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Exploring the Feasibility, Acceptability and Satisfaction of a Virtual Peer Mentoring Program for Undergraduate Nursing Students: A Mixed-Methods Study

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Exploring the Feasibility, Acceptability and Satisfaction of a Virtual Peer Mentoring Program for Undergraduate Nursing Students: A Mixed-Methods Study

Abstract

Final-year nursing students are known to face high levels of stress due to increased demands in academics and clinical practicum. In this study, a virtual peer mentoring program was pilot-tested, involving alumni as mentors. Using a mixed-methods approach, we sought to describe the acceptability, feasibility and satisfaction associated with the intervention. Study intervention involved: a) orientation, b) mindful self-compassion training workshop, and c) virtual mentorship interactions for nine months. Evaluation of study variables was done at the completion of training and at the end of the virtual peer mentoring program via self-reported questionnaires and interviews. The current virtual peer mentoring intervention was deemed acceptable, feasible and satisfactory to mitigate challenges for final-year nursing students. The virtual component of the study was considered to be convenient and appropriate, however, future mentoring interventions could be more effective by employing a form of mixed-contact involving both virtual and in-person interactions.

On sait que les étudiants et les étudiantes en soins infirmiers de dernière année font face à des niveaux élevés de stress causés par les exigences accrues en matière d'enseignement et de stages cliniques. Dans cette étude, un programme virtuel de mentorat par les pairs a été testé à titre expérimental. Le programme a impliqué des anciens étudiants et des anciennes étudiantes en tant que mentors. À l'aide d'une approche à méthodes mixtes, nous avons souhaité décrire l'acceptabilité, la faisabilité et la satisfaction associées à l'intervention. L'intervention de l'étude impliquée comprenait les éléments suivants : a) une orientation, b) un atelier de formation à l'auto-compassion et c) des interactions virtuelles de mentorat pendant neuf mois. L'évaluation des variables de l'étude a été réalisée à l'issue de la formation et à la fin du programme virtuel de mentorat par les pairs grâce à des questionnaires d'auto-évaluation et des entrevues. L'intervention actuelle de mentorat virtuel par les pairs a été considérée acceptable, faisable et satisfaisante pour mitiger les défis auxquels sont confrontés les étudiants et les étudiantes en soins infirmiers de dernière année. La composante virtuelle de l'étude a été considérée comme étant pratique et appropriée, toutefois, les interventions de mentorat futures pourraient être plus efficaces si l'on emploie une forme de contacts mixtes impliquant des interactions à la fois virtuelles et en personne.

Keywords

education, nursing, baccalaureate, mentorship, mentorship—evaluation, quantitative studies, qualitative studies, support, psychological; éducation, soins infirmiers, baccalauréat, mentorat, mentorat-évaluation, études quantitatives, études qualitatives, soutien, psychologique

Background

The process of education in the nursing profession necessitates academic rigour and clinical competence. This often poses challenges for students. The literature has shown that nursing students experience higher levels of stress and anxiety than other undergraduate students (Bartlett et al., 2016; Kachaturoff et al., 2020; Turner & McCarthy, 2016; Wedgeworth, 2016).

Throughout the duration of baccalaureate nursing education, nursing students experience stress as they navigate the complexities associated with learning and applying a substantial and growing amount of health-related knowledge. As each year progresses, the expectations, responsibilities, and workload placed on nursing students increase, inciting increased stress levels in final-year students (Rayan, 2019). In particular, multiple studies have found that stress levels rise in final-year nursing students due to increased demands in academics and clinical practicum (Deary, Watson, & Hogston, 2003; Edwards, Burnard, Bennett, & Hebden, 2010; Pulido-Martos, Augusto-Landa, & Lopez-Zafra, 2012; Rella, Winwood, & Lushington, 2008; Timmins, Corroon, Byrne, & Mooney, 2011). The aforementioned evidence underscores the need to develop interventions to minimize stress and support emotional well-being for this population (Rayan, 2019).

Nursing and Peer Mentorship

Mentoring consists of a relationship between a more experienced individual (mentor) and a lesser skilled or experienced individual (mentee). This relationship is intended to promote personal and professional development in which general well-being is enhanced, new insights are gained, and ways to succeed are discovered (Meier, 2013). Indeed, mentoring interactions are crucial in addressing challenges in nursing education and practice (Jacobs, 2017). Nursing institutions that have explored mentorship as a form of mediating stress reported positive outcomes including enhanced problem-solving, self-awareness, and self-confidence, along with decreases in stress, and situation or short-term anxiety levels (Allred & Sakowicz, 2019; Andersen & Watkins, 2018; Demir et al., 2014).

Peer mentorship is a relationship developed between a mentor and mentee similar in age and/or status (Andersen & Watkins, 2018) and is known to increase confidence and decrease stress of the mentee (Jacobs, 2017). This form of mentorship has been described to be an effective educational strategy in nursing education due to its collaborative, non-evaluative, and reciprocal nature (Anderson & Watkins, 2018; Rohatinsky, Harding, & Carriere, 2017). Scholars suggest that peer mentorship leads to positive outcomes particularly relevant to final-year nursing students including successful career advancement, greater professional networking, and increased confidence and competence (Andersen & Watkins, 2018; Demir et al., 2014; Lombardo et al., 2017). Preliminary evidence suggests that having alumni as mentors may be beneficial as an alumnus is likely to have many similarities to current students, while having already experienced and overcome the difficulties of the nursing program (Allred & Sakowicz, 2019).

