Stress, Resilience, and Student Nurses: Piloting a Mindfulness-based Intervention

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In Aotearoa New Zealand and internationally, nursing students report high levels of stress, which can have a detrimental effect on individual well-being and lead to low retention of student nurses. Given the global shortage of registered nurses, interventions to reduce stress and increase coping methods and resilience among student nurses are worth investigating. This pilot study used a mixed-methods approach to explore the experiences of first-year nursing students who participated in a mindfulness-based intervention. Ten participants engaged in a six-week course focusing on breathwork and progressive relaxation. Data was collected pre-intervention (n = 10; quantitative only) and post-intervention (n = 7; quantitative and qualitative). Results showed a decrease in perceived stress and an increase in resilience and mindfulness. Content analysis of qualitative data infers participants experienced positive impacts from taking part in the intervention and intended to continue practising mindfulness post-intervention. The findings support the value of further research into the use of mindfulness-based interventions as one way to reduce stress and increase resilience among first-year nursing students. Opportunities to strategically place interventions for student nurses to learn adaptive coping mechanisms within nursing degree curricula should be considered to increase well-being and inadvertently address workforce shortages.

KEYWORDS: mindfulness; mixed methods; nursing curricula; resilience; stress; student

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BACKGROUND

This pilot study aimed to investigate the feasibility of using a six-week mindfulness-based intervention to explore levels of stress and resilience among first-year student nurses (SNs). Internationally, undergraduate students' stress is rising (Baik et al., 2019). This is consistent with findings from Aotearoa New Zealand, whereby psychological distress has increased among 15- to 24-year-olds by 5% between 2011 and 2021 (McLiesh, 2022). Of those enrolled in undergraduate degrees, SNs' stress remains a cause for concern (Labrague, 2022; Ma et al., 2022). Stress has negative effects on SNs' mental health, wellness (Mendes et al., 2021), and quality of life (Labrague et al., 2018), and can lead to high drop-out rates (Chan et al., 2019; Slatyer et al., 2016).

Approximately 50% of the global health workforce comprises nurses, with the current

workforce shortfall reported as being 5.9 million nurses (World Health Organisation, 2020, 2021). This deficit is estimated to reach 13 million by 2030 if actions to sustain and retain nurses are not taken (Buchan et al., 2022). From a workforce perspective, chronic stress can lead to compassion fatigue and an increase in preventable errors resulting in unfavourable patient outcomes (Horner et al., 2014). Sick leave and time lost due to stress is also a burden of cost to the employers of registered nurses (RNs) (Bak et al., 2020).

Low levels of resilience are associated with poor stress-management skills (Chan et al., 2019; Huang et al., 2025; Kukkonen et al., 2016) and high drop-out rates (Slatyer et al., 2016). Subsequently, the drop-out rates of SNs reduce the number of new graduate nurses entering the workforce (Harris et al., 2014). Additionally, increased stress levels experienced by new graduate nurses moving into the RN role are impacting rates of new-graduate retention (Smythe & Carter, 2022). Addressing the problem of stress at an undergraduate level may have multiple benefits.

Traditionally, nursing education curricula are heavily laden with content (Baron, 2017), leaving little room for learning about self-care (Bak et al., 2020). Although some SNs employ help-seeking behaviours, others resort to maladaptive or unhealthy coping mechanisms (Bak et al., 2020; Chow et al., 2020; Stanton et al., 2021). Learning about healthy coping and stress-management skills could act as protective factors to counter this (He et al., 2018; van der Riet et al., 2018). Additionally, the acquisition of healthy coping skills may be transferable to clinical practice, benefitting themselves and the patients they care for through spreading knowledge about healthy lifestyle choices (Lehmann et al., 2014).

Whilst it is agreed that stress for SNs is an issue, there is inconsistency about how best to address the issue (Bamber & Kraenzle Schneider, 2016; Beddoe & Murphy, 2004; He et al., 2018; Karaca et al., 2019; Martin et al., 2022; Ortega et al., 2021; van der Riet et al., 2015). One possible reason is that there is inconclusive evidence regarding the most effective way to alleviate stress (Turner & McCarthy, 2017). Another is that for practice-based disciplines, such as nursing, it is impractical to eliminate specific sources of stress, for example clinical practice which is integral to a nursing degree (He et al., 2018; Yilmaz et al., 2022).

