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PhD student perspectives on maintaining and formalizing peer mentorship during the COVID-19 pandemic

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ABSTRACT

Mentorship is important for doctoral education and development. Students in Doctor of Philosophy (PhD) in Nursing programs traditionally receive formal mentorship from more experienced faculty mentors, creating a top-down, mentor-mentee relationship. Peer mentorship, characterized by a mentor-mentee relationship between peers in similar career stages, provides unique opportunities for career development and socialization. The emergence of the COVID-19 pandemic limited in-person interactions and introduced new, complex challenges to peer mentorship. The authors, current and recently graduated PhD in Nursing students, were forced to create new ways of connecting with peers and sought to explore how other PhD in Nursing students experienced and maintained peer mentorship in their respective programs during the pandemic. In this article, the authors share their personal experiences with peer mentorship during the pandemic, their process of creating a formal peer mentor model, and findings from a national, cross-sectional survey on COVID-related, peer mentorship experiences among PhD in Nursing students from other academic institutions. Most respondents were able to maintain peer mentorship throughout the pandemic, however, less than half reported receiving faculty support to do so. Recommendations for PhD in Nursing program administrators are provided, based on the experiences of the authors and survey results from PhD in Nursing students across the United States.

Peer mentorship is a highly beneficial, yet challenging aspect of Doctor of Philosophy (PhD) in Nursing education. With the emergence of SARS-CoV-2 (colloquially known as COVID-19), pandemic-related limitations on in-person contact created new barriers to peer mentorship and pushed PhD students into unexpected isolation. The purpose of this article is to provide a robust discussion about the importance of peer mentorship for students throughout their PhD in Nursing program and how the COVID-19 pandemic has affected this mentorship. Discussion includes: (A) vignettes from the authors' personal experiences, (B) a description of the process taken to formalize peer mentorship at the authors' institution in response to COVID-19, and (C) findings from a descriptive study undertaken to explore the effects of COVID-19 on peer mentorship in PhD in Nursing programs throughout the United States (U.S.). The authors of this article are current and recently graduated PhD in Nursing students from a large, research-intensive (R1) university. The authors provide diverse perspectives based on their different professional backgrounds and personal experiences. Collectively, the authors bring forth the perspective of Bachelor of Science (BS) to PhD students, Master of Science (MS) to PhD students, National Institutes of Health (NIH) Institutional (T32) and Individual (F31) Pre-Doctoral Fellows, graduate research and teaching associates, active clinicians (i.e., registered nurse, nurse practitioner), students of color, and international students.

Background

Mentorship is defined as "a nurturing process in which a more skilled or experienced person, serving as a role model, teaches, sponsors, encourages, counsels and befriends a less skilled or less experienced person for the purpose of promoting the latter's professional and/or personal development" (Anderson and Shannon, 1988, as cited in Deshpande, 2017). Mentorship is frequently seen as an important component of

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scholarship and research education (Byrne and Keefe, 2002). Typically, a PhD program will have an ingrained mentorship model with dissertation committee members and designated faculty chairs serving as formal mentors. Formal mentorship is also obtained through participation in research residencies, research assistantships, and institutional or individual training programs (i.e., NIH Ruth L. Kirschstein Predoctoral T32 or F31 National Research Service Awards).

In addition to these formal, often top-down methods of mentorship, PhD students may benefit from informal mentorship. Informal mentorship differs from formal mentorship in that the mentor-mentee relationship happens organically rather than being assigned. The guidance provided through informal mentorship is less structured. Informal mentors provide emotional support and serve as an institutional and intellectual guide (McLaughlin, 2010). Informal mentors are often peers, who become an essential component for success in the prolonged, challenging rigors of PhD education (McLaughlin, 2010). Although peer mentorship, both formal and informal, has been a topic of interest in disciplines such as management (Kram & Isabella, 1985) and in doctoral education programs in social work, education, occupational therapy, psychology, engineering, and library science (Jacobs et al., 2015; Katz et al., 2019; Kumar and Coe, 2017; Lorenzetti et al., 2019), there is scant literature on peer mentoring in doctoral nursing programs (Brody et al., 2016; Bryant et al., 2015; Lewinski et al., 2017; Porat-Dahlerbruch et al., 2021).

Formal and informal peer mentorship programs in nursing

In response to requests for peer mentorship, students within the PhD in Nursing program at Duke University developed the Partnership for Development (POD) program (Lewinski et al., 2017). In this formal mentorship program, small groups (i.e., PODs) were formed. Each POD consisted of pre- and post-doctoral students, one faculty member, and a trained student facilitator. Groups were intentionally formed to bring people with diverse backgrounds together. Over the course of one academic year, each POD met several times. The POD program provided students with PhD program procedure clarification (e.g., dissertation proposal), tips for success, peer and faculty socialization, and professional development. Participants provided positive feedback, appreciating the unbiased environment and opportunity to build informal relationships. Program challenges included scheduling conflicts, a consistent need for student facilitators to initiate and stimulate discussion when no meeting agenda was provided, and a lag in student buy-in. The POD program has since been adapted and implemented by students at the University of Pennsylvania School of Nursing. Denoted as the PhD Constellation Mentorship Program, this adaptation incorporates both one-on-one peer mentoring and POD group mentoring (Porat-Dahlerbruch et al., 2021). Approximately half of the PhD students surveyed felt that they benefited from the adapted program, but similar difficulties were reported (e.g., scheduling conflicts, unclear objectives).

In another mentorship program, the Peer Mentor Program (PMP), early career gerontological nursing scholars engaged in mentorship within a matched pair (Brody et al., 2016; Bryant et al., 2015). The PMP served as an extension of the Building Academic Geriatric Nursing Capacity Program - a program intended to support future leaders in geriatric nursing and address the declining presence of senior scholars in the field (Brody et al., 2016). Matched pairs were created based on each individual's content, methodology, career trajectory preferences, and expectations for time commitment and engagement (Bryant et al., 2015). Each matched pair created pair-specific goals for mentorship and expectations for meeting frequency. Brody et al.' (2016) evaluation of the program revealed that most mentees had contact with a mentor once a month (22.7%) or less (68.2%); the majority of mentees met their mentor in person at least once (68.2%). Despite most participants valuing the PMP, mentors and mentees requested more structure, such as setting goals for the mentor-mentee relationship (Brody et al., 2016).