Virtual Peer Mentoring

Various studies have suggested that time and coordination issues are common barriers for the development of mentee-mentor relationships (Mollica & Mitchell, 2013; Cheek et al., 2016; Robbio, 2018). For instance, Cheek et al. (2016) found that mentor and mentee participants had conflicting schedules due to personal, work, and academic priorities. In recent years, virtual contact has been acknowledged as a cost-effective and flexible alternative that

eliminates the aforementioned constraints (Clement & Welch, 2017; Pollard & Kumar, 2021). Virtual peer mentoring (VPM) establishes mentoring relationships using a technological platform (e.g. Facebook) (Clement & Welch, 2017). Mirroring traditional methods of mentoring, VPM was found to yield similar outcomes such as satisfaction with academic and personal support (Clement & Welch, 2017; Pollard & Kumar, 2021).

Nevertheless, there are no known studies that have examined or evaluated VPM with alumni as mentors. Thus, the present study examined a virtual peer mentorship pilot program to evaluate the feasibility, acceptability, and satisfaction of alumni mentorship.

Intervention Development

This study was approved by the university's Research Ethics Board (REB 2018-199). The research team consisted of faculty members from three different undergraduate nursing programs, an expert in e-mentoring intervention, an undergraduate nursing student, and a master's-prepared nurse with frontline acute care experience. The research team used the Humanistic Learning Theory (Braungart & Braungart, 2007) as a framework to guide development of the VPM intervention. The team also determined the characteristics of the intervention (e.g., component, dose, mode of delivery) and evaluation methods based on a combination of empirical evidence and reflection on experience as educators, learners, and newly graduated nurses (Sidani & Braden, 2011). These characteristics guided the establishment of the study timeline. Once the timeline of the VPM program was set, the team developed training materials, which are key to the VPM intervention. These materials included a training manual and a half-day orientation which included a 90-minute mindful self-compassion (MSC) workshop that introduced training manual's content. The manual served as a resource package that reinforced the half-day training. Core topics of training were: a description of sources of anxiety and stress prevalent among fourth-year nursing students; definition of mentoring; the role of both the mentor and mentee; means to foster an effective mentor-mentee relationship (e.g., sample mentor-mentee agreement, ways to promote reflections in dialogues); and skills that serve to combat stress and anxiety (e.g., mindfulness and self-compassion). The training manual also included background information that encouraged discussions of commonly identified issues by final-year nursing students such as communicating with healthcare team members (Melo et al., 2010), passing the licensing examination (NCLEX-RN), making mistakes in clinical placement, and being in unfamiliar practice environments (Wang et al., 2019). Other issues that were considered at the planning stage of the VPM program included keeping participants engaged to prevent attrition and the practicality of using virtual platforms (e.g., data security, ease of use).

Intervention Implementation

The VPM intervention was offered during the 2018-2019 academic year from September 2018 to May 2019. Program orientation took place prior to the start of the Fall semester where the purpose of the program, role expectations, and ethical considerations (e.g., privacy and confidentiality) were reinforced. Mentors and mentees also had the opportunity to discuss their expectations of the mentoring relationship and determine their preferred communication methods. Participants were advised to maintain contact at least twice a month (Wong et al., 2016). To encourage participant engagement, the research team followed up with participants every two weeks via email. In the emails, the research team provided examples of topics that mentors and mentees could discuss as well as resources on mindful self-compassion, meditation, and stress management.

According to Lombardo and colleagues (2017), elements that facilitate the growth of the mentoring relationship and fit within dyads include background in education, personality, interests, career goals, role beliefs, preference for method of communication, and scheduling. As such, mentees provided the research team with their top three nursing interests such as intensive care unit, emergency, or mental health. Each mentee was then matched to a mentor employed in one of their top three choices. The research team believed that a pairing system, based on the above criteria, could facilitate meaningful interactions (Lombardo et al., 2017). Following the in-person orientation, the study intervention included a series of guided mentor–mentee discussions via mutually agreed upon virtual platform(s) identified from a list provided by investigators. The evaluation of the impact of the VPM intervention in terms of well-being, self-compassion, and professional development needs is published elsewhere (Wang et al., 2022).

Method

Design

A mixed-methods approach was employed to describe the acceptability, feasibility, and satisfaction associated with the VPM intervention from the mentors' and mentees' perspectives (Table 1). The employment of qualitative methods, in conjunction with quantitative methods, allowed for the unpacking of nuances and comprehensive disclosure of experiences. Ultimately, a mixed-methods approach enabled researchers to create a more complete narrative.

Feasibility includes the capacity to provide the intervention in the manner in which it was anticipated, the environment itself, and the degree to which the target population can partake in the intervention (Sidani & Braden, 2011). Acceptability denotes the perceptions of participants related to the intervention's convenience, practicality, and effectiveness (Sidani & Braden, 2011). Satisfaction refers to the extent to which the intervention met the participants' expectations.