Lazarus and Folkman (1984) argued that if stressors cannot be reduced, interventions should aim to re-evaluate their meaning to develop effective coping strategies. Internationally, nurse educators have recognised that developing and enhancing learners' emotional growth is important for their success (Cleary et al., 2018; Schwind et al., 2017). SNs themselves report that incorporating education about relaxation techniques into curricula is beneficial (Bak et al., 2020).

SNs and stress

Stress can be defined as a state that arises when the internal or external demands on an individual exceed the individual's ability to cope or adapt to a situation (Lazarus & Folkman, 1984; Woolfolk & Lehrer, 2021). High levels of distress correlate negatively with overall well-being (Labrague et al., 2018) and can be detrimental to the motivation and engagement of some learners (Rudland et al., 2020). The issue of SNs' stress is complex, with many factors contributing, such as academic, financial, and interpersonal demands (Moore et al., 2021). Completing a nursing degree requires competence academically and clinically, often resulting in SNs juggling competing demands (Stanton et al., 2021; Torbjørnsen et al., 2021). Internationally, levels of depression, anxiety, and stress are reported to occur at moderate to severe levels among SNs (Leung, 2016; Ma et al., 2022). Undertaking a nursing degree during the COVID-19 pandemic appears to have further exacerbated levels of stress (Hamaideh et al., 2022; Labrague, 2022).

Despite the concepts of a healthy lifestyle and health promotion being included in nursing curricula content, the demands of completing

the degree may leave SNs with limited time to engage in self-care activities (Bryer et al., 2013). SNs can inadvertently engage in maladaptive rather than adaptive stress management (McCarthy et al., 2018), particularly if resilience levels are diminished (Van Hoek et al., 2019). The inability to cope and consistent exposure to stress often result in long-term ill effects for the SN (Liu et al., 2015). This includes developing mental health issues (Bakker et al., 2020; Stanton et al., 2021) and physical health issues (Gebhart et al., 2020). Academic-related stress is associated with the use and abuse of illicit substances, poor sleep, undesirable future employability prospects (Pascoe et al., 2020), and cardiovascular disease (Gebhart et al., 2020).

Resilience and coping with stress

Resilience can be described as an individual's ability to "bounce back" or recover from adversity (Babić et al., 2020; Smith et al., 2008). Carver (1998) notes resilience also includes the individual's ability to thrive after hardship, suggesting positive learning occurs during the "bouncing back" process. From a nursing perspective, resilience has been used by Stephens (2013) to mean "an individualized process of development that occurs through the use of personal protective factors to successfully navigate perceived stress and adversities. Cumulative successes lead to enhanced coping/adaptive abilities and wellbeing" (p. 130). The ability to cope is key to developing an individual's resilience (Babić et al., 2020; Huang et al., 2025; Moore et al., 2021; Smith et al., 2008).

Low levels of resilience are associated with poor stress-management skills (Chan et al., 2019; Huang et al., 2025; Kukkonen et al., 2016) and high rates of attrition (Slatyer et al., 2016). Investing in the development of skills to cope with stress also serves as a resilience-building protective factor (He et al., 2018). Cleary et al. (2018) propose including resilience-building activities within nursing curricula to assist SNs in dealing with stress, particularly during clinical practice. Resilience is critical for success during study to maintain good mental health (Kotera et al., 2021) and is positively associated with SN academic success (Van Hoek et al., 2019).

Resilience is also essential for managing the demands of being a RN (Chow et al., 2020; He et al., 2018). Becoming a RN is not merely about socialising SNs into the role. Rather, Benner et al. (2009) emphasise the need to focus on the multidimensional development of the RN. Improving protective measures to build resilience directly influences the formation of the SNs which, in turn, leads to resilient RNs (Thomas & Revell, 2016). Interestingly, stress seems to affect SN cohorts differently. Higher stress levels, and reduced levels of resilience, have been reported as occurring at higher rates amongst RNs who are considered part of Generation Z (people born between 1997 and 2012) (Ang et al., 2022; Sherman & Labat, 2021). Resilience is important in mitigating the negative effects of stress through engagement with stress-reducing behaviours (Van Hoek et al., 2019). Mindfulness practice is positively associated with developing resilience and coping with stress (Mitchell, 2021; Moore et al., 2021).