Despite a growing need for mentorship amid a looming nursing faculty shortage (American Association of Colleges of Nursing, 2021), information on peer mentorship in PhD in Nursing programs is limited. Moreover, the COVID-19 pandemic has introduced new and more complex challenges to both formal and informal mentorship. The disruption to education, scholarship, and research that has occurred warrants creative and novel strategies to mentor the next generation of nursing scholars. It is the authors' hope that the information shared in this article might encourage PhD in Nursing program directors and administrators to implement formal programs of peer mentorship in their own institutions.

Personal vignettes of peer mentorship

During the COVID-19 pandemic, the authors each uniquely navigated a transition into a new normal for education delivery, research conduct, and receipt of both faculty and peer mentorship. The authors' peer mentor experiences, presented as vignettes, span several years and include both pre-pandemic and pandemic-era experiences. A few authors (JPS, EK, NC, EM) began their PhD programs during the pandemic and experienced coursework and peer mentorship virtually. Others (ECS, AFH, SDS, ALN) experienced peer mentorship prior to COVID-19 and attempted to maintain those relationships during the pandemic. These personal accounts highlight several themes of peer mentorship, including positive outcomes of small group mentoring and the importance of frequent mentorship interactions (Kumar and Coe, 2017).

Maintaining informal mentorship at a distance

Prior to the COVID-19 pandemic, PhD faculty at the authors' home institution had considered conversion of the PhD program to an online and/or hybrid option. At the time, faculty concerns about the richness of classroom discussion in an online format, lack of immersion in faculty research, and limited availability of online statistics and cognate minor courses offered by the university led to a decision not to proceed with online and/or hybrid delivery (Pickler, R., personal communication, October 7, 2021). However, pandemic-related limitations on in-person contact forced an unexpected virtual conversion of the PhD program and thrust all PhD students into compounded isolation. This left first-year students, who had no existing peer networks and little or no institutional knowledge, and dissertating students, who had limited recurring classroom interactions, most susceptible to isolation. Students attempted multiple strategies to foster virtual peer-to-peer interaction with varying levels of success (discussed in author vignettes). As the COVID-19 pandemic and limitations on in-person interaction continued, the authors recognized the need for more formal delivery of mentorship that was inclusive of all PhD in Nursing students at the institution.

Formalizing informal interactions

While the strategies discussed in the authors' personal vignettes provided meaningful connections and opportunities for mentorship, they provided support for only certain groups of students. As the pandemic progressed, optimism of one day returning to the PhD student offices waned, and it was decided that informal peer mentoring relationships needed to be formalized and made accessible to all students in the program.

A PhD student sibling program was initially proposed for one-on-one mentoring between senior and junior students. Logistic challenges arose during implementation of the program, including a shortage of senior

Vignette One: Attempting to Retain a Traditional Model of Mentorship during Uncertain Times

Prior to the pandemic, PhD students in my (ECS) program shared two, side-by-side office spaces in the building. We spent moments discussing challenges with the PhD program, faculty relationships, and life in graduate school. These moments, while brief, occurred at regular and frequent intervals. The conversations were never planned, but spontaneous moments to debrief, share highs and lows, and discuss life outside the ivory tower such as an engagement, the birth of a child, or the adoption of a new puppy. The informal mentorship afforded by office run-ins allowed transfer of institutional knowledge, strategies for working with specific faculty, and a reminder that peers shared in my failures and triumphs.

In response to the virtual exclusivity brought on by the pandemic, I consulted our PhD Program Director to create a virtual office space for all PhD students that might mimic the traditional mentorship experience I had in my first few years of graduate school. This virtual space was intended to provide a forum for students to interact with each other and, for more junior PhD students, to ask questions related to program requirements, institutional norms, and academic culture. A university-sponsored commercial communication platform was chosen because it provided both a public forum that could be subdivided into categories and the opportunity for drop in video chats or virtual co-working. Students initially introduced themselves on the platform and a few senior PhD students fielded questions about course selection and literature reviews, but no further interactions or mentorship occurred.

Vignette Two: Using a Plethora of Tools to Build Mentorship Relationships

The COVID-19 pandemic significantly impacted my (JPS) experiences during the first year of the PhD program, and I had a hard time adjusting to life as a PhD student. All classes and events, such as colloquia, were moved on-line or cancelled. The only way to connect with fellow students and faculty, most of whom I did not know, was through email. I felt very isolated and disconnected from my peers and the institution. My role as a graduate research assistant provided me with the opportunity to interact with faculty outside of my advisor, but I was still missing out on informal interactions with more senior students. These interactions are important, as they are often where you learn unofficial, but important, information about being a PhD student and the program itself.

I had videoconference meetings with two senior PhD students during my first semester. I met one of them during our PhD orientation and reached out via email. I was introduced to the other (ECS) by a faculty member I worked with as a graduate research associate. We discussed topics related to work-life balance, relationships with advisors, and imposter syndrome. These interactions helped me to realize that feeling overwhelmed, and a little lost during the program was normal, which I found extremely helpful.

My cohort came up with creative ways to stay connected and grow informal relationship with one another as well. We established a group chat where we could post interesting articles, motivational memes, vent, and ask questions. Most of us in my cohort were active in this thread. Additionally, some of us talked one-on-one over videoconference, formed small study groups, and peer reviewed each other's work when appropriate.

Vignette Three: Expanding on Formal Mentorship in a T32 Fellowship

When I (EM) found out that I had been accepted into the T32 fellowship, I experienced both a great sense of pride and apprehension. While the fellowship is an excellent opportunity to work closely with faculty and other students within the fellowship, there are more obligations. Not having the ability to work closely with others made me feel that I was alone on an island. While the T32 group was small, having had little opportunity to interact in person with anyone ahead, or even within my cohort, made it difficult to form other mentoring relationships.

