Opportunities. Participant 2 stated,

> How are you going to go from like, never being in the hospital ever, and then now you're not in the hospital still, because of COVID you're getting sent home. And then you're getting thrown in your senior year for the first time at a clinical, or your junior year for the first time at a clinical, whereas you should have already had a year or a year and a half of experience in your back pocket by that point.

Missed Opportunities. Participant 5 stated, "Not being able to do those hands-on experiences was very disappointing, and I feel like I didn't learn as much as I should have."

Concern about Impact. Participant 10 stated,

> Nursing school's always been my dream, but I thought, you know, we don't know how all this is going, it doesn't look like it's going to get ever better, so I thought my dreams were just going to be shattered and I wouldn't get the education that I was going to get.

Concern about Impact. Participant 6 stated, "I would say just a lot of worry on whether it would take away from the nurse I'd become in the future, if it would affect my experiences."

Adjustments

Another major category within the interview guide referred to adjustments that had to be made or those that were experienced, as posed with the following three questions: "What other

changes occurred in your life at the time? Examples include isolation, changes in your work schedule, financial changes, childcare, online learning for children, online learning for yourself, and other members of your household having schedule changes;" "Did you drop any courses during the spring 2020 semester? If so, why?" and "How would you describe your coping strategies during the time when you were completing all your coursework online?"

Adjustment is the process of adapting to a new situation (Merriam-Webster, n.d.). All 11 participants described adjustments during the transition to online learning. Superordinate themes, *forced external adjustments*, and *new and renewed coping strategies* were identified from participant responses. For the superordinate theme of *forced external adjustments* that had to be made during the change from in-person to online education, the subordinate themes emerging from participant responses included *moving home*, *isolation*, *impacted job/finances/hobbies*, and *studying modifications*. All 11 participants stated that they relocated from their university to home with their families. Nine participants described family members being home and adjusting to their family members' schedules. Descriptions of *forced external adjustments* according to participants were:

Moving Home. Participant 10 stated,

> It was three people doing Zoom meetings in a small house. My brother has three daughters, and they were no longer going to school, so he needed someone to watch them, which meant on top of my online learning and clinical simulations, I had to watch my three nieces, so it was very hectic.

Moving Home. Participant 8 was grateful to be with her family during that time. She stated,

> I got to spend one bonus semester with my family because I had already moved out and gone to college and was kind of doing my own thing, but then I had to be forced back into my family, but it ended up being a really nice bonding experience.

Isolation. Five participants stated that they felt isolated at home. Participant 3 stated, "I was pretty much at my house for about three months, so I was in isolation for a really long time, which was really hard on my mental health."

Impacted Job/Finances/Hobbies. Five participants mentioned loss of job or change in finances for themselves or their families. Three participants discussed missing their usual hobbies or activities. Participant 2 stated, "I lost my job because of COVID…It was hard to pay my car insurance when I wasn't working."

Impacted Job/Finances/Hobbies. Participant 3 stated,

> I couldn't work. I have a job back at home, I work at a restaurant, and I could not. I didn't have any source of income so if I did go anywhere, it was kind of um you know, limited because I didn't have a lot of money coming in.

Impacted Job/Finances/Hobbies. Participant 9 stated,

> I lost a lot of the things that I loved to do aside from nursing school. I was the president of my dance company at school, and so we had to cancel all dance rehearsals, we had to cancel our spring show, and to that was a really big stressor on me because dance has always been a really big stress outlet for me.

Studying Modifications. Nine participants discussed studying modifications related to adjusting to online learning or the difficulty of finding a quiet study space at home. None of the participants dropped classes during the spring 2020 semester but acknowledged that their coursework became more challenging. When asked about whether courses were dropped that semester, Participant 1 stated, "No, miraculously." Participant 10 stated, "I didn't, but I know I was struggling."

Studying Modifications. Participant 9 stated,

> Not having my study groups, not having my friends around to bounce ideas off of or study together or go the library together, all of that changed. It was pretty difficult. It was just a really, really stressful time overall.

Studying Modifications. Participant 5 stated,

> My parents were a little frustrating during that time. They didn't always understand what was going on. It was hard to find a space where I could get my tests done in an effective manner because my dad tends to be really loud on the phone, and I could hear him through the floors.

The next superordinate theme within the adjustments category was *new and renewed coping strategies*. Coping strategies are methods to help individuals adapt during stressful events (Mariani et al., 2020). Coping strategies can be negative (Savitsky et al., 2020; Turkles et al., 2021) or positive (Gallego-Gomez et al., 2020; Heilferty et al., 2021; Kochuvilayil et al., 2021; Labrague et al., 2017). The three subordinate themes that emerged regarding *new and renewed coping strategies* included: *negative emotions, positive emotions,* and *resilience*.

Negative Emotions. Five participants described experiencing *negative emotions* during the beginning of the COVID-19 pandemic. Three participants described difficulty coping and three stated that they could not rely on their usual coping strategies.

Negative Emotions. Participant 4 stated,

> Some weeks were really good and I was able to like utilize like the coping strategies that I have that are like reading, listening to music, talking to someone on the phone just kind of venting, and other weeks it just felt really overwhelming. So sometimes they were doing great and other times I'm like, 'Woah, I need to use these a little bit better,' so definitely depended on the week.

Negative Emotions. Participant 9 stated,

> I didn't use a lot of healthy coping skills. I was really anxious all the time. I guess taking time to be with family. I was just having a lot of relaxation time. I had a lot of time to watch Netflix, as did the whole world.

Negative Emotions. Participant 7 stated, "I couldn't go to study group and be with all the other students. I would talk with my friends over the phone, but it was just totally different than it would have been in person."

Positive Emotions. All 11 participants described *positive emotions* regarding coping strategies. Seven participants mentioned relying on their support system, four participants stated that they spent time outdoors, and seven participants described relaxation strategies that they used. Participant 1 stated, "It was nice that everyone was in the same boat, worldwide even, that we all kind of knew what everyone was going through, so that was kind of comforting."

Positive Emotions. Participant 2 stated,

> I definitely had to find some ways to keep myself sane at home with all my whole family and my four pets, so just taking my pets to the park, going outside on walks. I also got into those adult coloring books just to de-stress and take a break from studying, watched a lot of Netflix and a lot of movies as well.

Resilience. Seven participants described *resilience*, as four described keeping a positive mindset, two stated that they focused on their studies, and one participant sought an internship opportunity. Participant 11 stated, "I hyper-focused on my studies…I just poured myself into my studies."