Mindfulness

Mindfulness-based activities are shown to reduce stress and anxiety (Bamber & Kraenzle Schneider, 2016) and support the clinical and academic success of SNs (Levett-Jones et al., 2015). However, further studies are required to ascertain the effectiveness of particular mindfulness-based interventions. Mindfulness can be described as an individual's ability, through mindfulness practices, to have thoughtful and reflective awareness of the holistic self in the present moment, compassionately and non-judgementally (Kabat-Zinn, 2015). Mindfulness practices include breathwork; body scan; and awareness of bodily sensations, emotions, and thoughts (van der Riet et al., 2015). Mindfulness is identified as having two main components. Firstly, self-regulated attention, which aligns with being in the present moment, and secondly, being oriented to experience, cognisant of an open, aware, and accepting mindset (Shapiro et al.,2006; Tran et al., 2013).

Interestingly, Walker and Mann (2016) suggest that in the context of nursing, "words such as 'non-judging', 'patience', 'trust', and 'acceptance' within mindfulness resonate strongly as these are fundamental components of the 'duty of care' nurses are expected to give to their patients" (p. 189). These aspects of mindfulness align with the theoretical underpinnings of holistic nursing practice (White, 2014).

Despite the stressful challenges associated with undergoing a nursing degree, it is identified as an opportunity for learning about stress and coping (van der Riet et al., 2015). Teaching SNs mindfulness skills during this period may decrease stress and increase the SNs' ability for self-care (Martin et al., 2022) before they embark on the professional journey of caring for others (van der Riet et al., 2015). Interventions to address stress must be timely; ideally, early on in the learning journey (Levett-Jones et al., 2015; Torbjørnsen et al., 2021).

There is a scarcity of research exploring effective strategies within nursing curricula to reduce SNs' stress (Beanlands et al., 2019; Torbjørnsen et al., 2021). Of the strategies that have been tried, there is limited evidence regarding the effectiveness of these strategies (Ortega et al., 2021; Turner & McCarthy, 2017). Mindfulness-based interventions, however, result in positive outcomes (McVeigh et al., 2021). To the best of the author's knowledge, no studies have explored stress, resilience, and mindfulness in first-year SNs undertaking a nursing degree in Aotearoa.

The present study

This pilot study aimed to answer the research question: Stress and resilience—what are the experiences of first-year student nurses who participate in a mindfulness-based intervention?

The study explored the experiences of first-year SNs at an Aotearoa polytechnic who participated in a six-week mindfulness-based intervention. The intervention consisted of weekly 30-minute sessions conducted by the researcher. SNs were introduced to the concept of mindfulness then guided through experiencing mindfulness practices themselves. Mindfulness practices frequently used in interventions, such as the Mindfulness-Based Stress Reduction programme (Kabat-Zinn, 2003), were used, including breathwork, progressive relaxation, and gratitude (Table 1). Each student received a researcher-developed booklet which outlined the focus for each week and enabled an intellectual understanding of the potential impacts of stress and mindfulness. The booklet included suggestions for homework aimed at cultivating mindfulness practices.

Table 1

Overview of the Mindfulness-based Intervention

Week	Teaching and learning focus
1	Overview of mindfulness Practise: breathwork, progressive relaxation
2	Stress and the stress response system, Practise: breathwork, progressive relaxation
3	Feelings, thoughts, and behaviours Practise: breathwork, progressive relaxation
4	Gratitude Practise: breathwork, progressive relaxation
5	Resilience Practise: breathwork, progressive relaxation
6	Work-life balance, awareness of the senses Practise: breathwork, progressive relaxation

METHODS

Study design and participants

This pilot study used an exploratory, quasi-experimental, pretest-posttest design using a mixed-methods approach. A flyer inviting participation in the study was sent to all SNs enrolled in the first year of a nursing degree. Those interested in participating received a comprehensive Participant Information Sheet detailing the study. Eleven participants were recruited using convenience sampling. Participants were SNs aged between 17 years and 50 years. All participants identified as female, were from diverse ethnic backgrounds, and could choose more than one ethnicity in the survey. Informed consent was obtained before any data collection. All 11 participants completed pre-intervention data, with one survey excluded due to being incomplete, leaving ten participants. Seven participants completed post-intervention data. Even though the experiences of Māori SNs are vital to explore (Asmar et al., 2015; Curtis et al., 2015; Merry et al., 2021), this study was limited by having only one Māori participant. Data relating to this participant has not been examined in isolation due to the risk of identifying participants.