Despite the lack of relationships and some apprehension about reaching out to other students, I did find the monthly T32 meetings to be helpful as they allowed me to hear from other students who were further along in their doctoral journey. It was inspiring to hear how far others had come and gave me a boost of confidence, in the midst of feelings of inadequacy, that I would eventually complete my degree. Additionally, having the ability to review student and faculty biosketches along with grant writing tips will prove useful when I begin my own F31 application.

students and uncertainty regarding how best to match sibling pairs. Would partnerships based on research interest or program type (i.e., post-BS versus post-MS, full- versus part-time) best foster relationships, or would purposefully pairing of those with diverse backgrounds and interests stimulate discussion (Lewinski et al., 2017)?

Given these challenges, faculty on the PhD Subcommittee suggested virtual student "coffee hours," which could be more easily implemented, and would allow for cross-cohort interaction without undue burden on senior students. The PhD Student Coffee Hours were held twice a month, with senior students serving as the hosts for each meeting. Due to the logistical difficulties in scheduling such meetings (Lewinski et al., 2017), a survey of potential dates and times was sent to students at the beginning of each semester. Once finalized, a calendar invitation was sent to the PhD student email list describing the coffee hour and providing a hyperlink to access the meeting. Invitations for all PhD Student Coffee Hours were sent at the beginning of the semester, with additional email reminders the day of each meeting. As COVID-19 vaccinations became available, and weather conditions allowed for outdoor meetings, PhD Student Coffee Hours were offered in a hybrid mode in which students could choose to attend virtually or in-person.

Although delayed buy-in from students was anticipated (Lewinski et al., 2017), initial attendance was high, with numbers temporarily dropping during the summer term. Although Lewinski et al. found that meeting agendas facilitate discussion, conversations during PhD Student Coffee Hours were generally lively and senior students did not often need to initiate dialogue. Frequent topics included: selection of cognate minor, advanced methods, and statistics courses; procedures for program milestones (e.g., candidacy exam); and work-life balance. Concerns for succession of peer mentors arose when the two primary peer mentors (ECS, LBK) approached graduation. Efforts to implement

Vignette Four: Making the Most of an Abnormal First Year

The T32 provided additional support as a first year PhD student. I (NC) was able to meet virtually each month with other T32 fellows. This provided me opportunities to ask advanced students in the program questions to gain insight on course and program expectations. Talking to advanced students was the most valuable to me in dealing with the effects of being in a pandemic and lacking in-person connections. The T32 fellowship provided additional resources and knowledge on grant writing skills and biosketch development.

As a first-year student during a pandemic, I felt the greatest disadvantage of being all virtual and engaging in distanced learning was the lack of interpersonal relationship building with the peers in my cohort. My goal for beginning the journey to obtain my PhD was to have mentorship and peer connections to support me through the challenges and workload. I was deprived of peer connections in the virtual environment compared to the in-person environment. I really missed having the opportunities to meet with peers outside of class to discuss challenges, questions, resources, et cetera.

I was able to consistently meet with two other peers regularly via videoconference throughout the semester to talk about our challenges and bounce things off each other. I feel peer support throughout this program is essential to success. I feel I missed out on being on the university campus as a first-year PhD student. There is something motivating and inspiring to be on campus and walking to and from classes. I am also thankful that my PhD cohort is larger than typical PhD cohorts. This created a well-rounded cohort with diverse research interests. Having a large cohort made the virtual environment more robust in that there were more of us to participate in discussions and provide feedback to peers.

Vignette Five: Adjusting to a New Institution and City through Mentorship

This unprecedented pandemic situation has changed my expected PhD life. I (EK) expected to take in-person classes and have regular meetings with cohorts and other students, but it did not happen due to COVID-19. Most of the PhD students in nursing were not allowed to access the nursing building, and none of them could meet each other in person during the fall semester. Mentoring programs with senior graduate students were also temporarily stopped. The only way to communicate with other students and faculty was through video chats during classes and the faculty's office hours. Regular research meetings with my advisor and the other research team members were no exception. All work had to be done via emails or video chats. Although I got used to taking lectures and doing work in virtual settings, I felt insecure because I had no experience living in my new city, did not know anyone, and did not know where to ask for help. I needed to go through the new venture by myself. Talking to others in my cohort helped me mitigate stress and anxiety levels; still, during these conversations, it was hard for me to gain information about a new PhD journey and adjust to a new place. To make it worse, some personal issues made me sink into a deep well, and I had difficulty controlling emotions. Everything seemed to be chaotic to me.

Thankfully, there was a senior graduate research associate (ECS) on the same research team, who had many experiences at Ohio State. I had opportunities to ask her about campus life and coping strategies for mitigating stress and burden while co-working on research work. This extension of virtual meetings, from research work to mini mentoring, helped me overcome stressful events. It also drove me to think about the importance of a peer mentoring program, especially for first-year students. Although we could not work together in-person, I have learned how to do several research tasks that I am not familiar with (e.g., entering research information on IRB or Clinical.gov website), as if I have learned about them in a face-to-face setting.

A friend of mine who went to the same college as I started a PhD program in a different state in fall 2020. When we started a new semester, both of us were confused about the new school life and PhD work, and this feeling changed into a sense of isolation and frustration and a lack of motivation. To overcome this air of melancholy, we decided to study together via a video chat platform. We read papers and worked on assignments independently while attending this virtual chat room. Even though we participated in different coursework and did not have the same study interest, we could share thoughts about a topic that we were studying at the moment and provide a new perspective from a different angle between us. There were also many small talks, and they sometimes made us stray from the original topic. However, studying together through videoconference was enough to improve our motivation and concentration compared to studying alone. Finally, we were able to complete the first semester successfully, and I still keep conducting this study chatroom with the friend during this second semester as well.

succession planning will be necessary to ensure success and continuation of a mentorship model similar to PhD Student Coffee Hours. Additionally, one primary student mentor (LBK) took on much of the administrative burden of organizing and planning PhD Student Coffee Hours. Program directors and administrators might consider utilizing college or school administrative staff to facilitate planning tasks to protect student research and scholarship time.

Maintenance of peer mentorship in U.S. colleges and schools of nursing during the pandemic

To contextualize the authors' experiences of peer mentorship during the COVID-19 pandemic, a descriptive, cross-sectional survey study was undertaken to explore the effects of the pandemic on mentorship in PhD in Nursing programs across the country and identify common strategies used to maintain peer mentorship. Findings result from a larger parent study focused on formal and informal mentorship in PhD in Nursing programs. Additional findings from the parent study will be presented in future publications. This study was reviewed and determined exempt by the Ohio State University Office of Responsible Research Practices (Protocol #2021E0525).