Resilience. Participant 10 stated, "You just have to keep a positive mindset."

Resilience. Participant 9 stated,

> It was really hard at first but we all kind of adapted and I think that showed a lot of us as students that we were able to adapt, and we were able to change um just like a nurse would need to do in different clinical scenarios.

Online Learning Experiences

The next major category of questioning focused on online learning experiences. Online learning is a technology-based method in which the Internet is used to allow student participation in, managing and tracking educational courses (Keis et al., 2017). The superordinate themes that emerged were *clear perceptions of case-based learning*, *perceived strengths of online education*, *perceived weaknesses of online methods*, and *relatable instructors' roles*.

In the major category of online learning experiences, one of the superordinate themes was *clear perceptions of case-based learning*, as posed by the interview question, "Describe the clinical learning activities and assignments that were used online during your clinical course." The subordinate theme was *identified types of case-based learning*. Participants described, in their own words, four types of online CBL used for their clinical coursework during the spring 2020 semester. Ten students stated they used a virtual simulation program, five students stated they used basic case studies, four students stated they used clinical logs and write-ups, and three students stated they used Zoom.

Identified Types of Case-Based Learning. Participant 9 stated,

> We used virtual simulation. We had to do a lot of write-ups on those scenarios, why we made the decisions we made, how we came about to get those answers in the clinical setting. It was a lot of paperwork.

Identified Types of Case-Based Learning. Participant 10 stated, "I learned how to put in an NG tube through Zoom. I watched my teachers do it on a manikin, but I never got to do hands-on for that, it was all through Zoom."

Identified Types of Case-Based Learning. Regarding written case studies, Participant 6 stated,

> You were given a situation and, 'What would you ask the patient?' those types of things, like as far as history and stuff like that. Like, 'If something was wrong, how would you move forward? What would you assess? What would you ask?' It was just, we got like a paragraph of information about the patient.

The next superordinate theme in the online learning experiences major category of questioning was *perceived strengths of online education*. Nine participants described strengths of online CBL as posed by the question, "Tell me about the strengths of the activities and assignments that were used in your clinical course." The two subordinate themes were *reinforced*

learning and *minimal learning*. Seven participants stated that using virtual simulation reinforced the sequence of nursing actions that needed to be done in the clinical setting. Two participants stated that online CBL enhanced their critical thinking. Five participants either could not identify strengths or that the activities did not have many strengths.

Reinforced Learning. Participant 8 stated, "The papers did help me critically think at the end of the clinical simulation."

Reinforced Learning. Regarding virtual simulation, Participant 1 stated, "You had time to think about what you were going to do and what your plans were before walking hypothetically into the patient's room."

Minimal Learning. Regarding strengths of online learning activities, Participant 8 stated,

> I don't know if I can think of one off the top of my head, I'll be honest with you. They tried their best, but I don't think any, I mean I can't speak for other universities, but I can't imagine many schools were prepared to go fully online. I feel they did their best with what they could do, but the nursing curriculum I believe anywhere is just much better taught in-person and it's something that you have to do, you can't just read about.

Minimal Learning. Participant 11 stated,

> I feel like there were not a ton of benefits in using that specific online program because there's a time limit on the ability to be in the actual scenario and it was just really difficult because I basically was just clicking on a button to like wash my hands. And if you just like accidentally didn't click on something, you got docked points for it.

The third superordinate theme in the major category of online learning experiences was *perceived weaknesses of online methods*. All participants described weaknesses of their online learning experiences in response to the interview question, "Tell me about the limitations of the learning strategies that were used." The three subordinate themes that emerged were *ineffective learning*, *negative emotions*, and *missing elements*.

Ineffective Learning. Nine participants stated that online learning was not helpful, or that they minimally learned. Seven participants state that the virtual simulation program was just pushing or clicking buttons. Participant 7 stated, "It really didn't stimulate my brain to really connect the dots. Going through an online simulation and only being able to demonstrate skills by pressing buttons really hindered my ability to feel like I knew anything."

Ineffective Learning. Participant 8 stated,

> If you did certain things out of order then it would mark you way off and I remember it just being such a drag and I would, I just wanted to get through it and I do not think that I benefitted from that experience at all. It was more just, 'here, let me chain myself to my computer for six plus hours to get this done and over with and not learn a single thing or benefit at all from it.'

Negative Emotions. Most participants expressed negative emotions about their experiences with online learning. Participant 9 stated,

> My confidence really dropped when I had to go back to clinical and it took a while for me to kind of get that back just because it was kind of uncomfortable being solely remote and then having to go back in person.

Negative Emotions. Participant 8 stated,

> My grade level who all took health assessment online, struggles with a lot of physical assessments, and how we're supposed to chart those and how even we're supposed to get the information from patients because we never had that. We had to practice on our siblings but there wasn't a lot of feedback. 'Oh, we're doing this right', or 'we're doing this wrong.'

Negative Emotions. Regarding virtual simulations, Participant 7 stated,

> It was kind of dreadful having to do the next one just because it did take time and if you didn't pass it because you didn't do it in the correct way the simulation wanted you to, you had to do it again and again and again. And it would just take a great deal of time doing that and then having to take it out of time studying for classes was really hard.

Missing Elements. Seven participants described the missing elements of online CBL. Participant 1 stated,

> I didn't really get to practice any of those hands-on skills because it was all just pressing buttons on a computer, so, I mean, at that point in time it was really important to me to practice taking vitals, um, and just interacting with a real live patient in general and all of those skills that we previously learned, it was hard to not be able to apply those in a hospital setting.

Missing Elements. Regarding virtual simulation, Participant 2 stated,

> You didn't learn any patient communication, you aren't standing in the patient's room actually touching them, touching the medications, touching the IV tubing, putting in those critical nursing skills with your own hands, so I don't think that honestly they had much benefit at all.

The final superordinate theme in the online learning experiences major category was *relatable instructors' roles*. The subordinate themes of *supportive/resource* and *source of grading and feedback* emerged in response to the question, "What was the instructor's role during online learning for clinical practice?" Nine participants described their instructor as either a resource or a source of support. Seven participants described their instructor's role as grading and giving feedback. Four participants described their instructors as having a minimal role during online clinical learning.

Supportive/Resource. Participant 2 stated, "She was personally reaching out to us and checking on us which I really did appreciate a lot. It was really genuine of her."

