Evaluation of Mental Effectiveness Training Pilot

Final Report for Guy's & St Thomas' Charity

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Executive summary

Background

Levels of stress amongst nurses are unacceptably high. Undergraduate student nurses also experience high levels of stress as they balance both clinical and academic work in their professional training. Interventions which enhance student nurses' resilience to stress may not only help them during their studies but may also help them to be more effective practitioners after qualifying. There is some evidence of the effectiveness of mindfulness based interventions, but little UK-based evidence. Mindapples, a London-based social enterprise, provides training on mental effectiveness for employees which could be adapted for use with student nurses.

Aims

This study aimed to evaluate the feasibility of adapting and delivering the Mindapples training programme to undergraduate student nurses; its effectiveness in improving their mental well-being, ability to self-manage their stress and knowledge about mental effectiveness; and their perspectives on its usefulness for their clinical and academic work.

Method

A waiting-list controlled trial design was used for the evaluation. 101 undergraduate nursing students were recruited from a London university and completed a baseline questionnaire, 57 in the intervention group and 44 in the intervention waiting-list control group. The Mindapples training was delivered in 8 weekly sessions to the intervention group, although some double sessions were required to complete it within the students' university time. Data on mental wellbeing, ability to self-manage stress and knowledge about mental effectiveness was gathered from both groups using self-completed questionnaires immediately prior to the training, on completion of the training and three months later. Additionally, two focus groups were held to explore students' perceptions of the usefulness of the training three months after it finished.

Results

Nursing students receiving the Mindapples training improved their ability to self-manage stress and increased their knowledge about their own minds in contrast to the control group. In this small sample, these improvements were statistically significant and maintained at three-month follow-up, and after differences between the intervention and control groups were considered. A statistically significant increase in mental wellbeing (positive mental health) was also found

for the intervention group post-training, though this difference did not persist at three-month follow-up. The focus groups revealed that the students had readily engaged with the Mindapples training and were prepared to make the voluntary commitment to come to the sessions, often overcoming several barriers to doing so. They also provided examples of how it had benefitted both their academic work and clinical training.

Discussion

This was a small pilot study which found that the Mindapples training had a moderate effect on students' ability to self-manage their stress and increase their knowledge of mental effectiveness. A larger study with random allocation to groups is required to confirm these findings.

Recommendations

1. This pilot study found that the Mindapples training programme had a statistically significant effect on students' knowledge of mental effectiveness and their ability to self-manage stress. The size of the effect on these outcomes was moderate, but it is likely that the logistical difficulties in organising the training sessions may have contributed to an under-estimate of its true effect. This indicative evidence of effectiveness suggests that the Mindapples training may be beneficial for undergraduate nursing students and higher education institutions could consider using it on their programmes.
2. A larger study is required to more accurately estimate the effectiveness of the training and to evaluate if the training has a similar effect in other student groups.
3. The efficacy of the Mindapples training programme may be improved if it were delivered as part of the core curriculum of an undergraduate nursing programme, as there is evidence that increased attendance at training sessions is correlated with increased knowledge of mental effectiveness. However, this needs to be evaluated as part of a larger study.
4. The training should be scheduled in the first year of undergraduate nursing programmes to equip students with knowledge and skills in self-management of stress at the beginning of their professional careers. However, the outcomes of this need to be evaluated as part of a larger study and over a longer period of time.

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Contents

1 Background 5
1.1 Mindapples 5
1.2 Mental effectiveness training 6
1.3 Nursing students and stress 6
2 Aims 8
3 Method 9
3.1 Design 9
3.2 Sample 9
3.3 Outcome measures 11
3.4 Procedures 11
3.5 Mindapples programme 12
3.6 Analysis 13
3.7 Ethical approval 14
4 Results 15
4.1 Participant socio-demographic characteristics 15
4.2 Feasibility of delivering Mindapples training 15
4.3 Baseline comparisons 16
4.4 Outcome measures at follow-up 16
4.5 Process evaluation 19
4.5.1 Motivation to attend 20
4.5.2 Barriers to attending 21
4.5.3 Benefits of the Mindapples training 22
4.5.4 Impact on nursing practice 24
4.5.5 Impact on academic practice 25
4.5.6 Perceived changes on outcome measures 25
4.5.7 Suggested improvements to the Mindapples training 27
5 Discussion 29
5.1 Main findings 29
5.2 Study limitations 29
5.3 Recommendations 30
6 References 32

1 Background

1.1 Mindapples

Mindapples closely follows an entrepreneurial model of a social enterprise. It was created by an energetic and entrepreneurial individual and it has a strong social aspect to its mission, which is codified in its memorandum and articles and non-profit status. It could be regarded as a training organisation and grouped with other organisations which provide short vocationally orientated programmes, although it has also consistently worked in and received funding from the healthcare and public health sectors. It is a small organisation compared to others which operate in this area. It does not own or lease its own training premises as would a number of such organisations.

