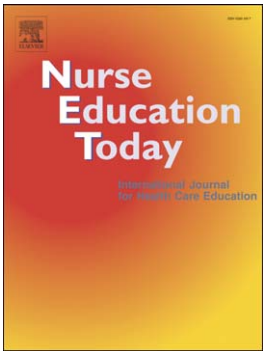
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TITLE PAGE

COPING WITH STRESSFUL EVENTS: A PRE-POST-TEST OF A PSYCHO-EDUCATIONAL INTERVENTION FOR UNDERGRADUATE NURSING AND MIDWIFERY STUDENTS

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Abstract:

Background: Knowledge of coping mechanisms are important for nursing and midwifery students to cope with stressful events during undergraduate education.

Objectives: To evaluate the impact of a psycho-educational intervention "Coping with Stressful Events" with first year undergraduate nursing and midwifery students

Design: A quasi-experimental, one-group pre-post-test.

Settings: One school of nursing/midwifery in one university in Ireland

Participants: A convenience sample of all first year undergraduate nursing and midwifery students (n=197). Of these 166 completed the pretest and 138 students completed the post test.

Methods: Using the COPE Inventory questionnaire (Carver et al., 1998) data was collected pre and post-delivery of the psycho-educational intervention "Coping with Stressful Events" by two research assistants. Data were analysed using the IBM SPSS Statistics version 22 (NY, USA)

Results: Results demonstrated improved coping skills by students. There were statistically significant differences between pre and postintervention for some coping subscales. For example, the mean subscale scores were lower post-intervention for restraint and mental disengagement, and higher for use of emotional and instrumental social support indicating improved coping strategies.

Keywords: Stress, coping, undergraduate students, nursing, midwifery, intervention

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Introduction

Nursing and midwifery are practice based professions and hence student nurses and midwives require in-depth theoretical knowledge and practical skills to achieve the competency levels required to practice as a registered nurse or midwife. The volume of academic and clinical requirements however, can sometimes result in students feeling overburdened and under pressure to cope either personally or professionally or both. These pressures may present in any one or more years of an undergraduate nursing programme however, first year students in particular can be exposed to an array of additional stressors some of which include; new study environments, new topics of study, volume of study, challenges of studying at third level and degree status and exposure to patients/clients in clinical environments. Many studies continue to highlight the need to include stress management and/or coping skills in undergraduate nursing and midwifery education (Gibbons, 2010, Jimenez et al. 2010, Reeve et al. 2013). Despite these recommendations a review of the literature highlighted a paucity of intervention studies conducted to assist undergraduate nursing and midwifery students with stress management and/or coping skills (McCarthy et al. 2017). The aim of this study therefore was, to evaluate the impact of a psycho-educational intervention "Coping with Stressful Events" with first year undergraduate nursing and midwifery students.

Background

Stress is a complex concept and generally falls into three categories; stress as a stimulus, stress as a response, and stress as an interaction (Bartlett, 1998). Despite its various definitions, a more common definition is that stress is "a physiological and/or psychological reaction to an event that is perceived to be threatening or taxing" (Riggio, 2015, p. 249). Stress is considered as a dynamic interaction between the individual and the environment, so in this instance between the student and the college/clinical area. In this interaction, demands,

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limitations and/or opportunities related to the student's performance may be perceived as threatening to surpass the student's resources and skills (Kohler et al. 2006).

Life transitions require major changes and learning the requirements of a new programme (nursing/midwifery) as well as navigating the demands of higher education and college life can put extra challenges/stressors on young adults (Sheu et al. 2002, Dyson and Renk, 2006). For many young adults this transition may be successful however, for others can present with great difficulties. Evidence suggests that those who struggle with adjusting to college life are at risk for depression, anxiety, physical health problems and negative health behaviours (Bell and Lee, 2006, Eisenberg et al. 2007, Pritchard et al. 2007, Lee and Gramotnev, 2007). Evidence also suggests that nursing students report higher academic and external stressors than students in medicine, dentistry pharmacy and physical therapy (Beck et al. 1997, Stecker, 2004). Some reasons proposed for this is that nursing students are more likely to have outside employment leading to less time for studying and more job and financial stress (Stecker, 2004).

Numerous studies highlight that the most prominent stressors for student nurses include; caring for patients (Chen and Hung, 2014, Bagcivan et al. 2015), difficult relationships with clinical colleagues and clinical educators (Wolf et al. 2015, Graham et al. 2016), exams, assignments and workloads (Reeve et al. 2013, Al-Zayyat and Al-Gamal, 2014) and financial problems (Galvin et al. 2015, Graham et al. 2016).