Supportive/Resource. Participant 10 stated, "If they were going to plan a Zoom meeting, they wanted our suggestions on when we want to do it, how we want to do it. They really listened to us and our needs."

Source of Grading and Feedback. Participant 1 stated,

> I didn't really hear from her a lot, which, I mean, I'm not blaming her or anything. I don't know what she kind of really would have helped us out with on the online stuff, but I mean she sent us our curriculum and our updated syllabus. She sent us feedback after we turned in the clinical logs, but other than that, we didn't really hear from her too much.

Source of Grading and Feedback. Participant 5 stated, "They were pretty much just there on the other end of the drop box. We were kind of on our own, so it was difficult to figure out what we were supposed to do and how to do it."

Minimal Engagement. The subordinate theme of *minimal engagement* emerged in response to the question, "What strategies were used by the instructor to engage learners during the time of unplanned online learning, and were these strategies effective?" Four participants described minimal engagement by their instructor, and three participants discussed that their instructor engaged students via Zoom. Participant 6 stated, "I felt bad for our teachers too 'cause they were like, 'We want to still teach you, but it's really hard to figure out how to do it via computer.'"

Minimal Engagement. Participant 9 reported that the clinical instructor debriefed with the clinical group weekly via Zoom. She stated,

> The instructor would set a time each week and we would meet and talk about the simulation for that week and kind of go through things together. They were very similar to how we would debrief after clinicals in person.

Non-Familiarity with Technology. In response to the question, "How would you describe the instructor's familiarity with technology used in the course?" seven participants stated that their instructor was new to using new technology, while three participants were unsure of the instructor's familiarity. Participant 11 stated,

> She had never used the virtual simulation, so she also was struggling. And I know she tried to go to other instructors, or she went to our actual nursing department and asked for more orientation so she could answer our questions.

Non-Familiarity with Technology. Participant 8 stated, "I'm sure they felt as unprepared as we did for the online learning."

Experiences with Technology

Within the major category of questioning relating to experiences with technology, the superordinate theme of *a variety of challenges with technology* emerged as participants reflected on their experiences with using technology for online clinical coursework. The subordinate themes identified were *non-familiarity with technology, minimal orientation/instructions,* and *technical issues*. In this major category, *non-familiarity with technology* emerged as posed by the question, "How familiar were you with the type of technology that was used?" Nine participants stated that they had not used the virtual simulation program prior to the unplanned transition to online learning during the spring 2020 semester and four participants stated that they had not used Zoom. Seven participants stated a learning curve to using new technology. Regarding virtual simulation, Participant 4 stated, "The school had never used it before, so it was a lot of just trial and error, see if this works, and kind of going from there."

Non-Familiarity with Technology. Participant 6 stated, "I had no idea how to use the simulation thing. Really none of us did. It took getting used to and I know I had to redo some things because I was like, 'How do I work this program?'"

Non-Familiarity with Technology. Participant 2 described her experience using Zoom. She stated, "I had never used it before, but I got the hang of it pretty quickly. It wasn't super hard to navigate Zoom."

Minimal Orientation/Instructions. A subordinate theme of *minimal orientation/instructions* emerged in response to the question, "What kind of orientation, if any, did you receive about using new technology?" Ten participants did not receive orientation to using virtual simulation or only received instructions about how to log in. Participant 11 stated,

"I just did the intro orientation that the actual [virtual simulation] program itself had and then I don't think I got anything else."

Minimal Orientation/Instructions. Participant 2 stated, "It was challenging only because we didn't really have any guidance on how to use it and we had never used anything like it before."

Minimal Orientation/Instructions. Participant 5 stated, "It was incredibly frustrating to try and figure it out. We had to figure out how to go into the program and do the assignment kind of on our own."

Technical Issues. Nine participants discussed technical issues related to using technology, while four participants discussed connectivity issues. These responses emerged from a previously addressed question, "Tell me about the limitations of the learning strategies that were used." Participant 4 stated, "The simulation that they used online was very robotic, very klinky, had a lot of technical issues."

Technical Issues. Participant 11 stated,

> There was a severe lag. Like you would click on 'wash hands,' and it would take at least 30 to 45 seconds before the nurse actually performed the action so I felt like I was just trying to randomly click on the buttons in time to get a good score so that I could pass the simulation.

Technical Issues. Participant 3 stated,

> I live in the country, my wi-fi isn't always as strong. So sometimes I'd get emails saying like, 'Hey, were you at class today? I asked you a question and you weren't answering.' And I'm like, 'yeah.' It's kind of frustrating whenever your wi-fi isn't working or the technical difficulties are interfering with your education.

Overall Perceptions

The final superordinate theme that emerged was *positive reflection and suggestions*, within the major category of overall perceptions. The subordinate themes of *flexibility* and *break*

from clinicals emerged in response to the question, "What did you enjoy most about online learning in your clinical course?"

Flexibility. Participant 1 stated, "I really liked that it was self-paced kind of, and I could focus on different things that I wanted to focus on and just skim through the other things that I knew I had a better handle on."

Flexibility. Participant 3 stated, "I liked the flexibility of my time the most. I could pretty much make my own schedule. They would post something, and you could just watch it whenever you could, so that was probably my favorite."

Break from Clinicals. Participant 11 stated that she enjoyed "that I didn't have to wear scrubs while I was technically in clinical."

Break from Clinicals. Participant 7 stated,

> I don't think I enjoyed a whole lot of it. I think maybe the best part was not having to go to clinical at six in the morning, but if I could have chosen to go at six in the morning instead of doing online simulation, I would have a thousand percent.

Three additional subordinate themes that emerged were *more collaboration*, *more critical thinking exercises*, and *more resources*, in response to the final question of the interview guide, "What could have made the experience better?" Three participants stated that they would have liked more collaborative learning experiences and four participants stated they wanted more case studies or learning activities that promoted critical thinking. Two participants wanted supplies to practice hands-on skills at home. Four participants were unsure about how the experience could be improved. Two participants stated that the university did the best they could with the circumstances.

More Collaboration. Participant 11 stated, "More Zoom meetings. Having a patient scenario and being able to talk through the plan of care and why you do these cares and draw these labs et cetera is really helpful for me connecting all the dots."

More Critical Thinking Exercises. Participant 7 stated,

> I think incorporating more case studies instead of doing back-to-back simulations which just require clicking of buttons would've been more beneficial because you're able to put the pieces together and learn like, 'This causes that and can lead to this if not treated.'