Setting, Participants, and Sample Size

Students ($n=27$) entering their final year of a baccalaureate nursing program in Southern Ontario were recruited as mentee participants in August and September 2018. According to Connelly (2008), extant literature suggests that a pilot study sample should be 10% of the target population. Given that the target population is 200, the required sample size for mentees is 20. Additional participants were recruited to account for possible attrition, yielding a total of 23 mentees who completed the program. Individuals who had graduated from the same program ($n=14$) within the last five years were recruited as mentor participants via similar methods. Inclusion criteria were: a) Graduated from the program within 5 years; b) Has held a registered nurse (RN) license within one year of graduation and in good standing with the College of Nurses of Ontario; c) Has held part-time or full-time employment as staff RN for at least nine months. Participants were recruited via several methods: class announcements, email invitations, social media posts (e.g., alumni website), and word of mouth. The integrative review of peer mentorship programs for undergraduate nursing students conducted by Wong et al. (2016) found that most programs had a ratio of mentor-to-mentee ranging from 1:2 to 1:5. Thus, 14 mentors were recruited, eight of which completed the program. The ratio of mentor-to-mentee for this study ranged from 1:2 to 1:4.

Quantitative Data: Study Variables, Instruments, and Analysis

The quantitative methods assessed participant demographics, feasibility and acceptability of the intervention, and participants' satisfaction with their experiences. First, we developed a demographics form that captured relevant information (e.g., age group, ethnicity, relevant experience, and grade point average). We also developed the Feasibility Tracking Form to assess the feasibility and acceptability of the intervention. One item was used to assess reach (an indicator of feasibility), which tracked the number of participants who showed interest in participating in the program. The items assessing enrollment, attrition rates, and number of participants who completed the study were tracked to indicate adherence (an indicator of acceptability). Satisfaction with the mentoring relationship was measured using three instruments (Table 1). We employed the *Mentoring Functions Questionnaire* (MFQ-9) (Castro & Scandura, 2004) to measure mentor effectiveness and the *Munich Evaluation of Mentoring Questionnaire* (MEMeQ) (Schafer et al., 2015) to measure personal and content aspects of mentoring relationships. To measure participants' satisfaction with the workshop and VPM program in general, we used the *Client Satisfaction Questionnaire* (CSQ-8) (Larsen et al., 1979). After data screening and cleaning, descriptive statistics was used to characterize the demographic profile of participants as well as the responses to the study instruments using SPSS version 25 (IBM Corp, 2017). The total scale and subscale scores were computed as the mean across respective items for the following instruments: MFQ-9, MEMeQ-PAM, and CSQ-8.

Table 1
Description of Satisfaction Instruments

Instrument	Description
<i>Mentoring Functions Questionnaire</i> (MFQ-9)	<ul style="list-style-type: none"> ● Nine-item self-report measure ● Three mentoring functions (vocational support, psychosocial support, and role modelling) to measure mentor effectiveness ● Five-point Likert scale from strongly disagree (1) to strongly agree (5) (higher scores indicating more positive mentoring functions)
<i>Munich Evaluation of Mentoring Questionnaire</i> (MEMeQ)	<ul style="list-style-type: none"> ● Personal aspects of the mentoring relationships (PAM) ● Six-point Likert scale ranging from strongly disagree (0) to strongly agree (5)
	<ul style="list-style-type: none"> ● Content aspects of mentoring relationships (CAM) ● Section 1: Mentees can provide up to 7 areas of interest ● Section 2: Eight-point Likert scale from not important (1) to extremely important (7) to rate the importance of respective areas of interest for mentees ● Section 3: Eight-point Likert scale from very unsatisfied (-3) to very satisfied (3) to rate the satisfaction of the advice and support by mentors in the respective areas of interest
	<ul style="list-style-type: none"> ● Overall satisfaction ● Two open-ended questions ● Final rating of the overall satisfaction of the mentoring relationship from very unsatisfied (-3) to very satisfied (3)
<i>Client Satisfaction Questionnaire</i> (CSQ-8)	<ul style="list-style-type: none"> ● Eight-item self-report measure ● Four-point Likert scale (higher scores indicating more positive ratings of satisfaction)

Qualitative Data: Focus Groups, Interviews, and Analysis

Qualitative data was collected using an interview guide to explore participants' experiences with the VPM Program through focus groups, individual interviews or written responses depending on the availability and preferences of the participants. An one-hour focus group was conducted for four mentees and individual telephone interviews were conducted with four mentors. Nine mentees and one mentor opted to provide written feedback using the interview guide.

All interviews were audio-recorded and transcribed verbatim. Content analysis was used to identify major categories and patterns related to participants' perception of the intervention (Elo & Kyngäs, 2008). The transcripts were read by the research team to gain familiarity with the data (Wang et al., 2022). During subsequent readings, notes and headings were written and highlighted within the text until all aspects of the content are described (Elo & Kyngäs, 2008). The headings were then coded into categories and were eventually condensed into themes (Elo & Kyngäs, 2008). The research team met at each stage to review categories and themes collectively. Trustworthiness of data was ensured using several strategies to meet the criteria set by Lincoln and Guba (1985). Credibility was assured through investigator triangulation as members of the research team analyzed the data independently and met on several occasions for discussion. Any disagreements were discussed among the research team members until a consensus was reached. In order to promote dependability, a dense description of the research methods has been provided in this paper. Confirmability was assured by maintaining an audit trail of the decision-making processes that occurred in this study. Relevant quotes from participants are situated within rich descriptions of categories to ensure transferability.