While a certain amount of stress can be motivating for students, high levels of stress or distress can lead to ill health (Buchanan and Huczynski, 2004). Some of the more common health problems identified include hypertension, heart disease and immune deficiency disorders (Lee and Gramotnev, 2007). Stress does not necessarily lead to distress, but how students cope or their ability to cope is important in determining the outcomes of the stressors (Seyedfatemi et al. 2007; Al-Zayyat and Al-Gamal, 2014).

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Coping refers to a variety of cognitive and behavioral strategies people use to manage their stress, and master, tolerate or reduce internal or external demands (Folkman and Moskowitz, 2004, Yi-frazier et al. 2010). It is a response to the circumstances of a stressor and its consequent emotions leading to an often used distinction between problem-focused (*dealing with the source of the stress*) and emotion focused coping (*handling thoughts and feelings associated with the stress*), (Lazarus and Folkman, 1984). Students use a variety of coping strategies to deal with stressful events depending on their circumstances. These can be categorised into individual coping behaviours or coping behaviours involving self in the context of others (McCarthy et al. 2017). Individual coping behaviours include problem solving, staying optimistic, engaging in exercise, listening to music, religious activities and positive thinking (Al-Zayyat and AL-Gamal, 2014, Bam et al. 2014, Zhao et al. 2015, Wolf et al. 2015, Graham et al. 2016). Those involving self in the context of others include seeking social support from family and friends, socialising with friends and developing cordial relationships with clinical colleagues during clinical placements (Reeve et al. 2013, Bam et al. 2014, Yesil et al. 2015, Wolf et al. 2015, Graham et al. 2016).

Knowledge of coping mechanisms are important for students. Gibbons, (2010) proposes that student coping should be developed through the psychology component of nursing programmes and/or stand-alone initiatives and include mechanisms that not only reduce distress but also increase “eustress” opportunities that may lead to positive outcomes. Many studies continue to highlight the need for further research to examine interventions and other stress management techniques for students to help them deal more effectively with stressful situations and avoid drawing on maladaptive strategies such as drugs or alcohol, separating self from others or avoiding stress, anxiety and depression (Jimenez et al. 2010, Galbraith and Brown, 2011, Reeve et al. 2013).

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A review of the literature highlighted a paucity of studies conducted on stress management interventions for undergraduate nursing/midwifery students (McCarthy et al. 2017). Interventions conducted showing some significant positive findings included coping programmes based on mindfulness meditation (Song and Linquist, 2015, van der Riet et al. 2015), building hardiness (Jameson, 2014), spiritual development (Hsiao et al. 2012) and exercise (Hsieh, 2011). Others such as individualised clinical support (Li et al. 2011) and changing belief systems (Kim et al. 2015) showed no significant findings. The aim of this study therefore was to evaluate the impact of the psycho-educational intervention "Coping with Stressful Events" with first year undergraduate nursing and midwifery students.

Theoretical Framework

The theoretical framework underpinning the current study is based on Lazarus and Folkman (1984) and Folkman and Lazarus (1980, 1985) Cognitive Model of Stress and Coping. Coping is a process that develops in response to an individual perceiving an environment or circumstance as stressful, one that is seen as threatening, or causing harm or loss to important goals for the individual. Coping plays a critical role in being able to withstand stress; coping strategies can be used to change the situation and/or manage the situation to decrease the threat or keep the symptoms controllable (Moos, 2002). Often intense negative emotions, which are stressful in themselves, are experienced alongside these appraisals, and a first step in coping is to de-escalate these emotions so that they will not block the adoption of other more helpful coping strategies. Two major theory-based functions of coping, proposed by Folkman and Lazarus (1980), are: problem-focused coping, which entails addressing the problem, and emotion-focused coping, which is aimed at ameliorating negative emotions related to the threat and/or demand. Carver et al. (1989) felt that this division was too simplistic and further subdivided problem focused and emotion-focused coping to include social support and avoidant coping.

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Methods

Research Design

A quasi-experimental, one-group pre-post-test design was used for this study. A quasi-experimental study is a type of evaluation which aims to determine whether a program or intervention has the intended effect on participants in a study (Polit and Beck, 2014).

Sample

Using a non-probability convenience sample, all first year undergraduate nursing and midwifery students (n=197) undertaking a communication/psychology module in one university in Ireland were invited to participate. Initially, students were informed about the study via email, followed by an information leaflet and invitation to participate in the study. Students were also informed that participation was voluntary and non-participation would not impede on their education or grades in any way.