Table 2

Demographic Characteristics of Participants

Variable	Response	n	%
Gender	Female	10	100
Commenced study	February	4	40
	July	6	60
Ethnicity	NZ European	6	60
	Asian	1	10
	Pacific Islander	2	20
	Māori	1	10
	Pākehā	1	10
	Other	1	10
Age	17–24	4	40
	25–34	3	30
	35–50	3	30

Data collection and instruments

Three previously validated scales were used to collect quantitative data both pre- and post-intervention: the Five Facet Mindfulness Questionnaire (Baer et al., 2006), the Perceived Stress Scale (Kamarck et al., 1983), and the Brief Resilience Scale (Smith et al., 2008). All data were collected anonymously via an online survey using Qualtrics XM software.

18-item Five Facet Mindfulness Questionnaire (FFMQ-18)

The FFMQ-18 is an 18-item scale abbreviated from Baer et al. (2006) that measures an individual's mindfulness using five subscales: Act with Awareness, Describe, Non-judge, Non-react, and Observe (Medvedev et al., 2018). The tool uses a five-point Likert scale response format ranging from 1 = "Never" to 5 = "Always True", contains nine reverse-scored items, and is designed to be used by a wide variety of individuals with mindfulness experience. In a previous study, psychometric testing using the Rasch model demonstrated high reliability and validity across all subscales (Medvedev et al., 2018). The subscales are small scales which make up the larger scale as a whole (the FFMQ-18). The FFMQ-18 was psychometrically tested using a scientific method in a previous study, which means it is a validated and reliable tool.

Perceived Stress Scale (PSS)

The PSS (Kamarck et al., 1983) is a 10-item scale that measures the degree to which an individual considers current events in their life to be stressful. The tool uses a five-point Likert scale response format ranging from 1 = "Never" to 5 = "Very Often" and contains four reverse-scored items. Previous testing found internal consistency to be Cronbach's $\alpha = 0.88$ (Medvedev et al., 2019).

Brief Resilience Scale (BRS)

The BRS (Smith et al., 2008) is a six-item scale that measures the individual's ability to "bounce back" and recover from stress. The tool uses a five-point Likert scale format ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree" and contains three-reverse-scored items. In a previous study, internal consistency was found to be Cronbach's $\alpha = 0.86$ (Kotera et al., 2021).

Qualitative and demographic data

Additional qualitative data were collected by adding six open-ended response questions to the post-intervention survey. The questions related to the SNs' experiences of stress and the mindfulness exercises during the six-week intervention. These included which, if any, exercises they found useful, whether they would continue to use any exercises shared during the mindfulness sessions, and if they had any recommendations for changes to the mindfulness intervention, should it be offered again. Demographic information about participants' age, gender, ethnicity, and intake cohort was also collected.

Data analysis

For the quantitative data, researchers used Microsoft Excel to calculate the difference between the pre- and post-intervention scale score means. Inferential statistical analysis and reliability testing were not deemed appropriate due to the small sample size (Bujang et al., 2018; de Winter, 2013; Dwivedi et al., 2017). Descriptive and summative content analysis methods were used to analyse qualitative data (Hsieh & Shannon, 2005; Lindgren et al., 2020; Sandelowski, 2000). Integration of qualitative and quantitative data in the final stage of data analysis allowed for overall conclusions to be drawn (Creamer, 2018). By comparing the differences in means for mindfulness, resilience, and stress, and then comparing those results with the qualitative self-report, the triangulation of data from two collection methods increases the validity of results.

Quality appraisal

The researcher-developed mindfulness-based intervention used in this study was evaluated and scored 26/26 using the Checklist to Improve Reporting of Group-based Behaviour-change Interventions (Borek et al., 2015). The robustness of the mixed-methods approach used in this study was evaluated using the Mixed Methods Evaluation Rubric (Creamer, 2018), resulting in a score of 12/12.

ETHICAL APPROVAL

Ethical approval to undertake the study was granted by the Human Research Ethics Committee at the University of Waikato, Aotearoa, approval number HREC (Health)2022#32, and the Research Committee at the research site.