More Critical Thinking Exercises. Participant 4 stated, "More instructions would be a good idea or utilizing a different program that might allow for more options for students to think outside of the box besides the robotic responses that were given."

More Resources. Participant 2 stated, "Maybe some IV tubing or some bags or things to practice with at home since we aren't doing any of that actually hands-on in the hospital might have been beneficial."

Summary

Chapter 4 included an overview of the data analysis of the basic qualitative study exploring baccalaureate nursing students' experiences with online case-based learning during the COVID-19 pandemic. The sample of 11 participants, who were prelicensure baccalaureate nursing students, were from a midsized private university in the western United States. Following the guidelines for thematic analysis, nine major superordinate themes emerged, which were: psychological distress, external adjustments, coping strategies, case-based learning, strengths of online education, weaknesses of online methods, experiences of instructors' roles, challenges with technology, and reflection and suggestions.

Chapter 5 includes a summary of the data findings, a discussion of the results, and conclusions that can be drawn. Data findings are compared to previous literature and the theoretical framework. Finally, Chapter 5 concludes with recommendations for further research.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This research study used a basic qualitative design to explore baccalaureate nursing students' experiences with online case-based learning during the COVID-19 pandemic. Chapter 4 provided a detailed presentation and description of the results from the participants' interviews. Chapter 5 will begin with a summary of the results, followed by a discussion of the results, conclusions based on the results, alignment with the theoretical framework and previous literature, an interpretation of the findings, and a discussion about the study's limitations. This chapter will conclude with implications for practice and recommendations for further research.

Summary of the Results

During the COVID-19 pandemic, nurse educators used various activities for online clinical learning (DeFoor et al., 2020; de Tantillo & Christopher, 2020; Esposito & Sullivan, 2020; Fogg et al., 2020; Kubin et al., 2021; Sailsman & Milne, 2020; Shea & Rovera, 2021; Van Der Wege & Keil, 2021). However, a review of the literature indicated that many peer-reviewed publications described the online learning activities that were used but did not conduct formal research studies. The gap identified in the existing literature showed that there was more to study about student learning and satisfaction with online CBL during the COVID-19 pandemic, thus confirming the necessity of this study.

In this basic qualitative study, data from 11 semi-structured interviews with baccalaureate nursing students were collected and analyzed using thematic analysis. There were five major categories of questioning in the interviews (initial reactions, adjustments, online learning

experiences, experiences of technology, and overall perceptions) for which participants shared their experiences with transitioning from in-person to online formats for clinical learning at the beginning of the COVID-19 pandemic. Through thematic analysis of the qualitative data collected, a total of 28 subordinate themes were identified from common phrases and words used by the participants, and nine superordinate themes- *psychological distress, forced external adjustments, new and renewed coping strategies, clear perceptions of case-based learning, perceived strengths of online education, perceived weaknesses of online methods, relatable instructors' roles, a variety of challenges with technology,* and *positive reflection and suggestions*– within the five major categories. A discussion of the results is presented in the following section.

The first superordinate theme, *psychological distress*, emerged as the participants' initial reaction to having in-person clinical experiences canceled and coursework transferred to online formats. They were concerned about missing learning opportunities and the impact that it would have on their future education and nursing career. *Forced external adjustments*, the second superordinate theme, were identified as nursing students described moving home, isolation, and changes to their jobs and hobbies. While none of the participants dropped any courses, they described needing to modify their studying strategies to complete all their coursework online. The third superordinate theme, *new and renewed coping strategies*, reflected the participants' responses to the numerous changes they experienced. BSN students had difficulty adapting to fully online learning and they experienced negative mental effects. However, they also used healthy coping strategies and were resilient.

In the next superordinate theme, *clear perceptions of case-based learning*, the participants described various online case-based learning modes that were used as a replacement

for clinical hours, including basic case studies, clinical logs and write-ups, Zoom, and virtual simulation. In the superordinate theme of *perceived strengths of online education*, some participants described that these strategies enhanced their critical thinking and reinforced the sequence of nursing actions, though others felt that they minimally learned. In the superordinate theme of *perceived weaknesses of online methods*, the participants described missing hands-on nursing skills and communication with patients. Most participants felt that they minimally learned and that the virtual simulations were time consuming, and it was difficult to achieve the desired score.

In the next superordinate theme, *relatable instructors' roles*, participants indicated that their instructors were available as a resource, offered support, and provided feedback. Some participants felt that their instructors had a minimal role in online clinical learning and minimally engaged with students during that time. Others noted that instructors engaged with students via Zoom. Many students noted that their instructors were unfamiliar with the technology used once the course transitioned online.

In the superordinate theme of *a variety of challenges with technology*, most participants shared that they had not used the virtual simulation program before, and some of them had not used Zoom. Almost all participants reported that they did not receive an orientation to the virtual simulation program or only received instructions about how to log in. They experienced limitations with the types of technology used and connectivity issues.

In the superordinate theme of *positive reflections and suggestions*, some participants liked the flexibility of doing online learning and having a break from waking up early for clinicals, though they would have much rather learned in person. Participants thought that the experience could have been improved with more collaborative learning, supplies to practice at

home, case studies, and other activities to promote critical thinking. Some participants were unsure of how the experience could be improved and felt that the university did the best they could with the circumstances.

Discussion of the Results

Research is limited about students' experiences during the unplanned transition to online learning in the spring of 2020, the initial phase of the COVID-19 pandemic (Lovric et al., 2020). The impact of the sudden need to learn online in situations where teachers and students were inadequately prepared is unknown (Roy et al., 2020), compared to online learning in well-developed online courses. This study provided insight into areas of concern for baccalaureate nursing students, including personal and professional stressors they faced during the crisis and how they coped with the situation. Results from this study will allow nurse educators to better support students emotionally, discuss adaptive coping strategies (Savitsky et al., 2020), and refer them to supportive resources as needed. The results of this study could help nurse educators better understand how to develop online learning activities and resources that allow nursing students to apply knowledge and clinical reasoning to realistic patient scenarios.