Research Instrument

The coping behaviours of the participants were measured with the COPE Inventory Questionnaire (CIQ), Carver et al. 1989). The CIQ consists of fifteen four-item scales designed to measure four dimensions of coping (problem-focused, emotion-focused, social support and avoidant coping). Each item is rated on a 4-point Likert scale ranging from "Never" (1) to "Often" (4). For each student pre- and post-intervention items within each scale were summed to give a scale score, with possible scores ranging from 4 to 16 and higher scores representing higher frequency of coping strategies. A scale score was not calculated for a student if any items within the scale were missing. As suggested by Litman (2006) and Litman and Lunsford (2009), the COPE dimension "self-sufficient approach" (problem-focused and emotion-focused combined) was also investigated. For each student pre- and post-intervention, scale scores within each dimension were averaged to give a dimension score, with possible scores ranging from 4 to 16 and higher scores representing

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higher frequency of coping strategies. A dimension score was not calculated for a student if any scale scores within the dimension were missing. This version of the COPE inventory has been identified as a more definite dispositional measure (*i.e how people usually react to stress*) of individual differences than previous coping measures (Schwarzer and Schwarzer, 1996).

Data collection

A pre-test questionnaire was distributed and collected in November 2014 and post-test in February 2015 by two research assistants who were not involved in the delivery of the intervention. The first thirty minutes of a 2-hour lecture slot was allocated for the distribution and again for the collection of the questionnaire in order to avoid any pressure on students to participate in the study.

Data analysis

Data were analysed using the IBM SPSS Statistics version 22 (NY, USA). All tests were two-sided and a p-value <0.05 was considered to be statistically significant. Categorical data was described numerically using frequency (percentage) and continuous data using mean (standard deviation, SD). Differences between respondent characteristics pre- and post-intervention were investigated using the chi-squared test or Fisher's exact test in the case of small expected counts. The independent samples t-test was used to investigate differences in coping methods pre- and post-intervention.

Psycho-Educational Intervention

The researcher designed psycho-educational intervention "Coping with Stressful Events" was offered to all first year undergraduate nursing and midwifery students (n=197) as part of a required communication/psychology module. Students were undertaking either general, mental health, intellectual disability or children's and general (integrated) nursing, or

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midwifery. The overall aim of the psycho-educational intervention was to provide students with knowledge and understanding of stress and associated coping mechanisms.

The intervention was delivered over a four-month period from November 2014 to February 2015 and involved fourteen contact hours with students **(Table 1)**. Seven of the hours were delivered in semester one, prior to exams and students going on their first 2-week clinical placement. The next seven hours were delivered at the beginning of semester two, after exams and prior to a five-week clinical placement.

TABLE 1 HERE

Ethical considerations

The study was approved by the local Clinical Research Ethics Committee and the ethics committee of the university where students attend. Completion of the questionnaire was acknowledged as consent.

Results

Initially pre-intervention respondents included n=166 respondents' and n=139 post-intervention. Of those, one respondent (at post intervention) failed to answer 14 of the 60 items in the COPE inventory and was therefore excluded from the analysis. Finally, n=166 respondents pre- and n=138 respondents post-intervention were included in the analyses The majority of students were female, in the general branch of nursing and in the 17 to 19 age group. Students predominantly lived in shared accommodation followed closely by living in family of origin (Table 2). No significant differences were found in respondent characteristics pre and post-intervention ($p>0.05$ for all characteristic measured).

TABLE 2 HERE

The independent samples t-test was used to investigate differences in coping methods in male and female students' pre-intervention. The number of males in this study was very small and therefore unable to reach statistical significance. Due to the presence of outliers and skew in

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the distributions for some scales/dimensions, the non-parametric Mann-Whitney U test was also performed and the conclusions remained unchanged. Pre-intervention, a statistically significant difference was found between male and female students for religious coping (p=0.025) and focus on and venting of emotions (p=0.002), (Table 3). For both of these scales, the mean scores were higher for female students indicating that females had a higher frequency of using these coping methods. A statistically significant difference between male and female students was also found for the socially-supported dimension (p=0.015), with the mean score being higher for females. After the removal of an outlier, a statistically significant difference was found between male and female students regarding the humour scale (p=0.039). The mean scale score was higher for male students M (SD):12.46(2.11) than female students M (SD): 10.63(3.10)) indicating that males had a higher frequency of using humour as a coping method (Table 3).