FINDINGS

All six mindfulness-based sessions took place outside of timetabled classes but onsite at the education facility. Delivery days alternated to accommodate the SNs' timetabled classes. Attendance was variable for each session, ranging between 50% and 91% (N = 10). Descriptive statistics (Cohen et al., 2018) are summarised in Table 3, which reports the difference in means pre- and post-intervention. The mean scores for the participants' mindfulness and resilience both increased post-intervention while the participants' perceived stress decreased post-intervention. Thus, it appears from the quantitative data that the intervention generated positive effects for participants. However, although pre- and post-intervention difference in mean scores increased for mindfulness as a whole, pre- and post-intervention sub-scale scores indicate a marginal decrease in the post-intervention sub-scale score for the non-react facet (Table 4).

Table 3

Descriptive Statistics

Mean scores	Mindfulness	Stress	Resilience
Pre (n = 10)	3.24	2.72	2.97
Post (n = 7)	3.66	1.23	4.0
Difference in mean scores	+0.42	-1.49	+1.03

Table 4

Difference in Mean Scores for the FFMQ-18

Five Facet Mindfulness Questionnaire-18 (FFMQ-18) (Baer et al, 2006).					
Pre-mean score 3.24		Post-mean score 3.66		Difference in means +0.42	
Subscale facet	**Act with awareness**	**Describe**	**Non-judge**	**Non-react**	**Observe**
Description	Ability to be fully aware and attentive of the present activities one engaged in	Ability to verbally express their experiences	Capability of accepting and tolerating unpleasant thoughts and feelings without being judgemental about them	Awareness of internal stimuli such as feelings and thoughts without reacting to them impulsively	Ability to be observational of internal and external stimuli
Pre-mean score	2.96	3.08	2.7	2.8	3.53
Post-mean score	3.86	3.3	3.23	2.79	4.26
Difference in means	+0.9	+0.22	+0.53	-0.01	+0.73

The following sections present key findings developed from the content analysis of qualitative data, which complement the quantitative findings above. These sections discuss the use of mindfulness-based strategies, how participants perceived the value of mindfulness, and their intentions to use mindfulness in the future. Subscale facets of mindfulness (Baer et al., 2006) found in Table 4 are evident in some statements.

Use of mindfulness-based strategies

All seven participants reported using mindfulness exercises outside of the weekly scheduled sessions. The most practised exercise was breathing (n = 7), followed by gratitude (n = 6), and grounding (n = 4). Participants reported using mindfulness to help them manage their studies and exam preparation (n = 7), in their home life (n = 6), and in their paid work life (n = 4). When asked when they had used the mindfulness-based exercises, participants reported using strategies to help with sleep ("sleeping" [SN4] and "in bed" [SN6]) and upon waking ("when I wake up in the morning" [SN1]). One participant used grounding to manage feelings of panic ("Occasionally when feeling panicked" [SN7]). Participants' use of mindfulness expanded outside of themselves in the home, including ("with the children" [SN2]).

Participant statements indicate an increase in self-awareness of cognitive processes and physiological processes, which links to the observing facet ("Sometimes when I try to relax at home in the evenings my mind spirals, I've used breathing and gratitude to try and calm those feelings" [SN3]). Strategies were also used during participants' paid work life to help deal with challenging or complex situations, and to cope during busy times, which links to the non-react facet ("When work is busy, I take a few moments to breathe regathering myself or just taking a little break" [SN7]) and ("When I had to deal with a difficult situation" [SN1]).

Perception of the value of mindfulness

All seven participants reported a decrease in stress levels post-intervention, a finding evident in both qualitative and quantitative data. Participants identified feeling that they were able to recognise and manage their feelings, thoughts, and behaviours using strategies learned during the intervention. Qualitative statements indicated that they were more able to recognise moments when they were getting stressed or dysregulating and use strategies to regulate themselves, demonstrating the facets of awareness and non-judgement ("I have more understanding of how I can control my stress and feelings" [SN5]) and ("Now I am aware that its ok to loosen up and listen and appreciate the mind and the wandering it does but also learning how to reel the thinking and over-thinking in" [SN7]). Participants also talked about the value of using mindfulness to cope with life ("During a busy life it is important to use the skills we have been taught" [SN6]), to manage panic ("Brings me back to a calm state of mind" [SN2]), and to stay calm during exams ("breathing through exams and revision" [SN3]).