Interview guide questions explored elements of feasibility and acceptability of the VPM program as an intervention (Table 2). Data from interviews and written responses complemented and supplemented the quantitative data to address the study objectives. Additionally, to explore participants' level of satisfaction with the mentoring relationship, the interviews gave participants the opportunity to describe characteristics that fostered or hindered the growing relationship. Qualitative comments were also provided by mentees in response to open-ended questions embedded within one of the quantitative measures (MEMeQ). While the surveys focused on the mentoring aspects of career and psychosocial support, the interviews allowed participants to deliver specific examples of ways in which their mentors assisted with a multitude of learning experiences.

Table 2
Interview Guide

Targeted Group	Question	Indicator
All	What did you like the most about the program? What aspects of the program were most helpful and in what way?	Acceptability <ul style="list-style-type: none"> • Appropriateness • Adherence • Convenience
All	What did you like the least about the program? What aspects of the program were least helpful and in what way?	Acceptability <ul style="list-style-type: none"> • Appropriateness • Adherence • Convenience
All	What challenges or barriers did you encounter in participating in the program? How did you manage these challenges (i.e., what strategies did you use, if any)?	Acceptability <ul style="list-style-type: none"> • Adherence
All	What helped or made it easy for you to participate in the program?	Acceptability <ul style="list-style-type: none"> • Convenience
Mentees	What did you like the most about the activities? What aspects of the activities were most helpful and in what way?	Acceptability <ul style="list-style-type: none"> • Appropriateness
Mentees	What did you like the least about the activities? What aspects of the activities were least helpful and in what way?	Acceptability <ul style="list-style-type: none"> • Appropriateness
Mentees	What aspects of the activities should be changed to make it more useful to students? How should these be changed?	Acceptability <ul style="list-style-type: none"> • Appropriateness
Mentees	Please describe if, and how, participating in the program and the mindful self-compassion activities has impacted your: Clinical practice (i.e., managing relationships with members of the healthcare team)	Acceptability <ul style="list-style-type: none"> • Effectiveness
Mentees	Please describe if, and how, participating in the program and the mindful self-compassion activities has impacted your: Academic demands (i.e., assignments)	Acceptability <ul style="list-style-type: none"> • Effectiveness
Mentees	Please describe if, and how, participating in the program and the mindful self-compassion activities has impacted your: Personal well-being (i.e., managing stress and anxiety)	Acceptability <ul style="list-style-type: none"> • Effectiveness
Mentors	What impact, if any, did being a mentor in this program have on your career or personal life?	Acceptability <ul style="list-style-type: none"> • Effectiveness
Mentors	What challenges or barriers did you encounter in participating in the program? How did you manage these challenges (i.e., what strategies did you use, if any)?	Feasibility <ul style="list-style-type: none"> • Context

Targeted Group	Question	Indicator
Mentees	What challenges or barriers did you encounter in participating in the intervention? How did you manage these challenges (i.e., what strategies did you use, if any)?	Feasibility <ul style="list-style-type: none"> • Context • Availability and quality of interventions • Material resources
All	What did you like most about the program? What aspects of the program were most helpful and in what way?	Feasibility <ul style="list-style-type: none"> • Context
All	What did you like least about the program? What aspects of the program were least helpful and in what way?	Feasibility <ul style="list-style-type: none"> • Context
Mentees	What characteristics of your mentor did you find most beneficial to the mentoring experience and in what way?	Feasibility <ul style="list-style-type: none"> • Availability and quality of interventions
Mentees	What characteristics of your mentor did you find least beneficial to the mentoring experience and in what way?	Feasibility <ul style="list-style-type: none"> • Availability and quality of interventions

Procedure

Following recruitment and informed consent, mentees were assigned to each mentorship group based on their stated nursing interests. Of note, researchers developed a mentoring relationship characteristic form that examined which technological platform was most preferred among participants and how many times mentors and mentees connected in a month (Table 5). The duration of intervention was nine months, with biweekly check-ins from the research team. Key study variables were assessed using previously validated instruments or qualitative methods at the end of the intervention, with the exception of CSQ-8 for the MSC workshop, which was administered immediately at the end of the orientation. All participants were assigned a study ID number.

Results

Quantitative Results

Demographics

The majority of mentees (91.3%) and mentors (100%) were between the ages of 18 and 34 years old and identified as female; 87.0% and 75.0% for mentees and mentors, respectively (Table 3). Most mentees' highest level of education was high school (69.6%) while some had other post-secondary education such as some college (8.7%) or a bachelor's degree (21.7%). Almost half of all mentees (47.8%) had clinical placements in hospitals; others had either long-term care (26.1%) or community care (4.3%) placements. Just under half of all mentees had limited relevant experience related to their placements (43.4%), while others had relevant skills training from prior courses (39.1%). Most mentors were currently working in or had experience working in a hospital setting (87.5%), particularly in acute care.