Methods

Study sample and recruitment

A sample of current and recently graduated (i.e., within two semesters) students from PhD in Nursing programs across the U.S. were recruited via email communications. Program directors or other institutional administrators were identified as points of contact at PhD-granting, AACN-accredited colleges or schools of nursing in the Eastern, Southern, Midwestern, and Western regions of the U.S. Institutions were grouped into these specific regions based on the four active nursing research professional organizations. In addition to institutional contacts, the Western Institute of Nursing and the Midwest Nursing Research Society distributed recruitment communications to student members. The recruitment email included a brief description of

Vignette Six: A Semblance of Normalcy in an Unprecedented Time

My (AFH) time as a PhD student has been anything but normal. I began my first semester of doctoral study in the fall of 2019 – just a few months before a novel coronavirus would spread across the globe and infect millions. All of the classes in the PhD program were reflected on my curriculum plan as being in-person. This would allow me to gain familiarity with my new university and build rapport with faculty, staff, and fellow graduate students. During this first semester, I started to develop relationships and identify those who could provide valuable mentorship to me throughout my PhD journey. I started spending my afternoons in the PhD student office and struck up friendly conversations with students from older cohorts. Through this, I started to form informal mentoring relationships with more seasoned peers. Upon the start of the spring semester, however, things changed drastically. Outbreaks of an unfamiliar virus began to appear in the United States. As a response, my university shut down and transitioned all in-person classes to either synchronous or asynchronous virtual delivery. Thankfully, a majority of my classes were synchronous, and I was able to meet students from a newer cohort in these virtual classes.

While the stress of being a PhD student in such an unprecedented time mounted, I began to have videoconference meetings with the students I had connected with both in-person and online. These meetings became a place of collaboration, innovation, and stress release. Through these meetings, my peers shared their experiences and allowed me to learn from their mistakes and successes. Despite not being able to have small chats in the hallway or walk to the library together, these virtual meetings became a place of growth and socialization. They also became a place for students to connect with peers who could mentor, who could teach, and who could become friends. While my formal mentors helped me progress through my program academically, it was my informal peer mentors who have helped me progress as a person. It was informal peer mentors who built me up, supported me, and brought a semblance of normalcy in a time of fear, stress, and uncertainty.

Vignette Seven: Building on Graduate Research Associate Positions to Promote Mentorship

We (ECS, EK) engaged in informal peer mentorship through our collaborative work on a National Science Foundation (NSF)-funded multi-institution research team that required attendance of multiple meetings a week with members of the team, internal and external to our home institution. Additionally, as graduate research associates, we spent time each week on collaborative projects for the NSF study that we often completed via a virtual co-working session. This work created an informal mentoring dyad, wherein we received formal mentorship from the study principal investigator but also engaged in informal conversations before and after scheduled meetings each week. Interactions were frequent, up to four times a week. Most interactions were brief in nature but provided a chance for regular communication and relationship building.

Vignette Eight: Weekly 'Beyond Writing' Groups

Students in the dissertation phase often feel cloistered and disconnected from their peers. Conducting the dissertation phase during the COVID-19 pandemic increased feelings of disconnection and we often found it difficult to stay on track with dissertation work.

To tackle waning productivity and increase motivation, particularly for writing, we (ECS, SDS, ALN), all in our dissertation phase, began an informal writing group to provide accountability and encouragement for each other.* The frequency of the writing group sessions was a key to success for creating a virtual space for informal mentorship. We met bi-weekly, and occasionally multiple times a week for an impromptu, informal virtual co-working session. These meetings often began with a discussion of progress and difficulties we had encountered and advice for tackling these issues, followed by a specified period of writing, and ended with another brief wrap-up discussion. The frequency of the meetings contributed to increased ease of checking in, as we were each aware of the others' recent progress, eliminating the need for extensive reorientation.

During the writing period we maintained visual contact which provided needed accountability for approximately an hour and a half and often served as a springboard for continued productivity after the virtual meeting ended. In addition to increased productivity and motivation, the informal nature of the meetings provided a social, collegial space to build relationships as we moved forward into our professional careers.

*Note: These writing groups were similar in structure and function to 'Writing Accountability Groups' (WAGs; Skarupski and Foucher, 2018)

the study, research team contact information, and a link to the anonymous survey created using Qualtrics software (https://www.qualtrics.com). Follow up correspondence with PhD program directors occurred to communicate IRB exemption status and study details. Prospective participants self-selected into the study after receiving communication from their PhD program directors. Participants were provided with a detailed description of study procedures, risks, and benefits on the first electronic page of the survey. Participants provided acknowledgement of receipt and proxy consent by clicking to proceed with the survey.

Instrument

Demographic data were collected to describe students (e.g., age, race/ethnicity) and their PhD programs (e.g., institution type, mode of delivery, program phase). Through a combination of yes/no and open-ended questions, students were asked about peer mentorship during the COVID-19 pandemic. Students who reported receiving or providing peer mentorship were asked if this was maintained throughout the pandemic. Those who did were asked to describe strategies used to maintain this mentorship during the COVID-19 pandemic. These students were also asked whether faculty assisted them in maintaining mentorship, and if so, how. Survey questions were developed by the authorship team. Demographic questions were developed based on AACN data categories related to PhD student enrollment in the U.S. Questions about maintaining peer mentorship during the pandemic were based on the authors' experiences of maintaining and establishing a formal method of peer mentorship during the pandemic (see Appendix A for a full list of survey questions).

Data collection

Data were collected via an online, anonymous survey between July and November 2021 - approximately one and a half years into the COVID-19 pandemic. The recruitment email, described in the *Study Sample and Recruitment* section, was sent to PhD program directors in mid-July, early-August, and early-September.