Data collected from the interviews in this study were sufficient to answer the research question, "How do baccalaureate nursing students describe their experiences when transitioning to online case-based learning for their clinical coursework at the beginning of the COVID-19 pandemic?" The findings of this study are organized according to the nine superordinate themes that emerged from the data. The themes were: *psychological distress, forced external adjustments, new and renewed coping strategies, clear perceptions of case-based learning, perceived strengths of online education, perceived weaknesses of online methods, relatable*

instructors' roles, *a variety of challenges with technology*, and *positive reflection and suggestions.*

Theme 1: Psychological Distress

Baccalaureate nursing students reported experiencing psychological distress as their initial reaction to finding out that in-person clinical experiences were being canceled and replaced with online learning during the spring 2020 semester. Similarly, the literature found that nursing students experienced increased anxiety (Kochuvilayil et al., 2021; Savitsky et al., 2020) and stress (Aslan & Pekince, 2020) during the COVID-19 pandemic. This study found that students' psychological distress was attributed to missed learning opportunities and concern about the impact on their future education and nursing careers. This finding was consistent with the literature, showing that students were worried about how the pandemic would impact their education (Suliman et al., 2021) and future nursing careers (Dewart et al., 2020; Diaz et al., 2021; Dziurka et al., 2022; Fogg et al., 2020; Huang et al., 2020). In contrast, other studies found that nursing students' anxiety was related to fear of infection (Aslan & Pekince, 2020; Fitzgerald & Konrad, 2021; Lovric et al., 2020; Savitsky et al., 2020; Turkles et al., 2021). In this current study, only two participants mentioned infection as a source of concern. Perhaps the participants did not describe their feelings of the risk of infection because the interview questions were primarily worded to focus on their experiences with their coursework.

Theme 2: Forced External Adjustments

All of the participants in this study reported moving home when in-person clinicals were canceled and coursework was changed to an online format, and most of them described adjusting to their family members' schedules. Similarly, some studies described the challenges of family members being home (Fogg et al., 2020; Heilferty et al., 2021; Keener et al., 2021; Suliman et

al., 2021). In the current study, participants described difficulty finding a quiet study space, which was consistent with findings from previous studies (Heilferty et al., 2021; Keener et al., 2021).

Five participants stated that they felt isolated at home. They missed seeing their peers and having study groups. The literature also showed that nursing students felt isolated during the pandemic (Diaz et al., 2021; Dziurka et al., 2022; Fitzgerald & Konrad, 2021; Michel et al., 2021) and missed interacting with their peers (Dziurka et al., 2022; Michel et al., 2021; Suliman et al., 2021).

Five participants mentioned a change in job or finances and three discussed missing their usual hobbies or activities. The literature also indicated that students faced increased financial burdens during the pandemic (Fogg et al., 2020; Gallego-Gomez et al., 2020; Kochuvilayil et al., 2021; Masha'al et al., 2020; Savitsky et al., 2020). One current study found that nursing students relied on their hobbies to cope, though other students in the study reported their coping mechanisms were inaccessible (Diaz et al., 2021).

Theme 3: New and Renewed Coping Strategies

Participants in this study used various coping strategies when they were in isolation at the beginning of the pandemic. They described reading, listening to music, relying on their support system, relaxing, watching movies and Netflix, spending time with family and pets, and spending time outdoors. Similarly, the literature showed that nursing students coped by relaxing (Turkles et al., 2021), binge-watching television shows, going for walks (Heilferty et al., 2021), and relying on their support systems (Black Thomas, 2022; Diaz et al., 2021; Heilferty et al., 2021; Kochuvilayil et al., 2021; Turkles et al., 2021). In the current study, participants described resilience as shown by statements of keeping a positive mindset and remaining focused on their

studies. This is consistent with the findings of Heilferty et al. (2021), indicating that students felt they became stronger by persevering through a difficult time.

In the current study, participants did not discuss specific unhealthy coping strategies that they used. However, participants stated that they experienced negative mental effects, difficulty coping, and an inability to rely on their usual coping strategies. In the literature, participants provided specific examples of ineffective coping strategies, including spending too much time with technology, overeating (Turkles et al., 2021), and using alcohol and sedative drugs (Savitsky et al., 2020). The literature also showed that nursing students had difficulty sleeping during the pandemic (Kochuvilayil et al., 2021; Singh et al., 2021), while participants in the current study did not discuss their sleep patterns.

Theme 4: Clear Perceptions of Case-Based Learning

In the current study, participants described various types of online case-based learning strategies that were used for their clinical coursework. Most participants described using a virtual simulation program, though they also used basic case studies, clinical logs and write ups, and synchronous Zoom meetings. The literature also described using virtual simulation and video conferencing (Esposito & Sullivan, 2020; Fung et al., 2021; Kubin et al., 2021; Van Der Wege & Keil, 2021; Wands et al., 2020). In contrast, other studies described using telehealth (DeFoor et al., 2020; Jimenez-Rodriguez & Arrogante, 2020; Rutledge et al., 2020; Shea & Rovera, 2021), a virtual escape room (Kubin et al., 2021), student-made videos, and online modules from various websites (Sailsman & Milne, 2020).

Theme 5: Perceived Strengths of Online Education

In this study, seven participants expressed that the online activities that were used in their clinical course reinforced the sequence of nursing actions necessary to provide patient care, and

two participants noted that the activities enhanced their critical thinking. Similarly, in recent literature, participants shared that using a virtual simulation program enhanced their learning (Foronda et al., 2018) and critical thinking ability (Badowski et al., 2021; Wright et al., 2018). Other findings from current literature showed that students felt that they became stronger independent learners when learning online (Bdair, 2021; Suliman et al., 2021; Wallace et al., 2021), which was only expressed by one participant in the current study.

Theme 6: Perceived Weaknesses of Online Methods

In this study, nine of the 11 participants felt that they minimally learned when using online CBL for their clinical coursework. They felt that it was time consuming, difficult to adjust to, and difficult to achieve the desired score on virtual simulations. Compared to in-person clinical experiences, participants expressed that they missed hands-on skills and patient communication.

Similarly, in the literature, students expressed difficulty learning clinical coursework online (Puljak et al., 2020; Suliman et al., 2021; Michel et al., 2021). Students were dissatisfied with the heavy course load and the amount of time it took to complete (Bdair, 2021; Fogg et al., 2020; Heilferty et al., 2021; Keener et al., 2021; Michel et al., 2021; Sailsman & Milne, 2020; Suliman et al., 2021). Additionally, studies showed that students were concerned about their grades dropping because of transitioning to online learning (Heilferty et al., 2021; Keener et al., 2021; Suliman et al., 2021). Current literature also showed that students missed hands-on nursing skills (Bdair, 2021; Dziurka et al., 2022; Fogg et al., 2020; Michel et al., 2021).