Table 3
Sociodemographic Characteristics of Participants

	Mentees (n=23)		Mentors (n=8)	
	Frequency	Percentage	Frequency	Percentage
Age				
18 to 24 years-old	18	78.3	3	37.5
25 to 34 years-old	3	13.0	5	62.5
35 to 44 years-old	2	8.7	0	0
Ethnicity				
Indigenous Peoples in Canada	0	0	0	0
East and Southeast Asian	7	30.4	5	62.5
South Asian	3	13.0	0	0
Persian	1	4.3	0	0
Black or African American	1	4.3	0	0
White	2	8.7	2	25.0
Other	9	39.1	1	12.5
Gender Identity				
Female	20	87.0	6	75.0
Male	1	4.3	2	25.0
Transgender female	1	4.3	0	0
Transgender male	0	0	0	0
Gender variant/Non-conforming	0	0	0	0
Not listed	0	0	0	0
Prefer not to answer	1	4.3	0	0
Highest Level of Education				
High school degree or equivalent	16	69.6	0	0
Some college, no degree	2	8.7	0	0
Bachelor's degree	5	21.7	7	87.5
Professional degree	0	0	0	0
Master's degree	0	0	1	12.5
Doctorate	0	0	0	0

	Mentees (n=23)		Mentors (n=8)	
	Frequency	Percentage	Frequency	Percentage
Placement/Work				
Hospital (Acute/Rehab)	11	47.8	7	87.5
Long Term Care	6	26.1	0	0
Community Care	1	4.3	0	0
Not released yet/Other	5	21.7	1	12.5
For Mentees Only				
Relevant Experience Related to Placement				
None. I have not practised or learnt what is expected of me at this placement.	4	17.4		
Learned in courses but never practised.	1	4.3		
Learned in courses with some lab practice.	5	21.7		
Learned in courses with both lab and practicum experience.	9	39.1		
I work (or have worked) in this setting prior to entering my program.	0	0		
Other/Not applicable	4	17.4		
Grade Point Average				
4.00 to 4.33 (A to A+)	6	26.1		
3.33 to 3.67 (B+ to A-)	12	52.2		
2.67 to 3.00 (B- to B)	5	21.7		
1.67 to 2.33 (C- to C+)	0	0		
0.67 to 1.33 (D- to D+)	0	0		

Almost half of all participants (41.9%) used a combination of technological platforms during the mentoring program, including Facebook, Skype, WhatsApp, email, and phone (Table 4). The other half used only one platform, either Facebook (45.2%) or email (12.9%). Most participants (67.8%) communicated with their mentee or mentor at least once or twice a month, whereas other participants had more frequent communication (29.0% and 3.2% for three to four times and four to five times respectively).

Table 4
Mentoring Relationship Characteristics (n= 31)

	Frequency	Percentage
Technological Platform Used Between Mentor and Mentee		
Facebook only	14	45.2
Facebook, Skype and email	1	3.2
Facebook and Whatsapp	2	6.5
Facebook and email	9	29.0
Facebook, email, and phone	1	3.2
Email only	4	12.9
Number of Times Mentees and Mentors Communicated in a Month		
1–2	21	67.8
3–4	9	29.0
4–5	1	3.2

Reach, Enrollment, Attrition, and Adherence

The Feasibility Tracking Form revealed 16 participants conveyed interest in being a mentor, with 14 enrolling and signing consent, and 38 participants expressed interest in becoming a mentee, with 27 enrolling and signing consent. Four mentees and 6 mentors dropped out either at the beginning or midway through the intervention due to unknown reasons. A total of 23 mentees and 8 mentors completed the study.

Satisfaction of Mentors' Function

The MFQ-9 mean value of the career development function, psychosocial support function, and role modeling function was 11.0 ($SD=3.5$), 9.2 ($SD=3.2$), and 11.2 ($SD=3.2$) out of 15, respectively (Table 5). The mean of the total mentoring functions score was 31.4 ($SD=8.7$) out of a possible total score of 45.

Satisfaction of the Mentor–Mentee Experience

For MEMeQ-PAM, the mean was 23.4 ($SD=6.0$) out of a possible maximum score of 30 (Table 6). Ranging from most to least satisfied based on the mean for the top five areas of interest, mentees found mentoring to be helpful in professional development ($M=1.88$, $SD=1.02$), the job hunting process ($M=1.83$, $SD=1.73$), assistance with clinical placement issues and nursing skills ($M=1.35$, $SD=1.77$), emotional support ($M=1.30$, $SD=1.55$), and

assistance with nursing program ($M=1.07$, $SD=2.14$). For overall satisfaction, the mean score was 1.17 ($SD=1.99$). These ratings ranged from -3 to 3.

Table 5
Descriptive Responses for Main Study Variables

MEASURE	CRONBACH'S ALPHA	POSSIBLE RANGE	MEAN	STANDARD DEVIATION (SD)	RANGE OF RESPONSES
Mentoring Functions: Career Support, Psychosocial Support, and Role Modeling Total Score ($n=23$)	0.94	9 – 45	31.4	8.7	9 – 45
Career Support		3 – 15	11.0	3.5	3 – 15
Psychosocial Support		3 – 15	9.2	3.2	3 – 15
Role Modeling		3 – 15	11.2	3.2	3 – 15
Satisfaction with Mentoring Relationship (MEMeQ; $n=23$)					
Personal Aspects of Mentoring Relationship (MEMeQ-PAM; $n=23$)	0.92	0 – 30	23.4	6.0	11 – 30
Satisfaction with Areas of Interest (Top 5 - from highest importance to lowest importance)					
Job Hunting Process (e.g., resume and cover letter help; interview preparation)		-3 – 3	1.83	1.73	-3 – 3
Assistance with Nursing Program (e.g., courses, assignments, student debt, and NCLEX-RN prep)		-3 – 3	1.07	2.14	-3 – 3
Assistance with Clinical Placement Issues and Nursing Skills		-3 – 3	1.35	1.77	-3 – 3
Professional Development		-3 – 3	1.88	1.02	0 – 3
Emotional Support		-3 – 3	1.30	1.55	-2 – 3
Overall Satisfaction		-3 – 3	1.17	1.99	-3 – 3
Satisfaction of VPM Program (CSQ-8; $n=31$)	0.97	8 – 32	24.9	6.7	10 – 32
Satisfaction of MSC Workshop (CSQ-8; $n=31$)	0.83	8 – 32	28.3	2.9	22 – 32