When asked for feedback about the intervention, participants identified that although beneficial, the timing and length of the sessions needed consideration, with comments like ("Maybe longer sessions, less rushed" [SN7]) and ("Having the course during the middle of the semester and not finish after classes finish for the semester" [SN4]). Participants also indicated mindfulness was useful when transitioning between different aspects of their day ("Sometimes when I try to relax at home in the evenings my mind spirals, I've used breathing and gratitude to try and calm those feelings" [SN3]).

Future intentions

All seven participants thought they would continue to use mindfulness post-intervention. When asked why, participants indicated it was because they developed feelings of calm and control ("it really helps me relax and feel grateful for everything I have" [SN1]). Participants also identified changes in thinking ("it's made me an overall calmer and more positive person" [SN3]) and ("…changed the way I think" [SN6]), and an increased ability to focus, demonstrating the acting with awareness facet ("helps me to be the best version of myself and complete tasks I need to do throughout the day" [SN4]).

A joint display of the quantitative and qualitative findings, as recommended by Guetterman et al. (2015) for mixed-methods research is reported in Table 5.

Table 5

Joint Display of Findings

Variable	Descriptive statistics		
Mindfulness	*Pre-score* 3.24	*Post-score* 3.66	*Difference in means* +0.42
Definition	"Moment-to-moment, non-judgmental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, as non-judgmentally, and as openheartedly as possible" (Kabat-Zinn, 2015, p.1481).		
Participant statements • I've learnt I'm quite hard on myself and sort of had the attitude of 'ohh get over it life goes on.' Where now I am aware that its ok to loosen up and listen and appreciate the mind and the wandering it does but also learning how to reel the thinking and over-thinking in (SN7) • Still early days but I'm learning to be in touch with myself more (SN7) • It's made me an overall calmer and more positive person (SN3)			
Variable	**Descriptive statistics**		
Resilience	*Pre-score* 2.97	*Post- score* 4.0	*Difference in means* +1.03
Definition	"Nursing student resilience is an individualized process of development that occurs through the use of personal protective factors to successfully navigate perceived stress and adversities. Cumulative successes lead to enhanced coping/adaptive abilities and well-being" (Stephens, 2013, p. 130).		
Participant statements • I have more understanding of how I can control my stress and feeling (SN5) • Because I am now more aware of my feelings and now have to tools to change them (SN2) • (Used mindfulness) When I had to deal with a difficult situation (SN1) • (Used mindfulness) When task doesn't go my way (SN4) • Helps me to be the best version of myself and complete tasks I need to do throughout the day (SN4)			
Variable	**Descriptive statistics**		
Stress	*Pre-score* 2.72	*Post-score* 1.23	*Difference in means* -1.49
Definition	The unique experience of a person when the perceived demands of their personal and social resources are exceeded (Lazarus & Folkman, 1984).		
Participant statements • Because I am now more aware of my feelings and now have to tools to change them (SN2) • I have more understanding of how I can control my stress and feelings (SN5) • When work is busy, I take a few moments to breathe regathering myself or just taking a little break (SN6) • Sometimes when I try to relax at home in the evenings my mind spirals, I've used breathing and gratitude to try and calm those feelings (SN3)			

DISCUSSION

The results of this exploratory mixed-methods quasi-experimental pilot study provide insight into the experiences of stress, resilience, and mindfulness among SNs who participated in a mindfulness-based intervention and the feasibility of a larger study. The data suggest that participants experienced a decrease in perceived stress and an increase in both mindfulness and resilience following their participation in the intervention. These findings are consistent with findings from similar international studies (Beddoe & Murphy, 2004; Lynch et al., 2011; Lynch et al., 2018; Ortega et al., 2021; Schwind et al., 2017; van der Riet et al., 2015) and suggest that mindfulness-based interventions have the ability to reduce the stress experienced by SNs (McVeigh et al., 2021; van der Riet et al., 2018). These results are significant because SNs experience substantial stress during their nursing degree education. Despite the limitation of the small number of participants, this study provides insight into one way stress could be reduced, and mindfulness and resilience increased, among first-year SNs.

The present research suggests that participants gained valuable and transferable skills during the intervention that were applicable to their study, home, and paid work lives post-intervention. Some participants also appeared to have developed an increased awareness of the self and their perceived stress. Becoming self-aware implies a cognitive process occurred (McCarthy et al., 2018), evident in some participants' qualitative statements. Language used suggests the participants are thinking about how and what they are thinking. This is notable because knowing oneself is essential to delivering compassionate nursing care (Landon-Campbell & Kenward, 2017).