Theme 7: Relatable Instructors' Roles

The participants described their instructors as being a resource and source of support once clinical courses transitioned online. Instructors graded clinical logs and provided feedback.

Four participants stated that their instructors had a minimal role once coursework transitioned online. Four participants shared that the instructors minimally engaged students in online coursework, while another four participants discussed that their instructors engaged with students during Zoom sessions. Seven participants stated that their clinical instructor was unfamiliar with the technology that was used once coursework transitioned online, and three participants were unsure of the instructor's familiarity with technology used.

The current literature showed various findings regarding students' experiences with instructors during the pandemic. Some studies found that students felt their instructors were supportive (Fitzgerald & Konrad, 2021; Michel et al., 2021), encouraging (Lovric et al., 2020), and engaged students (Wands et al., 2020). Additional student feedback described negative interactions with faculty. Some students shared that their instructors were unprepared to teach online, hard to get in contact with (Michel et al., 2021), and added extra assignments due to being online (Heilferty et al., 2021).

Theme 8: A Variety of Challenges of Technology

Most of the participants in this study were unfamiliar with the types of technology used once they transitioned to online learning. Almost all participants had not used the virtual simulation program before, and four participants had not previously used Zoom. Most participants shared that they did not receive an orientation to using new technology or only received information about how to log in. Nine participants described the limitations of technology and issues with using it, and four participants noted problems with connectivity.

The current study's findings are consistent with previous literature, indicating that students can become frustrated navigating virtual simulation programs, which may be related to their unfamiliarity with the software (Cobbett & Snelgrove-Clarke, 2016; Foronda et al., 2016;

Foronda et al., 2018). Recent literature showed that students benefit from having an orientation to new online programs (Bdair, 2021; Hampton & Pearce, 2016; Swartzwelder et al., 2019). Another study finding that was consistent with the literature is that nursing students experienced connectivity issues. Several recent studies noted that students had trouble with Internet connectivity (Bdair, 2021; Fogg et al., 2020; Keener et al., 2021; Ramos-Morcillo et al., 2020, Singh et al., 2021; Suliman et al., 2021) or access (Michel et al., 2021; Singh et al., 2021).

Theme 9: Positive Reflection and Suggestions

The final theme highlighted what students liked best about their experience with online clinical learning at the beginning of the COVID-19 pandemic and how the experience could have been improved. Participants indicated that students liked having a flexible schedule and a break from in-person clinicals. If they could improve the experience, participants suggested having more opportunities for collaborative learning, more case studies or other activities that promote critical thinking and having supplies at home to practice. Four participants were unsure how the experience could be improved, and two participants stated that the university did the best they could with the circumstances.

In alignment with the current study, the literature found that nursing students liked the flexibility of completing their online coursework at their convenience (Bdair, 2021; Chan et al., 2021). Regarding collaborative learning, one study found that students appreciated collaborative learning during the pandemic (Esposito & Sullivan, 2020). Additionally, studies found that students wanted more video conferencing sessions to reinforce content and receive immediate feedback (Chan et al., 2021; Ramos-Morcillo et al., 2020).

Conclusions Based on the Results

This section will discuss conclusions drawn from the findings of this study. First, the study findings are compared with the theoretical framework and then compared to previous literature. Next, the findings are interpreted with consideration of the meaning of the study's outcomes.

Comparison of Findings with the Theoretical Framework and Previous Literature

The theoretical framework that guided this study was cognitive constructivism. Constructivism is the process in which a learner perceives and interprets information to make sense of it (Bruner, 1961). The learner adapts to a situation by assimilating new information into their mind and accommodating to external circumstances of the learning environment (Piaget, 1960). In the constructivist classroom, learners actively engage in the learning process by using their prior knowledge to interpret new information (Kay & Kibble, 2016). Thus, CBL is rooted in constructivism since it is a learner-centered approach requiring students to interpret patient data (Hartfield, 2010).

Piaget (1960) defined adaptation as the equilibrium between assimilation and accommodation. The learner must accommodate to an external reality, but unexpected obstacles make the success of accommodation slow and uncertain (Piaget, 1975/1985). The participants in this study revealed how different case-based learning strategies in their online coursework enhanced critical thinking and reinforced the sequence of necessary nursing actions. However, the transition to online learning for clinical coursework was unplanned and abrupt. Thus, the participants revealed much more about the challenges that they encountered during the spring 2020 semester than the strengths. It is possible that the negative emotions that the participants revealed were attributed to a delayed equilibration due to the unanticipated transition from in-

person clinical learning to online learning. Piaget (1975/1985) also discussed that when objects that are ordinarily assimilated are not available, the learner can assimilate to related objects. When in-person clinical experiences were canceled, the participants ultimately assimilated to online CBL, as supported by descriptions of positive coping strategies, resilience, and the fact that none of the participants had to drop courses during that semester.

Previous studies in nursing education have used constructivism as a framework to explore CBL in online learning platforms (Cobbett & Snelgrove-Clarke, 2016; Olson & Benham-Hutchins, 2020; Robinson et al., 2017; Wright et al., 2018). However, those studies focused on differences between in-person and online simulation (Cobbett & Snelgrove-Clarke, 2016), collaborative learning (Olson & Benham-Hutchins, 2020), or instructors' perceptions (Robinson et al., 2017). A study by Wright et al. (2018) explored students' experiences using a virtual simulation program, though the participants used the program throughout a semester and were instructed to do the program tutorial first. None of the previous studies were conducted during the COVID-19 pandemic (Cobbett & Snelgrove-Clarke, 2016; Olson & Benham-Hutchins, 2020; Robinson et al., 2017; Wright et al., 2018). In the current study, participants were experiencing additional psychological distress due to the circumstances of the COVID-19 pandemic, lockdowns, and the unanticipated transition to fully online learning, which significantly influenced their responses in this study.

All participants in the current study experienced psychological distress in response to the unanticipated interruption to their in-person learning experiences. The literature showed that students did not like online learning during the pandemic because they did not sign up for it (Michel et al., 2021) and were not prepared for it (Keener et al., 2021), which aligned with findings from the current study. In this study, the participants felt that in-person clinical

experiences could not be replaced with online learning, and they missed performing hands-on nursing skills and patient communication. Similarly, in the literature, students felt that online learning could not replace clinical learning (Puljak et al., 2020). They were dissatisfied with missing hands-on experiences (Bdair, 2021; Dziurka et al., 2022; Fogg et al., 2020; Michel et al., 2021) and were concerned about how the missed experiences would impact their future education and nursing careers.