Note. Higher scores indicate a more positive rating of the construct.

Overall Satisfaction

The mean CSQ-8 score was 24.9 ($SD=6.7$) for the VPM program and 28.3 ($SD=2.9$) for the MSC Workshop, out of a possible maximum score of 32 (Table 6).

Qualitative Findings

Data analysis revealed three categories related to the acceptability, feasibility, and satisfaction of the intervention: (1) Medium of the intervention; (2) Format of the intervention; and (3) Mentoring relationship. The medium and format, nested under the category of ‘mode’ in Sidani’s intervention theory, are two key characteristics describing how an intervention is delivered. Medium refers to the means through which the intervention is delivered, and format refers to the specific technique used to provide the intervention (Sidani & Braden, 2011).

Medium of the Intervention

Mentors and mentees expressed satisfaction and appreciation for the virtual aspect of the VPM program as it was found to be helpful, easy to participate in, and non-intrusive. Participants highlighted the autonomy of the individual, where having the ability to choose the method of communication increased accessibility and convenience of the program. Both groups expressed approval for the accessibility of the program; having a technological means of communication allowed them to surpass spatial barriers and scheduling conflicts arising in face-to-face (FTF) mentoring. For instance, one mentor (#107) suggested that “The online [is] always convenient for me and did not interfere with my work schedule, while helping for a consistent method of reaching everyone.” Similarly, a mentee (#218) stated, “I really appreciated the fact that we got to control how we communicated with our mentors. It made the mentor relationship that much easier, because it was really personalized to our needs.”

Having provided all participants with the appropriate tools (e.g., orientation and training manual) to collaborate and develop their relationship organically, the research team was flexible regarding the number of times the mentor–mentee dyads should meet in person. However, many participants felt that some FTF contact would have been helpful for building relationships. Additionally, some mentor participants requested that the research team organize additional mandatory in-person meetings between mentor and mentee. For instance, Mentee #201 noted: “The program has no mandatory FTF meeting between mentor and mentee, which makes it harder to break the ice and build relationships.” Mentor #104 also suggested that mediated communication is “definitely more challenging to make a connection and establishing rapport.”

Format of the Intervention

Mentors expressed their appreciation for the training phase of the intervention, as they felt it made them better prepared for the mentoring process. Mentor #101, for example, expressed appreciation for the orientation: “It gave me a sense of what I would be expected to do, what the mentees would expect of me and I was able to be a resource for them.” Mentors believed that the resources they were given made them effective throughout the mentoring process.

To better facilitate ongoing dialogue between mentors and mentees, participants felt that more frequent reminders from the research team to follow-up with participants and prompt interactions with mentees would have been helpful. For instance, one mentor (#110) expressed a desire for more reminders: “I don’t know how often I should be contacting them [mentees].”

Mentee #215 similarly called for “a way to ensure that meetings are happening, and the mentees are meeting their needs.” Participants also desired encouragement as to when it was appropriate to contact each other.

Many mentors suggested reducing the number of mentees to mitigate potential burden. For example, Mentor #104 indicated that “It’s very difficult to have four people to always check in and talk to them all the time.” Mentors explained that much work is required during the mentoring process, and a high mentee-to-mentor ratio might hinder the richness of the mentor–mentee relationship. Mentors also proposed that connecting with other mentors to share ideas and resources would be beneficial. For instance, Mentor #107 stated, “I’d say that the lack of opportunities to connect with other VPM mentors was a bit of a gap in the program.” Mentors suggested the creation of a network amongst mentors so that they may seek support from each other to address gaps.

The Mentoring Relationship

Findings revealed that mentoring relationships were vital as they fostered personal and professional growth that enhanced well-being. First, both groups conveyed having positive experiences, with an emphasis on open communication, good will, and trusted support from mentors. Mentee #213, for instance, noted that “I could always rely on my mentor for solid advice and guidance in a timely manner.” Mentor #101 also described the positive communication in their mentoring relationship: “We kept communication lines open... if she wanted to continue talking... I’m available.”

Nevertheless, a common struggle among all participants was the difficulty in finding time and matching schedules between mentor and mentee. This challenge is clearly expressed in Mentee #212’s comment: “It was pretty difficult when I was really stressed out... I can’t message... she’s on vacation, I don’t want her to communicate when she’s on her off days. So, I had to rely on other informal mentors.” Mentees had to balance a full-time student schedule with clinical practice hours and personal lives, and mentors worked full-time as newly graduated RNs with many personal obligations. Having full schedules made it challenging for mentors and mentees to find mutual times of availability, and this potentially hindered the progression of the mentoring relationship.