Developing self-awareness through mindfulness-based interventions acknowledges the connection between mind and body, encouraging the SN to consider the patient holistically, with empathy and a better ability to be present with their patients (Marthiensen et al., 2019; Sanko et al., 2016; van der Riet et al., 2015). Further to this is evidence of the development of self-compassion and non-reactivity towards inner experiences for some participants. Previous studies have identified the mindfulness facet of non-reactivity as the strongest contributor to well-being (Roemer et al., 2020). On the other hand, the results of this study report only a small decrease post-intervention for the non-react facet.

One possible suggestion is that participants were experiencing a state of mindfulness during the intervention but were still developing their dispositional or trait mindfulness.Mindfulness occurs as either a state or a trait (Bamber & Kraenzle Schneider, 2016). State refers to an immediate awareness of the self-regulated state of mind following mindfulness practice (Tanay & Bernstein, 2013). Trait refers to an innate characteristic of being aware, in a non-reactive and non-judgemental way, in the present moment (Carpenter et al., 2019). Trait mindfulness is developed through the slow brain changes that occur from continuous mindfulness practice over time and is correlated with lower levels of perceived stress (Kiken et al., 2015). Both concepts are intertwined, as state mindfulness develops trait mindfulness through mindfulness practice (Bamber & Kraenzle Schneider, 2016). Trait mindfulness correlates positively with adaptive cognitive processes and emotional regulation, and negatively with perceived stress (Kingery et al., 2020).

Use of language also indicated an increase in coping through mindfulness, which suggests some participants were becoming aware of their inner selves and the physiological changes that occur when becoming dysregulated from feeling stressed. Emotional regulation is associated with mindfulness and stress (Hambour et al., 2018) as mindfulness-based interventions, in particular breathwork, can help people restore balance (Baer et al., 2006). This is an important finding because SNs who are self-aware and can identify dysregulation are more likely to be conscious of their abilities and limitations in clinical practice (van der Riet et al., 2015).

An interesting finding was that post-intervention stress levels for all seven participants decreased despite inconsistent attendance rates at the weekly sessions. Of note is that all participants attended the first two sessions. One explanation for the decrease may be that the participants referred to the intervention booklet that outlined each session, even when they had not attended the session. The homework in the booklet included exercises for daily mindfulness practice, such as breathwork and gratitude; however, the data collected did not allow for any certainty here and so this possibility warrants further investigation. Nevertheless, this finding suggests that engagement in face-to-face mindfulness-based interventions may not be the only effective mode of delivery. Spadaro and Hunker (2016) found that stress was significantly reduced in a group of SNs and RNs who participated in an asynchronous online mindfulness intervention. Likewise, Gherardi-Donato et al. (2023) report a decrease in stress among RNs who participated in an online mindfulness programme during the COVID-19 pandemic.

Another hypothesis for the decrease in stress levels is that some participants may have entered the study with an established level of dispositional mindfulness (Kingery et al., 2020). If participants already had some level of dispositional mindfulness, engaging in formal mindfulness practice through the intervention may have taught participants to further develop and engage with their existing dispositional mindfulness to reduce or cope with stress, despite inconsistent attendance at the sessions. Additional investigation is warranted with a larger participant sample to allow for further testing of this hypothesis.

The positive pre- and post-intervention difference in the mean resilience scores is also worthy of note, because improved resilience has been identified as a protective factor (Huang et al., 2025; Reyes et al., 2015; Thomas & Revell, 2016) associated with psychological well-being and being better equipped to deal with stressful situations (Smith & Yang, 2017). Resilience encourages perseverance and can buffer stress encountered during a nursing degree (Beauvais et al., 2014). This finding is significant because of the implications that increased resilience has for attrition and preparing the SN for the challenges of working as an RN. Resilience is essential for RN practice because of its positive associations with role satisfaction, retention, and patient outcomes (Grafton et al., 2010). Subsequently, nursing degree curricula may have a role in developing SNs' resilience, which could be achieved by incorporating mindfulness-based interventions into nursing curricula (Mitchell, 2021).