TABLE 3 HERE

One-way ANOVA was used to investigate differences in coping methods between age groups. Prior to performing the analysis, the 26-30 years category and >30 years category were combined into one group. Due to the presence of outliers and skew in the distributions for some scales/dimensions, the non-parametric Kruskal-Wallis test was also performed and the conclusions remained unchanged. A statistically significant difference was found pre-intervention between age groups for mental disengagement (p<0.001) and use of instrumental social support (p=0.047) scales. For mental disengagement the mean scale score was lowest for the >25 years age group. Post-hoc pairwise comparisons, using Tukey's HSD, indicated that the mean score for this age group was significantly different to the 17-19 age group (adjusted p<0.001) and the 20-25 age group (adjusted p<0.001). Regarding the use of instrumental social support, the mean scale scores increased as the age groups increased. Post-hoc pairwise comparisons using Tukey's HSD indicated that the mean score for the >25

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years age group was significantly different to the 17-19 age group only (adjusted p=0.036). The p-value for the socially-supported dimension (p=0.052) was also close to the cut-off of 0.05 for statistical significance. In a multiple linear regression analysis, with gender and age group included as independent variables and socially-supported dimension score as the dependent variable, gender (p=0.003) and age group (p=0.018) were both statistically significant. Females were more likely than males (regression coefficient (95% CI): 1.90(0.64 to 3.17)) and students aged >25 years were more likely than students aged 17-24 years (regression coefficient (95% CI): 1.35(0.28 to 2.42)) to use this coping method.

TABLE 4 HERE

Results demonstrate statistically significant differences between pre and post-intervention for some coping scales. For example, the mean scale scores were lower post-intervention for restraint (p=0.048), (*scale of emotion focussed coping*) and mental disengagement (p=0.036), (*scale of avoidant coping*), indicating improved coping strategies. In contrast, the mean scale scores were higher post-intervention for use of emotional social support (p=0.007), and instrumental social support (p<0.001), (*both part of socially supported coping*), also indicating improved coping strategies. Overall, a statistically significant difference between pre and post-intervention was found for the socially-supported dimension (p=0.016), with the mean dimension score higher post-intervention, indicating improved socially supportive coping overall (Table 5).

TABLE 5 HERE

To assess whether the effect of the intervention differed by gender or age group, a linear regression model was used. Time (pre/post), gender (male/female) and the interaction of time by group were included in the model. Of primary interest was the interaction term – if the p-value for the interaction term was significant (p<0.05) this showed that the effect of the intervention differed by gender. A linear regression analysis was run for each

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scale/dimension and a p-value> 0.05 for each interaction term was found. Hence, the effect of the intervention did not vary between male and female students.

Similarly, the same type of analysis was performed for age group as for gender. Time (pre/post), age group (17-19/20-25/>25 years) and the interaction of time by age group were included in the model. A linear regression analysis was run for each scale/dimension and a p-value> 0.05 for each interaction term was found. The effect of the intervention did not vary between age groups.

In summary, the effect of the intervention did not vary between male and female students or between age groups There were some differences however, when comparing the most frequent and least used coping strategies pre- and post-intervention (**Table 6).**

TABLE 6 HERE

Discussion

This study demonstrates that the psycho-educational intervention improved undergraduate nursing and midwifery students coping mechanisms as evidenced by statistically significant differences between pre and post-intervention within some scales.

Socially supported dimension

Overall students scored higher on the socially supported category post intervention, particularly in relation to use of emotional social support (*seeking sympathy from others*) and use of instrumental social support (*seeking advice from others*). This is to be welcomed as young people are known to engage in low levels of help seeking behaviour for stress and/or mental health related difficulties with males having even lower rates (Stecker, 2004, Turner et al. 2007). Evidence also suggests that young adults are more likely to seek informal support from a friend, family member, parent or peers rather than use formal support systems (Hope et al. 2005, Turner et al. 2007). In this study students over the age of 25 were more likely than students age 17 to 24 to seek instrumental social support evident both pre- and

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post intervention however, post intervention there were significant differences for both the over 25's and the 17-19 age groups in this dimension. This indicates that this intervention may have influenced both cohorts of undergraduate students to seek instrumental social support. As the majority of students in this study lived in shared accommodation or with family, perhaps this also helped students to cope as, talking with friends and family can help decrease stress (Reeve et al. 2013).

Avoidant coping dimension

In this study there was a decrease overall in the avoidant coping dimension. Whilst denial (*refusing to believe problem is real*) and behaviour disengagement (*Giving up trying to deal with the problem*) were lower post intervention indicating less use of some avoiding coping strategies however, there was a significant difference in one scale in particular, mental disengagement (*mentally distracting oneself from thinking about the problem)* which was lower post the intervention. This indicates that rather than completely avoiding a stressor, students were now more likely to confront the stressor. However, it must be acknowledged that when one is on such a programme of study there are deadlines to meet hence, students cannot mentally disengage as much as when not on a course or when having no assignments to complete. Avoidance orientated coping is considered as ineffective coping (Zeidner and Endler, 1996), and avoidant coping styles are more associated with personality characteristics and outcomes that are negative (Moos and Holahan, 2003).