Data analysis

Descriptive statistics (i.e., frequency, percentage, mean, standard deviation) were used to analyze demographic data. Demographic data were compared between students who did and did not maintain peer mentorship during the pandemic. For discrete variables, Chi-square tests or Fisher's exact tests were used, while *t*-tests or Mann-Whitney *U* tests were used for continuous variables. Qualitative data analysis proceeded using a thematic analysis approach (Clarke and Braun, 2014). Open-ended questions were coded using both inductive and deductive techniques by two authors (ECS, JPS). After separate completion of initial coding, authors proceeded through additional phases of thematic analysis (Braun and Clarke, 2012) and met to review initial codes, identify emerging themes, and make decisions about thematic categorization and abstraction. A second round of focused coding was performed using new, higher-level themes. Once a final list of themes was generated, a thorough review of all qualitative data was conducted to ensure selected themes meaningfully captured respondent experiences (Braun and Clarke, 2012).

Results

Over a four-month period, 222 survey responses were received, representing approximately 5% of the 2021 enrollment totals for PhD in Nursing and other research focused nursing doctorates (American Association of Colleges of Nursing, 2022). Of the 222 surveyed students, 118 (53.2%) responded to questions regarding maintenance of peer mentorship during the COVID-19 pandemic. These 118 respondents had an average age of 39.4 (SD = 10.8) years, were primarily female (92.1%), and mostly White (75.0%, Table 1). In terms of PhD programs attributes, respondents were fairly diverse. Students were enrolled in PhD programs across the U.S., with just over half (55.1%) at research-intensive institutions. Most participants were post-MS students (50.9%), enrolled full-time (70.3%) in the Pre-Candidacy (coursework) phase (44.8%) and had attended their PhD program in-person prior to the pandemic (41.7%).

Approximately 20% (n = 25) of respondents indicated that they had not maintained peer mentorship during the COVID-19 pandemic. There were demographic differences between those that reported maintaining peer mentorship and those that did not. Compared to students that reported maintaining peer mentorship, those that did not maintain peer mentorship were an average of 6.6 years younger and were more likely to identify as a being part of a racial/ethnic minority group (33.3% vs. 22.5%). The MS to PhD students were more likely to maintain peer mentorship than the BS to PhD students (52.2% vs. 28.3%). Students who were pre-candidacy, and enrolled in coursework, were more likely to maintain peer mentorship than students in the candidacy phase (45.7% vs. 35.9%). There were no other differences between groups in terms of student or PhD program demographics.

Student strategies to maintain mentorship

Of the 93 respondents who maintained peer mentorship during the pandemic, 86% (n = 80) shared their strategies for maintaining mentorship via open-ended responses. Thematic analysis of these responses revealed two main themes, adaptive strategies and non-adaptive strategies, that described adjustments made to maintain peer mentorship during the COVID-19 pandemic. Within the adaptive theme, there were two main sub-themes: communication adjustments and personal adjustments. Communication adjustments were further divided into three subthemes: (1) continuous ←→ intermittent communication, (2) structured ←→ unstructured communication, and (3) use of institutional resources or external resources for communication.

Table 1
PhD student & program demographics.

	COVID-19 mentorship		Total
	Yes	No	
Age, yrs., $\bar{x}$ (*SD*)*	40.9 (11.0)	34.3 (9.2)	39.4 (10.8)
Gender, *n* (%)			
Female	72 (92.3)	21 (91.3)	93 (92.1)
Male	5 (6.4)	2 (8.7)	7 (6.9)
Non-Binary	1 (1.3)	0 (0.0)	1 (1.0)
Race/Ethnicity, *n* (%)			
White	62 (77.5)	16 (66.7)	78 (75.0)
Black	6 (7.5)	3 (12.5)	9 (8.7)
Asian	4 (5.0)	2 (8.3)	6 (5.8)
Hispanic/Latino	5 (6.3)	1 (4.2)	6 (5.8)
American Indian/Alaska Native	1 (1.3)	0 (0.0)	1 (1.0)
Multiracial	1 (1.3)	1 (4.2)	2 (1.9)
Other	1 (1.3)	1 (4.2)	2 (1.9)
International student, *n* (%)			
No	89 (95.7)	23 (92.0)	112 (94.9)
Yes	4 (4.3)	2 (8.0)	6 (5.1)
Institution type, *n* (%)			
Research-Intensive	52 (55.9)	13 (52.0)	65 (55.1)
Research & Teaching	40 (43.0)	12 (48.0)	52 (44.1)
Teaching-Intensive	1 (1.1)	0 (0.0)	1 (0.8)
Region, *n* (%)			
Eastern	39 (42.4)	8 (32.0)	47 (40.2)
Midwestern	21 (22.8)	6 (24.0)	27 (23.1)
Southern	15 (16.3)	7 (28.0)	22 (18.8)
Western	17 (18.5)	4 (16.0)	21 (17.9)
Pre-Pandemic Program Delivery, *n* (%)			
In-Person	32 (40.5)	11 (45.8)	43 (41.7)
Online	24 (30.4)	5 (20.8)	29 (28.2)
Hybrid	17 (21.5)	7 (29.2)	24 (23.3)
N/A	6 (7.6)	1 (4.2)	7 (6.8)
Program type, *n* (%)			
BS to PhD	26 (28.3)	10 (41.7)	36 (31.0)
MS to PhD	48 (52.2)	11 (45.8)	59 (50.9)
Other	18 (19.6)	3 (12.5)	21 (18.1)
Program phase, *n* (%)			
Pre-Candidacy (Coursework)	42 (45.7)	10 (41.7)	52 (44.8)
Candidacy	33 (35.9)	11 (45.8)	44 (37.9)
Recently Graduated	17 (18.5)	3 (12.5)	20 (17.2)
Enrollment status, *n* (%)			
Full-Time	65 (69.9)	18 (72.0)	83 (70.3)
Part-Time	28 (30.1)	7 (28.0)	35 (29.7)
Have you maintained peer mentorship during the COVID-19 pandemic?	93 (78.8)	25 (21.2)	

Note. Missing data excluded.
* $p < 0.01$.

Non-adaptive theme. The non-adaptive theme was marked by scenarios

in which no change to peer mentorship practices occurred in response to the pandemic. A small number of students fit into the non-adaptive theme, and many were in programs that were online prior to the start of the pandemic. For example, one respondent stated, "*My program has always been online/virtual, so nothing changed really*." There was a small subset of students that started their PhD programs during the pandemic, and as a result there was no change in peer mentorship practices because it was all they knew. One student's comment highlighted this point well, "*I started my PhD during COVID, so these [mentoring] relationships were all formed during COVID-19*."