The participants shared significantly more negative feedback about online learning than positive comments. They were primarily assigned virtual simulation scenarios as a replacement for clinical hours, and almost all participants were unfamiliar with the virtual simulation program. They were frustrated with navigating the virtual simulation program and identified limitations of the program, such as having to perform tasks in a specific sequence. Students in the study by Foronda et al. (2016) also felt hindered by the virtual simulation program's inability to allow them to multitask. Additionally, prior research indicated that students value an orientation to new technology (Bdair, 2021; Hampton & Pearce, 2016; Swartzwelder et al., 2019). Participants in this study did not receive a formal orientation to the virtual simulation program, which might have resulted in their negative feedback.

The participants in this study described their instructors as having a limited role in online learning. Since the participants were primarily assigned clinical coursework to complete virtual simulations individually, they felt that there was not much that their instructors could offer. The participants acknowledged that their instructors were also frustrated with the situation and felt hindered by not knowing how to use new technology and how to best support their students during online learning. However, the participants acknowledged feeling supported by their instructors and felt that their instructors listened to their needs and suggestions. A few

participants described having Zoom meetings with their instructor or clinical group, and they felt engaged in those sessions. Previous literature indicated that students like synchronous conferences so that they participate in the conversation and ask questions (Banna et al., 2015; McDaniels et al., 2016).

Though the participants stated they enjoyed having a break from in-person clinicals, they would have much rather been in the clinical setting. One advantage that they identified about was that online learning allowed them flexibility in their schedules. Previous literature also found that students liked completing coursework at their convenience (Bdair, 2021; Chan et al., 2021).

If they could improve the experience, the participants suggested having more opportunities for collaborative learning, more case studies or other activities that promote critical thinking and having supplies at home to practice. Collaborative learning allows students to consider each other's perspectives and learn from one another (Laver & Croxon, 2015; Turner & Cole, 2017). It is also not surprising that participants suggested using more case studies, as CBL can lead to improved critical thinking (Li et al., 2019; Raurell-Torreda et al., 2015; Roshanger et al., 2020) and enhanced clinical decision-making (Kantar & Massouh, 2015; Meiers & Russell, 2019). Lastly, participants expressed that they missed hands-on skills during this time. Though Bdair (2021) noted that online learning was inappropriate for teaching hands-on skills, Shea and Rovera (2021) suggested providing students with supplies to practice their nursing skills when they were required to be home.

Interpretation of the Findings

This study's findings provide insight into baccalaureate nursing students' experiences with online CBL during the COVID-19 pandemic. Baccalaureate nursing students faced numerous challenges when abruptly transitioning from in-person clinical learning to online

learning during the spring 2020 semester. Though they expressed that hands-on nursing education could not be replaced by virtual education, they wanted to continue learning in ways that would successfully prepare them to enter the nursing workforce. The results can help nurse educators and administrators identify resources that nursing students need (Ramos-Morcillo et al., 2020) and develop future educational plans (Bezerra, 2020; Johnson et al., 2020) should the need arise to transition to online learning in the future.

In this study, participants were frustrated with using a virtual simulation program that they had never used before. They did not receive a formal orientation to the program, and they were assigned to complete simulations on their own. In alignment with studies by Caylor et al. (2015) and Wands et al. (2020), participants in this study wanted to be better prepared to complete simulations. Nurse educators should orient students to new technology and integrate it throughout the course so that students become familiar with it. Additionally, participants in this study were frustrated with achieving the desired score on virtual simulations. Previous studies have cautioned against grading virtual simulations (Foronda et al., 2018; Verkuyl et al., 2020). Nurse educators should be flexible when evaluating student performance on virtual simulations. They should also offer an alternate assignment if students encounter technological issues (Wallace et al., 2021).

Nursing faculty should regularly ask students for their feedback (Wallace et al., 2021) to make sure that they are meeting their students' learning needs. The participants in this study offered insightful suggestions about how their experiences could have been improved. One suggestion was to incorporate more collaborative learning. This suggestion was not surprising considering that they were isolated at home and missed interacting with their peers. Collaborative groupwork has been used in distance education to engage students (Martin &

Bolliger, 2018), and nurse educators should incorporate more collaborative opportunities online. Another suggestion was to have resources at home so that students could practice hands-on skills. Nurse educators should provide appropriate supplies to nursing students so that they can practice hands-on skills when they cannot learn in-person.

Limitations

This study had several limitations. First, this was a qualitative study with a small sample size, which limits generalizability to other settings and populations. However, this study thoroughly described the research process and any potential biases and reported detailed descriptions of participant responses. The reader must decide whether this study's findings are similar enough to accurately transfer the results to their circumstances and setting (Braun & Clarke, 2013).

The sample was limited by convenience sampling of baccalaureate nursing students from a single institution in the Midwestern United States. Therefore, this study's results are limited to a single group of baccalaureate nursing students. The perceptions of the participants may be different from students in other nursing programs or other geographic locations. Additionally, the sample was limited to baccalaureate nursing students who were in their first or second clinical course during the spring 2020 semester. In the literature, a study by Zhi et al. (2020) found that senior-level nursing students had lower stress levels than nursing students who had not yet taken clinical courses. It is unknown if senior-level nursing students would have had different perceptions about their experiences transitioning to online CBL during the spring 2020 semester compared to those students who did not have prior clinical experience or those with only one prior semester of clinical coursework.

This study's findings were limited by a basic qualitative approach. Since basic qualitative research is used to understand how people perceive and describe their experiences (Kostere & Kostere, 2022), it is appropriate for this study. However, another approach, such as phenomenology, could have also uncovered valuable data. Phenomenological research asks participants about situations that influenced their experiences about a phenomenon (Creswell & Poth, 2018), which may also be valuable to further understand baccalaureate nursing students' experiences at the beginning of the COVID-19 pandemic.