Emotion focused coping dimension

Some studies have identified that emotion focused coping is more associated with exhaustion and anxiety (Jones and Johnston, 1997, Gibbons, 2010, Shikai et al. 2009). In this study there was a decrease overall, in emotion focussed coping with one scale in particular, restraint (*waiting for the right moment to act*), being statistically significant and lower post intervention. This may be due to the demands and or/busyness of clinical placement which

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may force students to act immediately rather than being able to restrain and wait for the right moment. The constant performance of skills under supervision in clinical placement (which is an external demand) may also interfere with a novice nurse/midwife's internal emotion focused coping strategy – that of waiting for the right moment to act in a situation. Because these students are first year and engaging in a very new and unknown role (situation/environment), they do not have the luxury to wait for the right moment, as they have so much to learn academically and clinically at such a fast pace. Pressure of work, fear of the unknown, failure or making mistakes and need to progress in such a short timeframe may influence students to act more promptly as time may not be on their side to go at a pace that is comfortable or suitable for them. Notably, one of the scales, positive reinterpretation and growth (*Reframing stressors in positive terms*) had increased. This suggests that students were either drawing on relaxation or mindfulness techniques as a positive reframing strategy or viewing stressors as challenges/opportunities to face rather than mere threats to their overall well-being. This is to be welcomed also as it helps students to progress and move out of feeling trapped.

Problem focused coping dimension

Problem focused coping is considered as an approach orientated style or positive coping style and consistent with lower levels of stress (Jones and Johnston, 1997, Gibbons, 2010, Shikai et al. 2009). In this study however, there was evidence of a decrease in problem focused coping overall, post intervention. This was not surprising as with a new course in a third level institution, the elements involved in problem focused coping may not yet be established. It must also be acknowledged that some stressors of the programme may be beyond the reach of problem focussed strategies. Nonetheless, their application may result in increased positive feelings of autonomy or reduction in stress/anxiety. For example, if a student is anxious about a clinical placement area, a problem focused strategy may be to read up on the particular area

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to determine the nature and type of speciality involved and consider what learning outcomes they may achieve. At this early stage of a nursing/midwifery programme some familiarity with a new situation and expectations of the programme must be established before a novice nurse/midwife can start a problem solving approach to coping by themselves**.** It must also be acknowledged that some students may have some previous college or other experiences in dealing with stressful events in the current study. Results for all three scales were reduced post intervention. Distinction between problem and emotion focussed coping is not always distinct (Litman, 2006). One of the reasons proposed for this overlap is that individuals may use both kinds of strategies depending on their unique and personal experiences (Tennen et al. 2000).

Gender and Age

The majority of students in this study were female and there were some significant differences pre-intervention between male and female coping strategies at the early stage of the nursing/midwifery programmes. Religious coping, venting of emotions and use of social support were higher for female students, whereas use of humour was higher for male students. Post intervention however, no significant differences were found between male and female students. This is to be welcomed indicating some positive effect on males as, males are frequently associated with using distraction, avoidance or disengagement coping strategies (Zimmer-Gembeck and Skinner, 2008).

In relation to age, findings in this study highlighted statistically significant differences pre-intervention for some coping strategies between age groups. For example, students over the age of 25 had lower scores for mental disengagement and instrumental social support than the 17-19 age group. This suggests that perhaps this age group (over 25) are more engaged and therefore may seek help and/or support more readily with problems or difficulties. Pre-intervention, females over 25 were also more likely to use socially supportive coping

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strategies than those in the 17-19 age brackets. However, no significant difference was found post intervention. Hence it can be deduced that age or gender did not impact on the effect of the intervention, suggesting that this intervention is suitable for all age groups and for both genders

Limitations

There are a number of limitations in this study that must be addressed. The study used a convenience sample of students undertaking a communication /psychology module in year one of an undergraduate nursing and midwifery programme in one university in Ireland therefore, the results may not be generalizable to other programmes or students in other third level institutions. This study used data collected from self-reported questionnaires, which rely on students' willingness to give honest answers. Comparing same student before and after would give more specific results. However, we did not link pre and post responses in this study. Another limitation was that the post–test had to be administered one month after the intervention. It was logistically impossible to re-administer it at three months as all students were on clinical placements in over one hundred clinical areas. Not having a control group was also a limitation but this was not feasible as all students were required to undertake the module. Despite these limitations this study contributes to the body of knowledge on stress and coping in undergraduate nursing and midwifery students.