Adaptive theme. The adaptive theme was characterized by scenarios that suggested some sort of adjustment which occurred in an effort to maintain peer mentorship during the pandemic. The sub-themes represent the two main types of adjustments that occurred: personal adjustments and communication adjustments.

Personal adjustments. Personal adjustments were characterized by changes to individual behaviors or mentalities as a response to the pandemic, but were not directly related to peer mentorship. Some behavior changes were related to supporting peers, for example, one student noted they *"sent encouragement notes to everyone in my cohort…"* Other respondents described personal adjustments to promote personal success and well-being as a graduate student during the pandemic. For example, one student reported adjusting their work hours, and another reported *"lowering expectations."*

Communication adjustments. Communication adjustments included changes in communication to promote peer mentorship during the COVID-19 pandemic. One response captured the meaning of this theme well: *"We utilize texting, emailing, some phone calling and some [video-conference] meetings to maintain this informal mentorship relationship."* This theme was divided into three additional sub-themes that relate to the specific changes in communication that occurred. The sub-themes are distinct but not mutually exclusive.

The '*continuous ←→ intermittent communication*' sub-theme represents the timing of communication. Intermittent communication was characterized by periods of communication that had a distinct beginning and end, for example, videoconference meetings or telephone calls. One student provides an example of using intermittent communication *"phone call and [omitted] video chats."* Continuous communication represents an ongoing stream of communication that can transition from one topic to another, but does not have a clear end, for example text messaging or group chats in messenger applications (also known as apps). Many respondents reported using a combination of continuous and intermittent communication. For example, *"Occasionally met with peers one-on-one with web conference tools…regular use of chat/text services…"*.

The '*structured ←→ unstructured*' sub-theme represents the degree of structure of placed on communication. The boundaries between structured and unstructured communication were often blurred. Unstructured communication was characterized by informal, unscheduled communication that did not have a specific agenda or purpose. The communication did not need to include all three of these characteristics to be coded as unstructured. For example, one student reported peer mentorship was *"provided on an as needed basis rather than regularly scheduling appointments."* Another student reported *"…occasional in-person meeting in public places (i.e., coffee shops, the park)."* Each of these examples highlights a different aspect of unstructured communication, but neither contains all three characteristics.

Structured communication was scheduled, had a specific purpose or activity planned, and was more formal than unstructured communication. One student provided an excellent example of structured communication with an intended purpose, reporting *"[videoconference] work-together (we turned on the [video] and work on our own work)."* Several students reported introducing regularly scheduled meetings. For example, one student responded, *"Having regular, scheduled virtual meetings."* Scheduled meetings took place at different timeframes with one student reporting *"bi-weekly team meetings,"* another reporting *"Weekly [videoconference] check ins"* and yet another reporting *"Check ins with each other on a quarterly basis."*

The '*institution ←→ external resources*' sub-theme represents the range of tools that were used to facilitate communication during the pandemic. Institutional resources were those provided or supported by the university. External resources were tools that were not associated with the academic institution such as proprietary freeware messenger applications that can be used across different platforms.

Complexity and evolution of communication adjustments. It is imperative to note that these sub-themes are not mutually exclusive and can be used in combination to describe various strategies students used. For example, there was often overlap between *continuous ←→ intermittent* and *structured ←→ unstructured* communication. Messenger apps and texting, which are considered forms of continuous communication, were also consistent with the definition of unstructured communication, which was often spontaneous and informal. Videoconference calls, which were a form of intermittent communication, were often scheduled and usually more formal, making them consistent with structured communication. However, these boundaries are also unclear, as some students reported using video chats for both structured and unstructured communication. For example, "*Informal and scheduled [video] calls; text, emails.*" Additionally, institutional communication platforms and email can be used for continuous communication that is structured or unstructured. Lastly, respondents highlighted the ways in which they adjusted when one method of continuing mentorship proved ineffective, suggesting that having a variety of ways to connect could be an important adaptive strategy to maintain mentorship. One response highlights this point well, "*Staying in touch via text has been very helpful. [Videoconference] fatigue is real and sometimes impedes successful mentor video calls, but informal texting seems to be working just as well at this point.*"

Faculty support to maintain mentorship

Participants who reported maintaining peer mentorship (n = 93) were also asked if, and how, faculty had assisted in maintaining peer mentorship. Approximately 44% (n = 41) of respondents who maintained peer mentorship reported receiving faculty support to do so. These individuals described a variety of ways in which their faculty and administrators assisted in maintaining peer mentorship. Strategies were thematically categorized on a continuum from passive efforts, including maintenance of existing communication patterns, to high levels of active assistance in the form of providing monetary support for students to engage in peer meetings (i.e., providing monetary support for lunches during videoconference meetings). Other faculty assistance along the continuum included encouraging connections, facilitating meetings for faculty and students, and facilitating meetings for students. The full continuum with exemplar quotes is depicted in Figure 1.

Discussion

The peer mentoring relationship can result in individual and mutualistic benefits for both the mentor and the mentee. Mentors and mentees may mutually experience reduction in stress and improvements in mental health and mentees receive benefits related to professional socialization (Lorenzetti et al., 2019). Peer mentors also stand to gain valuable benefits from a peer mentor relationship, including preparation for faculty roles (Abbott-Anderson et al., 2016). Experiences with mentorship during PhD education may become increasingly important as more senior nursing scholars retire (American Association of Colleges of Nursing, 2021). Additionally, an informal peer mentor relationship is not bounded by strict expectations. This differs from the formal faculty-