A noteworthy component of the VPM intervention was the matching process between mentors and mentees, where matching was based on the stated nursing interests of the mentee and the mentor’s current area of work. Most mentors appreciated the matching process as it allowed for a quicker connection with each mentee based on mutual points of interest. For instance, Mentor #110 said that

“the match is pretty good... everybody has different interests, qualities. I think it worked out well for me that I got the people who were interested in certain settings and I had some knowledge on.”

A number of mentees thought that a match based on personality or characteristics should have been considered for relationship building. Mentee #215, for instance, emphasized the importance of personality: “It’s difficult for you to connect with someone with a very different personality... it kinda creates a barrier in your relationship with your mentor.” Some mentees emphasized the idea that an area of interest for an individual can change over time, while one’s personality is considered to be more stable. For example, Mentee #212 stated:

“Personality and behavioural compatibility are important because my area of interest changes.” Having a match based on one’s mentoring characteristics could facilitate the mentoring relationship in a constructive way.

Finally, differences in expectations arose within the mentor–mentee dyads regarding efforts and contributions to the mentoring relationship. For instance, mentors, like Mentor #104, spoke of a lack of motivation and initiative from mentees that made the mentoring process more challenging: “I want them to be taking initiative too and seek help too... I want them to come to me also.” On the other hand, mentees expressed frustration related to the lack of reciprocation from mentors. For example, Mentee #204 stated:

“I would have liked my mentor to take the initiative to contact me more often instead of waiting for me to contact her. I needed help but of course I wouldn’t seek it. That’s why I’m in this study. I would have liked it if she had contacted me when I was drowning by myself.”

Discussion

Evaluating the pilot VPM program using the concepts of feasibility, acceptability, and satisfaction provided insight into the implementation aspects of this intervention. Below is a summary of the specific findings that addressed indicators within these three concepts.

Feasibility

Participants expressed that the intervention was provided in the way it was anticipated, and the environment enabled participants to partake in the intervention. The program was primarily a virtual experience, where mentors and mentees had the flexibility to interact at will and decide when and how frequent their engagements would be. Through the indicators of *fidelity* and *context*, participants expressed their approval of the virtual delivery method of the intervention. The online social environment allowed both mentors and mentees to overcome limitations associated with FTF meetings. This was evident through the combination of technology platforms used, where the majority of participants communicated one to two times a month with their partner, and some even three to four times (Table 3).

Although virtual delivery of the intervention was favoured by busy mentees and working mentors, a significant number of participants asked for additional FTF time for relationship building. It is important to note that the research team gave participants the freedom to meet in person, and many mentor–mentee dyads reported having done so. Yet, many suggested mandatory or scheduled in-person meetings for future VPM interventions. Indeed, Allred and Sakowicz (2019) emphasized employing multiple methods of communication to foster a positive relationship. Our findings further reinforced the idea that despite the availability of communication technology, physical interactions were sought out, especially to generate a genuine connection. A mixed mentoring program with both virtual and in-person components could be applicable within the community of nursing education (Allred & Sakowicz, 2019).

Regarding the *availability and quality of the interventionists*, our data showed both strengths and limitations. The dyads assigned based on nursing career interests facilitated the development of the mentoring relationship. Specifically, such pairing criteria ensured mentors’ professional qualities were adequate to address the needs of mentees. However, some felt that personalities should be a part of the pairing considerations.

Additionally, mentors proposed a lower mentee-to-mentor ratio to increase support for each mentee. The ratio used in our study was within the recommended range, but there are other studies that used a lower ratio of 1:1 or 1:2. Those which had a low ratio were primarily in-house studies where an upper-year student mentored a first-year student (Demir et al., 2014). Lower ratios could prove challenging as researchers would then have to recruit more alumni mentors who were no longer affiliated with the university. In some cases, an incentive was provided to enhance participant accrual rate (Demir et al., 2014). Further investigations are needed to examine the impact of mentee-to-mentor ratio on VPM interventions.

Based on interview findings, accessibility and preparation of mentors were evident. The prevailing *material resources* built a foundation of communication and trust to facilitate the mentoring relationship. Yet, some participants conveyed the need for further preparation from the research team such as providing additional reminders to prompt mentor–mentee interactions. A mentor support system was also suggested, where mentors would connect and share ideas and resources to support mentorship endeavours.

The *training of mentors* (who are the interventionists) consisted of an orientation and a training manual. Mentors expressed appreciation for the organization, communication, and ample guidance provided through these resources. Having access to this information allowed mentors to be better prepared and more effective in their role.

Lastly, through the Feasibility Tracking Form, *reach* was assessed to track the number of participants who showed interest in participating in the program and ended up participating. A total of 38 participants expressed an interest in becoming a mentee, and 16 participants expressed an interest in becoming a mentor. Of those, 27 mentees and 14 mentors consented to participate. No comparison from the literature was available to gauge the extent of reach of our intervention (Wong et al., 2016).

Acceptability

Overall, findings suggested that the intervention was convenient, practical, and effective. The *appropriateness* of our intervention was demonstrated through moderately high scores in mentorship functions: The MFQ (31.4 out of 45), MEMeQ-PAM (23.4 out of 30), and MEMeQ-CAM reflected our mentors' fulfilled functions. The highest rating for the MEMeQ-PAM subscale inferred that the personal aspects of the mentoring relationship was the most helpful.