Conclusions

This study found that a psycho-educational intervention had statistically significant effects on the coping strategies of undergraduate first year nursing and midwifery students, across all age groups and for both male and female students. This was particularly evident in the socially supported dimension whereby students were seeking advice and support from others. Another positive finding in this study is that avoidant coping was reduced indicating that students were now more likely to confront a stressor and try to deal with it. This was also

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evident by the increased score in reframing stressors in positive terms post intervention. Although there was a decrease in problem focussed coping, the authors contend that this could be addressed more in small focus groups in the future. Overall the authors conclude that this intervention has the potential to influence undergraduate nursing and midwifery students' coping skills during their first year of an undergraduate programme. Further research in this area is recommended and in particular a longitudinal study on coping with stressful events over the four years of an undergraduate nursing/midwifery programme.

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Table 1. Description of psycho-educational intervention

Topic	Intervention	Concept
Stress and the stress response	1. Psycho-education (PL & FSGT) 2. Video, instruction and practice of brief mindfulness exercise (FSGT)	Stress is a natural response and individual needs to able to regulate emotional and physiological arousal that arises in distress.
Coping strategies**,** implementation and review.	1. Psycho-education (PL & FSGT) 2. Explore, review and discuss coping strategies (PL & FSGT). 3. Identification & implementation of a coping strategy with on-going review and support (FSGT). 4. Reflective exercise: to review coping in a stressful clinical situation (RA)	Contextual approach taken to coping: to select appropriate outcomes and assess fit between coping and demands of a situation.

FSGT= Facilitated small group tutorials, PL= Psychology lecture, RA = Reflective assignment

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Table 2. Respondent characteristics pre- and post-intervention

	Pre-intervention (n=166)[1]	Post-intervention (n=138)[1]	
	n (%)	n (%)	p-value[2]
Branch of Nursing/Midwifery			0.924
General	104 (62.7)	88 (63.8)	
Intellectual Disability	18 (10.8)	11 (8.0)	
Children's Integrated	17 (10.2)	14 (10.1)	
Psychiatric	16 (9.6)	16 (11.6)	
Midwifery	11 (6.6)	9 (6.5)	
Gender[3]			0.840
Female	150 (91.5)	122 (90.4)	
Male	14 (8.5)	13 (9.6)	
Age group			0.766
17-19 years	115 (69.3)	91 (65.9)	
20-25 years	26 (15.7)	20 (14.5)	
26-30 years	14 (8.4)	16 (11.6)	
>30 years	11 (6.6)	11 (8.0)	
Living arrangements			0.959[4]
Living alone	3 (1.8)	2 (1.4)	
Living with significant other/partner	17 (10.2)	11 (8.0)	
Living with family of origin	68 (41.0)	60 (43.5)	
Living in shared accommodation	75 (45.2)	62 (44.9)	
Other	3 (1.8)	3 (2.2)	

[1] Unless otherwise stated; [2] From chi-squared test unless otherwise stated; [3] N=166 pre- and n=138 post-intervention; [4] From Fisher's exact test

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Table 3. Comparison of coping subscales and dimensions between male and female students pre-intervention[1]

	Female		Male		Difference in means (female-male)[2]	
	n	mean (SD)	n	mean (SD)	(95% CI)	p-value[3]
Self-sufficient approach (Problem-focus)						
Planning	146	12.71 (2.32)	13	12.15 (2.08)	0.56 (-0.76 to 1.87)	0.403
Active coping	146	12.16 (2.19)	14	12.00 (2.00)	0.16 (-1.04 to 1.37)	0.787
Suppression of competing activities	146	10.91 (2.08)	14	10.71 (2.30)	0.20 (-0.97 to 1.36)	0.739
Overall	142	11.93 (1.84)	13	11.79 (1.72)	0.14 (-0.91 to 1.19)	0.797
Self-sufficient approach (Emotion-focus)						
Restraint	147	11.42 (1.99)	14	10.86 (2.35)	0.56 (-0.56 to 1.68)	0.326
Positive reinterpretation and growth	149	13.40 (2.00)	14	12.50 (2.47)	0.90 (-0.23 to 2.03)	0.116
Acceptance	144	12.65 (2.01)	14	12.29 (2.09)	0.36 (-0.75 to 1.47)	0.524
Humor	145	10.63 (3.10)	14	12.00 (2.66)	-1.37 (-3.07 to 0.32)	0.112[4]
Religious coping	149	9.84 (4.18)	14	7.21 (3.56)	2.62 (0.34 to 4.91)	0.025
Overall	135	11.59 (1.66)	14	10.97 (1.21)	0.61 (-0.29 to 1.52)	0.181
Self-sufficient approach (Problem and Emotion-focus combined)	130	11.71 (1.42)	13	11.40 (1.16)	0.31 (-0.50 to 1.11)	0.455
Avoidant-coping						
Behavioral disengagement	149	8.42 (2.40)	14	9.07 (2.73)	-0.66 (-2.00 to 0.69)	0.336
Denial	147	8.01 (2.75)	13	6.69 (2.50)	1.32 (-0.24 to 2.88)	0.096
Substance use	149	6.49 (3.30)	14	7.86 (3.84)	-1.37 (-3.21 to 0.48)	0.146
Mental disengagement	149	12.07 (2.06)	14	11.64 (2.10)	0.43 (-0.71 to 1.57)	0.456
Overall	144	8.78 (1.77)	13	8.63 (1.72)	0.15 (-0.86 to 1.16)	0.775
Socially-supported						
Use of emotional social support	142	11.96 (3.13)	14	10.43 (3.39)	1.53 (-0.22 to 3.28)	0.086
Use of instrumental social support	149	12.23 (3.02)	14	11.57 (3.03)	0.66 (-1.01 to 2.33)	0.438
Focus on and venting of emotions	147	11.77 (2.67)	14	9.43 (2.62)	2.34 (0.87 to 3.82)	0.002
Overall	139	12.06 (2.27)	14	10.48 (2.51)	1.59 (0.32 to 2.86)	0.015