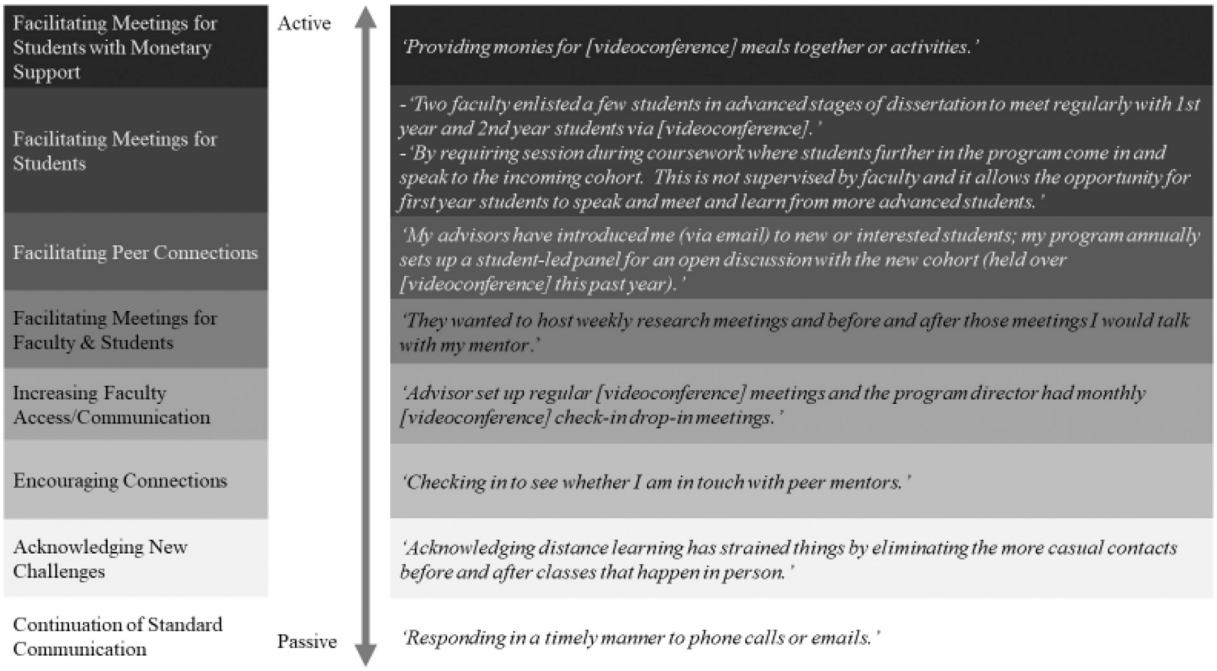

Fig. 1. Faculty support continuum.

student mentoring relationship, wherein there are expectations related to the student's productivity and progression in the program. A peer mentoring relationship provides a safe place, free of expectations, where students can air grievances, share successes, and build critical thinking and problem-solving skills.

Virtually delivered peer mentorship appears to be a viable and acceptable mode of delivery for peer support and informal mentorship. This acceptability will be important to consider in the event that the world experiences periodic waves of heightened COVID-19 infection rates or emergence of another novel virus. In addition to unanticipated periods of virtual exclusivity, PhD programs that have implemented, or are considering, implementation of virtual or hybrid models of education should also consider supporting virtual delivery of peer mentorship. Findings from this study indicate faculty support of peer mentorship via financial and administrative resources are well received and appreciated by PhD in Nursing students.

At the authors' institution, as mentioned in the section *Maintaining Informal Mentorship at a Distance*, the established mode of educational delivery prior to the COVID-19 pandemic was via in-person instruction. Ultimately, faculty felt that online PhD program delivery did not offer the same level of peer interaction and lively discussion critical to doctoral education. In the fall of 2021, the authors' home institution transitioned back to predominantly in-person classes, with no plans to transition to a permanent on-line and/or hybrid model (Pickler, R., personal communication, April 8th, 2022). Regardless of curriculum delivery model, PhD students can still benefit from a virtual peer mentorship model. Virtual peer mentorship bolsters inclusivity by facilitating connections between students who are geographically distant outside curriculum hours, who are navigating complex work and education schedules, and who have diverse family and caregiving responsibilities.

The authors' personal vignettes and participants' survey responses demonstrate the flexibility and creativity PhD in Nursing students leveraged to retain an integral part of the PhD experience. Despite several successful peer mentor pivots, PhD students have struggled to maintain peer mentorship during the pandemic. Of those who were successful, less than half received explicit support from faculty. Faculty should work to support peer mentorship, especially during this precarious point in our collective history.

Limitations

While showing a need for more peer mentorship support, these study findings are not without limitations. First, study participants self-selected to complete the aforementioned survey. Therefore, respondents may have been more technologically savvy at baseline and more likely to engage in continued peer mentorship during a period of virtual exclusivity. Experiences of peer mentorship were likely different for students who have only experienced PhD education via online delivery, including those who were enrolled in online PhD programs prior to the pandemic (24.5%%, $n = 29$) and those who began their PhD program during the pandemic (~11%, $n = 13$). Additionally, this study used a cross-sectional design. Therefore, we cannot assess for temporal changes in peer mentorship experiences for respondents. Peer mentorship experiences could improve or worsen as a respondent progresses through their program and may change over time (e.g., as the COVID-19 pandemic progresses).

Furthermore, respondents may represent a group of current and recently graduated PhD students representing extreme views- those with overwhelmingly positive or negative experiences of peer mentorship. Response bias likely affected open-ended responses that required additional effort from respondents. Additionally, the length of the survey may have increased the possibility of missing data. While we addressed this limitation by excluding responses with missing data, this exclusion may have eliminated valuable and unique student perspectives. Finally, the recommendations presented are based in part on the authors' personal experiences of peer mentorship at one U.S. institution. While the survey data supplements and corroborates author experiences, respondents were homogeneously female, White, and classified as domestic students. Survey findings, and the authors' recommendations, may not be generalizable to all U.S. PhD in Nursing programs or PhD students. Additionally, while including perspectives from students with an international status, findings of this study cannot be generalized to programs outside of the U.S. Further systematic testing of these recommendations may be necessary to determine affects in groups that differ from the authors.

Implications for future research

Ongoing efforts to systematically examine peer mentorship in PhD in Nursing programs are needed. This investigation into peer mentorship during the COVID-19 pandemic, and the parent study (forthcoming), to examine and describe peer mentorship in U.S. PhD in Nursing programs add to the small, but growing body of literature focused on the topic. As the U.S., and other global nations face a looming faculty shortage (American Association of Colleges of Nursing, 2021), efforts to support and build peer mentorship models for emerging nurse scholars will be increasingly necessary. Further, given the high percentage of students from racial and ethnic minorities who reported a lack of peer mentorship during the COVID-19 pandemic, support of underrepresented populations through formal mechanisms, including peer mentorship, continue to be important for the advancement of nursing science and education. Future research on this topic should examine peer mentorship in relation to diversity, equity, and inclusion.