The nature of the programmes which it delivers distinguishes Mindapples from most other social enterprises involved in training. It does not engage in education or training delivering programmes in which the curriculum and assessment is externally set by, for example, a National Skills or Assessment Body. Rather, it has evolved its own model of training which has required a large amount of creative activity and primary research.

Unlike similar social enterprises, Mindapples did not seek or rely upon the typical sources of public sector funding to promote or develop programmes which aimed to respond to specific contractual requirements set by Government funding bodies. Instead, Mindapples has taken a far more challenging route to develop its own model of training and to compete in a highly commercial setting to establish the reputation and value of their product without relying upon external validating bodies or a nationally set curriculum.

In this respect, Mindapples has been demonstrably successful with a list of highly regarded clients. The two questions for the organisation now are: (1) is this commercial success matched by the efficacy of their interventions in clinical and/or educational terms; and (2) can these benefits be delivered at scale.

Bearing this in mind, Mindapples' training model has evolved in a structured form which enables delivery by appropriately qualified and experienced trainers who may be engaged as self-employed workers or as contractors as well as directly employed staff. This is critical for such a social enterprise in that it enables the organisation to grow beyond the time and energy limitations which inevitably constrain a founder. The next step was therefore to assess the efficacy of the training delivered by two trainers to determine whether the training shows promise for helping participants with their health, work and relationships.

1.2 Mental effectiveness training

The Mindapples training aims to teach psychological awareness, mental resilience and self-efficacy by enabling participants to understand the nature of their minds and mental health (by which is meant maintaining a healthy mind, not treatment of mental health conditions), and to develop effective coping mechanisms to deal with stress and make the most of their mental capabilities. Although currently focused upon workplace (or study orientated) contexts, the Mindapples model has a very broad application which could also readily be extended to contexts where people need to understand and manage mental and psychological stress, and perform well under pressure. Possible examples could include residents of long stay or custodial institutions, or people undertaking a carer role for a relative.

The Mindapples training consists of 8 sessions:

1. Love your mind
2. Master your moods
3. Get motivated
4. Handle pressure
5. Know yourself
6. Make smarter decisions
7. Influence people
8. Think creatively

Each session provides accessible insights from research about our minds. This is presented in a lively and engaging way by lively and engaged trainers. The presentation of research findings is supported by clear and eye-catching presentation materials and handouts which offer practical suggestions about how participants can better look after their minds and be more mentally productive. The sessions are interactive and involve discussion, activities and practical tasks so that participants remain engaged throughout. Takeaway messages are highlighted during and at the end of sessions which summarise the key points for participants. Additionally, some homework tasks are set for participants to complete between sessions, such as keeping a mood diary, daily tasks and small self-challenges, for example.

1.3 Nursing students and stress

Students entering higher education are facing increasing financial, workload and social pressures which impact negatively on their mental health, well-being and ability to study (Royal

College of Psychiatrists, 2011). International studies repeatedly find high levels of depression and anxiety amongst students (Bayram and Bilgel, 2008, Mackenzie et al., 2011) and health and social care students are not immune from these difficulties.

Students who appear more adept at managing their stress have fewer symptoms of depression (Sawatzky et al., 2012) and interventions to promote student mental health appear effective in supporting students to cope with stress or identifying mental health problems (Stein et al., 2012). Stress arising from both academic and clinical work is particularly prevalent among nursing students (Pulido-Martos et al., 2012). As high levels of stress can carry through to their later clinical practice post-qualification, it is important to find ways to support nursing students to self-manage stress and to build their resilience.

There is emerging evidence of effective interventions which alleviate stress, anxiety and depression in nursing students. In particular, mindfulness-based stress reduction programmes appear to work. For example, a randomised controlled trial in South Korea found that it reduces anxiety, depression and stress in nursing students (Song and Lindquist, 2015), and a Chinese trial found that it reduced anxiety and blood pressure in nursing students there (Chen et al., 2013). Additionally, in a pilot in Australia, undergraduate nursing students reported improved sleep, concentration and clarity of thought following a mindfulness-based stress reduction programme (Van der Riet et al., 2015). However, there is limited evidence from the UK about similar training for nursing students; although mindfulness is becoming increasingly popular, it is still not part of mainstream cultural practices in the UK.