[1] Possible range of scores: 4 to 16 with higher score representing higher frequency of coping methods

[2] A positive value indicates higher frequency of coping in females compared to males

[3] From independent samples t-test

[4] After removal of one outlier p=0.039

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Table 4. Comparison of coping scales and dimensions between age groups pre-intervention[1]

	17-19 years		20-25 years		>25 years		
	n	mean (SD)	n	mean (SD)	n	mean (SD)	p-value[2]
Self-sufficient approach (Problem-focus)							
Planning	112	12.63 (2.32)	26	12.50 (2.63)	23	12.91 (1.76)	0.813
Active coping	112	12.03 (2.22)	26	12.19 (1.88)	24	12.67 (2.14)	0.419
Suppression of competing activities	114	10.90 (2.15)	26	10.62 (2.08)	22	11.23 (1.80)	0.602
Overall	109	11.89 (1.87)	26	11.77 (1.93)	22	12.24 (1.41)	0.638
Self-sufficient approach (Emotion-focus)							
Restraint	113	11.36 (2.01)	25	11.04 (2.21)	25	11.60 (1.87)	0.616
Positive reinterpretation and growth	115	13.31 (2.14)	26	13.15 (1.97)	24	13.46 (1.72)	0.872
Acceptance	112	12.62 (2.06)	25	12.12 (2.05)	23	13.09 (1.53)	0.247
Humor	112	10.68 (3.06)	25	10.16 (3.01)	24	11.63 (3.12)	0.323
Religious coping	115	10.01 (4.20)	25	8.28 (3.67)	25	8.68 (4.49)	0.094
Overall	107	11.58 (1.67)	22	10.98 (1.56)	22	11.64 (1.47)	0.270
Self-sufficient approach (Problem and Emotion-focus combined)	103	11.73 (1.43)	22	11.27 (1.52)	20	11.73 (1.06)	0.367
Avoidant-coping							
Behavioral disengagement	115	8.50 (2.24)	25	8.24 (2.83)	25	8.64 (2.84)	0.837
Denial	113	8.18 (2.76)	25	7.56 (2.95)	24	7.17 (2.37)	0.200
Substance use	115	6.68 (3.30)	26	6.04 (3.39)	23	6.96 (3.60)	0.594
Mental disengagement	115	12.37 (1.88)	26	12.27 (1.95)	24	10.13 (1.96)	<0.001[3]
Overall	113	8.94 (1.64)	24	8.43 (2.05)	21	8.31 (1.96)	0.182
Socially-supported							
Use of emotional social support	115	11.65 (3.36)	21	12.00 (2.59)	22	12.68 (2.50)	0.368
Use of instrumental social support	114	11.89 (3.17)	26	12.19 (2.40)	25	13.52 (2.43)	0.047[4]
Focus on and venting of emotions	114	11.44 (2.68)	25	11.96 (2.95)	24	11.92 (2.81)	0.566
Overall	113	11.67 (2.46)	20	12.50 (1.75)	22	12.82 (1.74)	0.052

[1] Possible range of scores: 4 to 16 with higher score representing higher frequency of coping methods

[2] From one-way ANOVA

[3] Pairwise comparisons revealed statistically significant differences between the >25 years group and both the 17-19 years and 20-25 years groups

[4] Pairwise comparisons revealed statistically significant differences between the >25 years group and the 17-19 years group