In addition to examining existing peer mentorship patterns, future research should expound on potential long-term effects of the COVID-19 pandemic on PhD students and peer mentorship. Research that examines PhD program outcomes, such as time to completion, post-graduate employment, and characteristics of faculty transition before and after the pandemic, may provide much needed insights. Retrospective studies, to explore the relationship between peer mentorship and these outcomes, may also provide valuable explanatory information and potential exemplars of faculty and administrative support.

Implications for nursing education

Nursing faculty, program directors, and administrators should take note of PhD students' experiences transitioning to a virtual learning environment. The hurdles presented by the COVID-19 pandemic appear to be persistent and may have implications for the nurse scholar and faculty workforce into the future. As indicated by the responses of PhD in Nursing students across the country, adaptive strategies to maintain peer mentorship in challenging times are possible- yet faculty support is lacking. Educators and administrators can provide support by creating space for students to engage in informal mentorship without faculty presence. This may require tapping more senior PhD students to take a leadership role in mentorship sessions, which can be framed as preparation for their future role as a nurse scholar, leader, and mentor. Enlisting the services of college, or school support, staff to manage planning and scheduling may reduce the administrative burden placed on student mentors.

Nursing educators and administrators can also encourage peer mentorship through communication of its benefits, identification of potential mentor-mentee dyads with similar research and scholarship interests (if group mentorship is not feasible), and financial support for mentorship interactions. As indicated by a survey respondent, provision of financial resources for occasional virtual lunches was a noticeable indication of faculty support. Nursing faculty should pay special attention to PhD students without pre-pandemic experiences of peer mentorship, as well as younger PhD students and those from underrepresented populations, both of whom were more likely to not maintain mentorship during the pandemic.

Conclusions

As PhD in Nursing students continue to adjust to a virtual learning environment, efforts to continue peer mentorship are imperative. Peer mentorship allows for further student support, professional development, and PhD program retention. The recommendations of the authors, to fill the gap of mentorship felt by PhD students during the COVID-19 pandemic, are practical and feasible. The creation of spaces for informal dialogue, and support, requires limited resources and may have a lasting effect on the career development of future leaders in nursing scholarship and education. If, or rather when, a more traditional model of PhD education resumes, educators and administrators can continue to use these strategies to promote peer mentorship in their programs.

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Declarations of competing interest

None.

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Appendix A. Survey questions

Question	Response options	Response style
DQ1: At what type of institution are you completing, or did you complete your PhD?	**DR1:** Research Intensive/Research & Teaching/Teaching Intensive	Single-choice
DQ2: In which U.S. region is your PhD granting institution?	**DR2:** Eastern/Midwestern/Southern/Western*	Single-choice
DQ3: What is or was your PhD program type?	**DR3:** BSN-PhD/MSN-PhD/Other	Single-choice
DQ4: What is your current program phase?	**DR4:** Pre-candidacy (Coursework)/Candidacy/Recently graduated	Single-choice
DQ5: What is your program year?	**DR5:** 1–5+/ N/A	Single-choice
DQ6: What is your enrollment status? If recently graduated, please indicate your enrollment status at graduation.	**DR6:** Full-time/Part-time	Single-choice
DQ7: Are/were you an international student?		Yes/No
DQ8: During your program were you at any point the recipient of tuition funding support?		Yes/No

(*continued on next page*)

(*continued*)

Question	Response options	Response style
DQ9: What was/is the funding mechanism?	**DR9:** Institutional Fellowship (T32)/Individual Fellowship (F31)/ University/College Sponsored (Presidential Fellowship)/Graduate Research Associate position/Graduate Teaching Associate Position/Graduate Administrative Associate Position/Other (fill in the blank)	Select all
DQ10: What is your race and/or ethnicity?		Open-ended
DQ11: What is your age?		Open-ended
DQ12: What is your gender identity?		Open-ended
DQ13: Prior to the COVID-19 Pandemic how was your program delivered?	**DR13:** In-Person/Online/Hybrid/N/A	Single-Choice
PMQ1: Have you received peer mentorship in you PhD program?		Yes/No
PMQ2: Has this mentorship been formal or informal? (Select all that apply)	**PMR2:** Formal/Informal	Select all
PMQ3: Please tell us about the informal peer mentorship you received.		Open-ended
PMQ4: Please tell us about the formal peer mentorship you received.		Open-ended
PMQ 5: What were/are the benefits of having a peer mentor?		Open-ended
PMQ6: What were/are the challenges of having a peer mentor?		Open-ended
PMQ7: Have you served as a peer mentor in your PhD program?		Yes/No
PMQ8: Did you serve as an informal or formal peer mentor? (Select all that apply)	**PMR8:** Formal/Informal	Select all
PMQ9: Please tell us about the informal peer mentorship you provided.		Open-ended
PMQ10: Please tell us about the formal peer mentorship you provided.		Open-ended
PMQ11: What were/are the benefits of serving as a peer mentor?		Open-ended
PMQ12: What were/are the challenges of serving as a peer mentor?		Open-ended
PMQ13[+]**:** Have you maintained peer mentorship during the COVID-19 pandemic?		Yes/No
PMQ14: What strategies have you used to maintain peer mentorship during the COVID-19 pandemic?		Open-ended
PMQ15: Have the faculty and administrators of your PhD program assisted in maintaining peer/informal mentorship during COVID-19?		Yes/No
PMQ16: How have the faculty in your program assisted in maintaining peer mentorship during COVID-19?		Open-ended

Note. DQ = Demographic Question; DR = Demographic Response; PMQ = Peer Mentorship Question; PMR = Peer Mentorship Response.

[*] Regions selected based on regional nursing research professional organizations in the U.S.

[+] If a respondent answered yes to questions about *either* receiving *or* providing peer mentorship in their PhD program, they received the questions related to the COVID-19 pandemic.

Responses to questions PMQ1-PMQ12 are included in a forthcoming analysis and research article.

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