The Mindapples training programme, though, may be more culturally appropriate for UK nursing students. It has the potential to make them more effective in their studies and emotionally resilient in the face of the demands placed upon them during their degree programme and subsequent professional career. However, to our knowledge, interventions which promote mental effectiveness or resilience amongst students, particularly nurses, have not been evaluated in UK higher education institutions.

2 Aims

This study aimed to evaluate a pilot of the Mindapples training programme adapted for undergraduate nursing students in a London university. In particular, the evaluation aimed to establish:

1. The feasibility of adapting the Mindapples training programme 'Your Mind: A User's Guide' and delivering it to undergraduate nursing students
2. The effectiveness of the programme in improving well-being, self-efficacy, resilience and knowledge about mental effectiveness of undergraduate nursing students
3. The perspectives of undergraduate nursing students on the usefulness of the training for their studies and future professional roles

3 Method

3.1 Design

We used a waiting-list controlled trial design for the evaluation. The strength of this design is the inclusion of a control group which allowed us to evaluate if any changes over time would have occurred naturally without the training. It also meant that all participants received the training, eventually. We had originally planned to recruit nursing students and randomise them into two groups, one to receive the training first (the intervention group) and the other to receive the training at the end of the study (the control group). This was partially achieved but due to the practical difficulties discussed below the design moved to a pragmatic trial which utilised student groups when they were available to pilot the training.

Data were collected by self-complete questionnaires at baseline (prior to the training commencing), at the end of the final training session and three months later. Paper questionnaires were used for most of the data collection, though a link to an online survey was emailed to students who were unable to complete a paper version.

Embedded within the trial was a qualitative process evaluation to explore students' experiences of the training. This consisted of focus groups with the intervention group three months following completion of the training programme. The focus groups explored students' experiences of the training and their perception of its impact on their ability to study.