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Table 5. Comparison of coping subscales and dimensions pre- and post-intervention[1]

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	Pre-intervention		Post-intervention		Difference in means (post-pre)[2]	
	n	mean (SD)	n	mean (SD)	(95% CI)	p-value[3]
Self-sufficient approach (Problem-focus)						
Planning	161	12.65 (2.29)	135	12.53 (2.40)	-0.13 (-0.66 to 0.41)	0.645
Active coping	162	12.15 (2.16)	133	12.13 (2.25)	-0.02 (-0.53 to 0.49)	0.937
Suppression of competing activities	162	10.90 (2.09)	131	10.89 (1.77)	-0.01 (-0.46 to 0.44)	0.972
Overall	157	11.92 (1.82)	125	11.85 (1.82)	-0.07 (-0.50 to 0.36)	0.751
Self-sufficient approach (Emotion-focus)						
Restraint	163	11.35 (2.02)	137	10.90 (1.90)	-0.45 (-0.90 to 0.00)	0.048
Positive reinterpretation and growth	165	13.31 (2.05)	136	13.46 (1.97)	0.15 (-0.31 to 0.61)	0.529
Acceptance	160	12.61 (2.00)	136	12.32 (2.03)	-0.28 (-0.74 to 0.18)	0.229
Humor	161	10.74 (3.07)	135	11.00 (2.91)	0.26 (-0.43 to 0.95)	0.456
Religious coping	165	9.55 (4.21)	135	9.18 (3.98)	-0.37 (-1.31 to 0.57)	0.441
Overall	151	11.50 (1.63)	128	11.33 (1.48)	-0.17 (-0.54 to 0.20)	0.374
Self-sufficient approach (Problem and Emotion-focus combined)	145	11.66 (1.40)	116	11.55 (1.33)	-0.11 (-0.45 to 0.22)	0.504
Avoidant-coping						
Behavioral disengagement	165	8.48 (2.42)	134	8.22 (2.33)	-0.25 (-0.80 to 0.29)	0.358
Denial	162	7.93 (2.75)	136	7.67 (2.69)	-0.26 (-0.89 to 0.36)	0.407
Substance use	164	6.62 (3.35)	137	7.16 (3.34)	0.54 (-0.22 to 1.31)	0.161
Mental disengagement	165	12.02 (2.05)	137	11.53 (2.04)	-0.50 (-0.96 to -0.03)	0.036
Overall	158	8.78 (1.76)	131	8.67 (1.85)	-0.11 (-0.53 to 0.31)	0.610
Socially-supported						
Use of emotional social support	158	11.84 (3.17)	133	12.74 (2.22)	0.90 (0.25 to 1.54)	0.007
Use of instrumental social support	165	12.18 (3.00)	133	13.35 (2.15)	1.17 (0.56 to 1.78)	<0.001
Focus on and venting of emotions	163	11.59 (2.73)	137	11.58 (2.35)	-0.01 (-0.60 to 0.57)	0.967
Overall	155	11.94 (2.32)	129	12.53 (1.65)	0.59 (0.11 to 1.07)	0.016

[1] Possible range of scores: 1 to 16 with higher score representing higher frequency of coping methods
[2] A positive value indicates an increase in the frequency of coping methods from pre- to post-intervention
[3] From independent samples t-test

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Table 6. Most frequent coping strategies used pre- and post-intervention

Pre-intervention	Post-intervention
The five most frequent coping strategies used: • Positive reinterpretation and growth (*Reframing stressors in positive terms*) • Planning (*Creating a plan of activities*) • Acceptance (*Accepting the problem for what it is*) • Use of instrumental social support (*Seeking advice from others*) • Active coping ***The five least used:*** • Humour • Religious coping (*Using faith for support*) • Behavioural disengagement (*Giving up trying to deal with the problem*) • Denial (*Refusing to believe problem is real*) • Substance use	The five most frequent coping strategies used: • Positive reinterpretation and growth (*Reframing stressors in positive terms*) • Use of instrumental social support (*Seeking advice from others*) • Use of emotional social support (*Seeking sympathy from others*) • Planning (*Creating a plan of activities*) • Acceptance (*Accepting the problem for what it is*) ***The five least used*:** • Suppression of competing activities (*Focussing solely on the problem*) • Religious coping (*Using faith for support*) • Behavioural disengagement (*Giving up trying to deal with the problem*) • Denial (*Refusing to believe problem is real*) • Substance use

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Highlights:

- Coping strategies are essential to help students cope with stressful events
- Psycho-educational interventions have the potential to influence students to cope with stressful events
- More interventions need to be explored and examined to identify how best to help students cope with stressful events

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