Implications for Practice

This basic qualitative study adds to the body of knowledge in nursing education about baccalaureate nursing students' experiences with online CBL during the COVID-19 pandemic. This study provided insight into nursing students' perspectives, and it highlighted their perceptions of the strengths and challenges of online CBL when used as a replacement for in-person clinical learning at the beginning of the COVID-19 pandemic, in addition to providing insight about the additional stressors that nursing students experienced during that time. The results of this study have implications for nurse educators and nursing program deans and administrators regarding how online CBL can be used in nursing education to enhance student satisfaction, engagement, and achievement of learning outcomes. This study confirmed that while various online case-based learning strategies have their advantages, a more robust plan must be in place to use them in the most effective manner. Institutions should make contingency plans for when normal delivery methods are interrupted (Shea & Rovera, 2021) and they should invest in information technology and training so that they will have well-designed online learning opportunities (Bdair, 2021). Academic institutions should also consider incorporating

hybrid education for flexibility of online learning and in-person opportunities for hands-on skills (Bdair, 2021).

In this study, participants overwhelmingly did not like using virtual simulation. They had not used the program prior, and they did not receive an orientation to the program. Since an orientation is essential for students' satisfaction and comfort with using a new program (Foronda et all, 2018), nurse educators should incorporate an orientation session. Participants in this study also missed collaborating with their classmates. The few participants that mentioned meeting with their clinical groups via Zoom felt that the session allowed them to engage with their peers and instructor. Nurse educators might consider incorporating more online collaborative learning and video conferencing sessions, since students value interacting with their classmates and instructors (Suliman et al., 2021). Collaborative online activities include using active learning strategies in breakout rooms, discussion boards, and shared video messages (Wallace et al., 2021). Students should also be given the opportunity to collaborate with faculty through virtual office hours (Wallace et al., 2021).

Nurse educators should provide encouragement and support to their students during challenging times (Savitsky et al., 2020; Wallace et al., 2021; Zhi et al., 2020). The results of this study showed that nursing students needed additional emotional support at the beginning of the pandemic. Participants in this study experienced various negative emotions in response to transitioning from in-person clinical learning to online learning and other life changes. They used both positive and negative coping strategies. Nurse educators can empower their students to cope with their emotions (Turkles et al., 2021) and help them become more resilient (Keener et al., 2021). They can help alleviate students' stress levels by encouraging reflection, meditation, and by limiting the number of assignments (Wallace et al., 2021).

Recommendations for Further Research

In addition to identifying valuable data about baccalaureate nursing students' experiences with online CBL during the COVID-19 pandemic, the findings led to further questions. This study did not explore how the COVID-19 pandemic impacted the participants' professional identity and desire to enter the nursing profession. Previous studies explored nursing students' professional identity and continued desire to enter the nursing profession following COVID-19 (Dos Santos, 2020a, Heilferty et al., 2021; Jackman et al., 2020; Michel et al., 2021; Turkles et al., 2021; Zhao et al., 2021; Zhi et al., 2020). The results of these studies differed among cultures (Dos Santos, 2020a, 2020b), and only two studies were conducted in the United States (Heilferty et al., 2021; Michel et al., 2021). Additional research is warranted to better understand the impact that the COVID-19 pandemic had on nursing students' professional identity and desire to pursue nursing in the United States.

The results of this study also highlighted areas of further research needed when using virtual simulation programs in nursing education, including orientation, prebriefing, and debriefing. The participants in this study received minimal or no orientation to using a new virtual simulation program when they transitioned to online learning at the beginning of the pandemic. Though previous research supports providing students with an orientation to new technology (Bdair, 2021; Chen, 2016; Hampton & Pearce, 2016; Swartzwelder et al., 2019), further research is warranted to explore how other nursing students were oriented to virtual simulation during the pandemic and best practice for orienting students to new technology virtually. Participants in this study did not attend a prebriefing session before completing their virtual simulations. Current research and guidelines about simulation prebriefing in virtual simulation are limited (Dileone et al., 2020; INACSL, 2021a). Participants in this study did not

have a debriefing session; rather, they submitted a clinical log to their instructor. Debriefing should occur immediately after a simulation is completed (INACSL, 2016a). However, debriefing following virtual simulations is challenging because students complete them at different times and in different locations, and further research is needed about how to debrief effectively when using virtual simulation (Badowski & Wells-Beede, 2022).

Another area that needs to be further explored is students' experiences with their instructors during the COVID-19 pandemic. While some participants in this study felt their instructors were supportive, others indicated that their instructor had a minimal role and minimally engaged with students during online learning. While research is emerging about instructors' roles during the COVID-19 pandemic, additional research would provide further insight about how instructors can best support students and help them learn during online learning.

The participants in this study provided insight about how their experience could have been improved. They indicated that they wanted more opportunities for collaborative learning at the beginning of the pandemic. The literature supports collaborative group work to enhance engagement (Martin & Bolliger, 2018), but it is unknown how to best facilitate collaborative group work in the online learning environment. Two participants suggested having supplies to practice hands-on skills at home. It is unknown how to best provide opportunities for hands-on learning when students need to learn via distance education. Both suggestions warrant future exploration for best practices in nursing education.

Finally, the literature indicated additional activities that nursing instructors used for online learning during the pandemic, including telehealth (Rutledge et al., 2020), virtual role playing (Sailsman & Milne, 2020), unfolding video case studies, and a virtual escape room

(Kubin et al., 2021). All of these activities should be further studied to learn how they can be used most effectively by nurse educators for achievement of learning outcomes and student satisfaction.

Conclusion

This study revealed what baccalaureate nursing students experienced during an unprecedented event that changed their world. They experienced a lot of psychological distress, worried that they were missing out on in-person clinical learning, and they were concerned about the impact that this monumental change from in-person to online learning would have on their careers. They described having to make external adjustments never before made by nursing students, had to rely on old coping strategies, and had the courage to try new ones. They showed they were resilient and steadfast in their path to become nurses, as they did not drop courses. They were resolute and maintained their schedule despite having changes occurring in family/home life, and sometimes jobs and even personal space. They expressed that they felt supported but needed more engagement from faculty. Even though they were unprepared for online learning or appropriately oriented to the technology, they still had the resolve to continue through the challenges it presented. Although participants' interview responses were overwhelmingly negative, they identified some strengths of online education were identified, including flexibility, reinforced learning, and enhanced critical thinking. This is truly a testament to how valuable their nursing careers are to them. This is an example of how nursing education is constructivism at its core, relying on the student to adapt, assimilate, and gain new insights to move forward and continue learning. The foundation of education is the student, and thus, modifications and improvements must revolve around their experiences of it, their perceptions, suggestions, and feedback. Nurse educators and administrators must listen to their students and

use their feedback to improve students' experiences, should nursing programs be required to transition entirely online in the future.

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