The virtual nature of the program allowed for *adherence* to the intervention. The Feasibility Tracking Form indicated that 85% of the mentees and 57% of the mentors who enrolled in the program completed the intervention. Information regarding attrition in mentorship programs was lacking (Wong et al., 2016) and thus no benchmark is possible. The literature suggests that mentors have demanding schedules and this combined with the many responsibilities of mentorship could contribute to the drop-out rate (Cheek et al., 2016). Despite a higher attrition rate for mentors, we were able to maintain the desired mentor-to-mentee ratio through our initial over-recruitment in anticipation of this issue.

The virtual delivery was deemed *convenient*, which is another indicator of acceptability. Participants had the liberty to choose the preferred form of communication. The medium of the intervention was perceived to be non-intrusive, as both mentors and mentees spoke of the ability of the virtual component to fit within their demanding schedules. Suggestions were made to enhance this aspect of feasibility: a) a decreased mentor-to-mentee ratio, and b) a mentor network.

The VPM program was perceived to be *effective*, as participants considered the intervention to be reasonable and suitable. The results of the content aspects of the mentoring relationships revealed moderate effectiveness in addressing the top five areas of interest that

final-year nursing students find most anxiety-producing. The results of the mentoring functions (31.4 out of 45) and the personal aspects of the mentoring relationships (23.4 out of 30) also demonstrate a moderate level of mentor effectiveness. The qualitative data suggests a strong mentor–mentee relationship is the foundation of effectiveness (Allred & Sakowicz, 2019). As mentioned in fidelity (under Feasibility), a lack of FTF interactions and scheduling conflicts created obstacles in relationship building. Furthermore, there existed differing expectations of who should initiate and facilitate communication in a mentor–mentee relationship. Together, these factors may have hindered the effectiveness of the mentoring process.

Satisfaction

Overall, the intervention met participants' expectations. Consistent with the literature, findings from our interviews revealed a strong sense of satisfaction with the medium of the intervention (Mollica & Mitchell, 2013). The results of the MEMeQ-CAM also revealed moderate satisfaction among mentees related to the top five areas that final-year nursing students found most anxiety-producing. These five areas were in line with the study by (Wang et al., 2019). The ensuing satisfaction (an average of 1.17 on a scale of -3 to 3) validated mentoring as an effective method of addressing final-year nursing students' needs.

Lastly, study data conveyed a slightly diverged view of satisfaction regarding the mentoring relationship. From study interviews, it was evident that mentor–mentee relationships were considered open and trusting. Similarly, through the MEMeQ-PAM rating (23.4 out of 30), a moderately high level of satisfaction with the mentoring relationship was noted. Yet, concerns were raised regarding scheduling conflicts, workload related to mentoring more than two mentees, and differences in expectations regarding efforts to initiate communication within the dyads.

Results of the CSQ-8 revealed an overall moderate level of satisfaction with both the VPM program (24.9 out of 32) and the MSC Workshop (28.3 out of 32), with the latter having slightly greater ratings. This is significant as their satisfaction with this component of the program is indicative of a need to improve current stress-targeted interventions.

Implications

The overall experience was perceived as positive by our participants. There were minor concerns about factors that underlie relationship building such as personality compatibility, number of in-person interactions, and expected contributions to the mentor–mentee relationship.

The aforementioned details about the VPM intervention should be considered by educators, mentee–mentor dyads, administrators, and researchers who are interested in adopting technology in mentorship. For instance, researchers could explore the ideal mentor-to-mentee ratio or the ideal balance between in-person and virtual interactions in future VPM programs. Educators and mentee–mentor dyads should anticipate that personality and expectations of contribution may affect the development of the mentor–mentee relationship. Administrators of nursing programs should support mentorship programs that utilize an online platform and involve alumni as mentors, by encouraging infrastructure that: a) supports virtual communication and b) strengthens the connection between alumni and their alma mater and involve those who are passionate about improving the quality of education and well-being of learners.

While the present study found this VPM intervention to be satisfactory, other areas of impact could be further explored, such as knowledge gains, behavioural changes, and long-term impact such as intention to stay in the profession as a result of effective coping strategies

(Sapri et al., 2022). To do so requires the use of a longitudinal, experimental study design, and robust measurement methods that ensure valid and reliable assessment of target outcomes.

Limitations

In this study, a small sample size was used from one university's nursing program, thus results may not be generalizable to students in all nursing programs. Also, outcome measures of feasibility and acceptability were not assessed by instruments specific to implementation outcomes because none were available at the time of study. One study proposed preliminary instruments for feasibility and acceptability, but predictive validity was not reported (Weiner et al., 2017).

Conclusions

The VPM intervention addressed an insufficiently researched area pertaining to mentoring final-year nursing students through the use of alumni as mentors. Findings from the current pilot study suggested reasonable levels of acceptability, feasibility, and satisfaction related to the study intervention. The virtual component of the study was considered convenient and appropriate, however future mentoring interventions could employ mixed modality of communication, such as combining a technological platform with regular in-person meetings. Moreover, the mentor–mentee relationships were highly valued by participants. Results also prompted the considerations of supportive infrastructure or resources for future VPM programs to further enhance relationship building within the dyads.

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