Participant feedback indicated that the weekly sessions needed to be longer in duration. Although standardised protocols for delivering mindfulness-based interventions specify 2.5 hours per week over eight weeks (Chin et al., 2019), these protocols may not be realistic for curriculum-based interventions. A previous study by Roemer et al. (2021) documented a decrease in perceived stress following low-dose mindfulness-based interventions (60 minutes once a week for four weeks). Howarth et al. (2019) conducted a systematic review that showed brief mindfulness-based interventions (at least 30 minutes a week for at least four weeks) had positive health-related outcomes across 79 studies. Similarly, a systematic review undertaken by Kriakous et al. (2021) reports positive outcomes from shorter programmes. The intervention in this study was delivered weekly for 30 minutes over six weeks. However, the literature suggests that 30 minutes may have been minimalistic, and that future iterations should consider longer weekly sessions.

An unexpected finding was that despite inconsistent attendance at the weekly sessions, all participants nonetheless reported a decrease in stress levels and the daily use of at least one mindfulness-based activity (breathwork) to regulate emotions. Breathwork is a relatively quick and simple intervention to teach that could be integrated into the beginning and end of Bachelor of Nursing tutorials (Schwind et al., 2017). Breathing exercises are reported as being a tool that many participants continue to practice past formal engagement in a mindfulness

intervention (Kearney & Simpson, 2020). This finding suggests that teaching breathwork during every session was found to be an easy skill to learn which was beneficial for all participants.

LIMITATIONS

The obvious limitation of this study was the small sample size and participant attrition, which impacts the generalisability and reliability of the results. Nevertheless, the positive outcomes for the participants who took part in this pilot mindfulness-based intervention suggest this is an intervention worthy of exploring with a larger participant group. Furthermore, valuable participant feedback was obtained from this initial pilot, which provides guidance for future iterations of the intervention.

IMPLICATIONS FOR PRACTICE

The increasing levels of stress experienced by SNs and the subsequent effects of this stress on well-being, patient care, and attrition rates call for a review of how SNs are supported toward success. Participants in this study reported using basic mindfulness-based techniques such as breathwork almost daily and could identify the benefits associated with using mindfulness-based practices in many facets of their lives. This researcher interpreted participants' intentions to continue mindfulness practices as a sign that they found the benefits valuable. Three recommendations are found below based on the findings of this pilot study:

1. Implementation of a large-scale study to gain further evidence: It is proposed that a larger scale study is undertaken to provide evidence regarding the integration of mindfulness-based interventions that reduce stress and increase resilience into nursing curricula. Undertaking a multi-site study across polytechnics offering a Bachelor of Nursing programme would increase the sample size, providing validity and reliability for the research.
2. Provision of standardised resources for mindfulness-based interventions: Developing standardised resources for use in mindfulness-based interventions in a larger scale study ensures an equitable and uniform approach to the intervention at all research sites. Included could be specific practices, guidelines, and protocols for the intervention.
3. Integration of mindfulness-based interventions into nursing curricula: Should a larger-scale study produce favourable results, the inclusion of mindfulness-based interventions in nursing curricula could be prioritised to support the mental health and well-being of SNs. By cultivating mindfulness practice in SNs, they will have learned a transferable skill for moving into the role of RN, subsequently creating a more resilient workforce, better equipped to cope with the demands of the job. This in turn would reduce new graduate attrition rates and increase effective patient outcomes.

CONCLUSION

This paper reported on the findings of a small pilot study exploring the experiences of first-year SNs during a six-week mindfulness-based intervention. SNs undertaking a nursing degree experience high stress levels, negatively impacting SNs' success, well-being, and resilience, and reducing the number of new graduates entering nursing practice. Subsequently, patient care outcomes may also be negatively impacted. Some sources of stress in nursing and nurse education cannot be moderated; therefore, it is crucial to develop SNs' ability to cope with stress. This study suggests that mindfulness-based interventions, particularly breathwork and progressive relaxation, increase mindfulness and resilience amongst SNs. Incorporating mindfulness-based interventions into nursing curricula has the potential to improve the mental health and well-being of nursing students and the patients they care for, ultimately benefiting the whole healthcare system. Such a favourable outcome supports the value of a larger scale study.

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CONFLICT OF INTEREST

The author is employed as a nursing lecturer at the institution where this intervention was conducted. This research was conducted independently and was not impacted by any institutional directives. Ethical approval to undertake this study was granted by the Human Research Ethics Committee at the University of Waikato and Western Institute of Technology at Taranaki, Te Pūkenga (WITT Te Pūkenga).

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