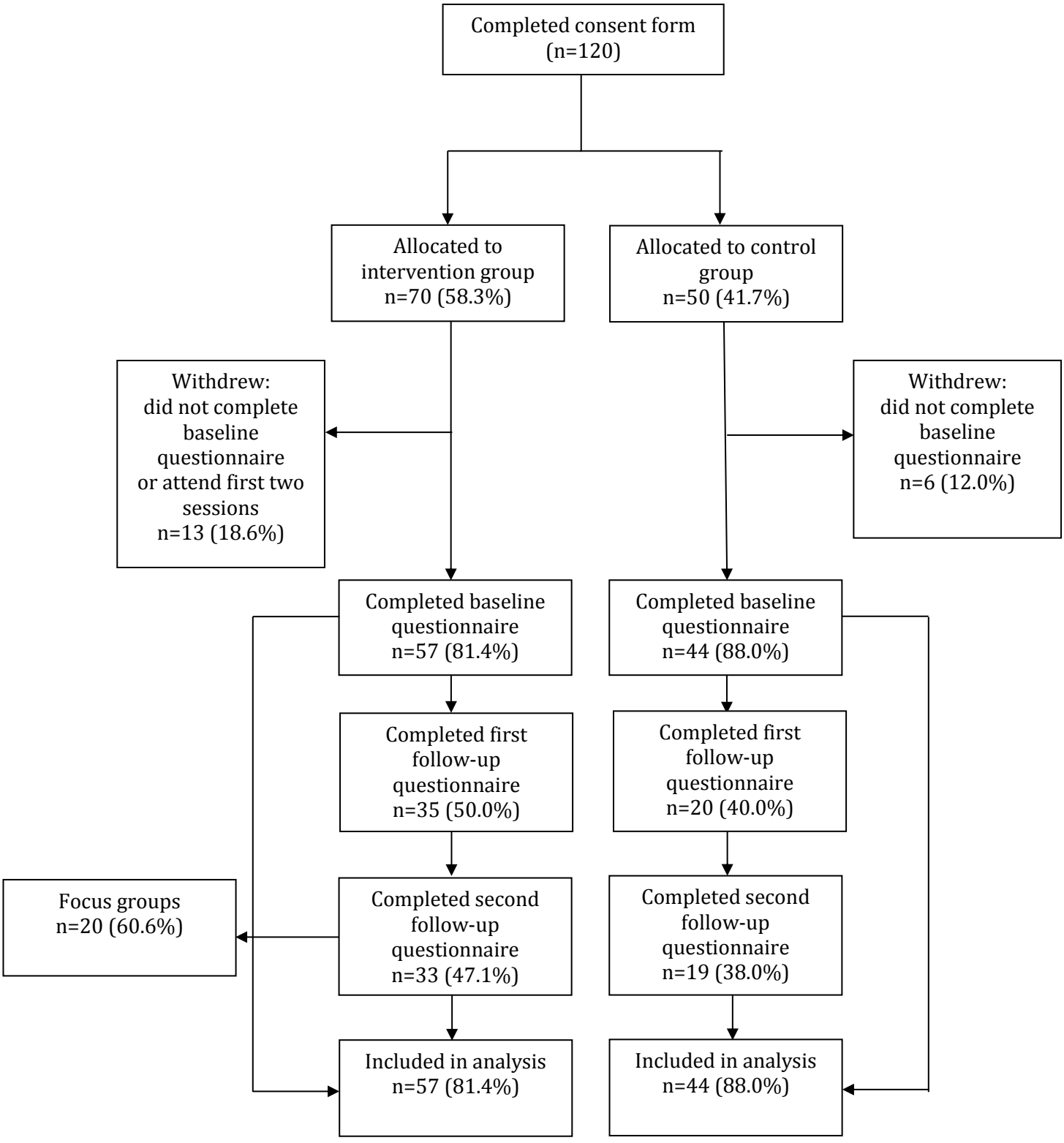
3.2 Sample

Undergraduate nursing students were recruited from a London university to participate in the study. To achieve full data on 30 students in each group, the minimum considered necessary to pilot an intervention (Lancaster et al., 2004), we aimed to recruit 50 students for each of the intervention and control groups to allow for a 20% drop-out. This target was achieved with a total of 120 nursing students completing consent forms to participate in the study. Of these, 101 students completed at least one questionnaire, with 57 in the intervention group and 44 in the control group. The flow of participants through the study is shown in figure 1.

The recruitment of the sample was informed by practical considerations. Nursing students were taught in different cohorts, with those learning adult nursing being part of a large cohort and those focusing on children's nursing being part of a much smaller cohort. The students were not in the university for traditional university terms but rather engaged in six-seven week teaching blocks. The programmes also ran on two sites, one at the main campus and the other at a small campus an hour away. Therefore, it was decided to invite students on the

adult nursing courses at both sites to participate in the study during one of their teaching blocks at university.

Figure 1. Flow of participants through the trial



One of the project investigators led the recruitment of participants as he was based in the university, albeit in a different department. He liaised with academic staff to arrange visits to nursing students at the end of their lectures to explain what the Mindapples programme involved and to invite students to participate in the study. This was supported by posters in teaching rooms advertising a presentation by Mindapples about the programme. This presentation had to be repeated as not all the students were present, partly due to the scheduling of their lectures.

3.3 Outcome measures

Three outcomes were of interest in this evaluation and were measured at before and after the training and at three months follow-up. Firstly, mental wellbeing was measured using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Stewart-Brown et al., 2011). This is a well validated outcome measure for use in the general population and is responsive to change (Maheswaran et al., 2012). The standard 14-item scale was used and participants could score between 14 and 70. The mean score for the general population in England is 52 (Health and Social Care Information Centre, 2014).

Secondly, students' ability to cope with stress was measured by a four-item self-efficacy and resilience scale (adapted from Sawatzky et al., 2012). This scale has been developed and used with student nurses. Scores on the measure range from 4 to 16, with higher scores representing greater stress management self-efficacy.

Thirdly, we measured students' knowledge of mental effectiveness through a 14-item multiple choice quiz. We based the questions on the course content to assess students' ability to understand and learn about their minds. Higher scores (range 0 to 14) represent greater knowledge of mental effectiveness.

3.4 Procedures

The nursing students were provided with information about the study and asked to sign a consent form if they chose to participate. The students were allocated to the intervention or control group on the basis of when it was feasible to deliver the training to fit with their university teaching block. Random allocation was not possible as there were not two teaching blocks within each cohort available to us to provide both the intervention group and control group with the training. Therefore, successive cohorts were recruited with one forming the intervention group and the other the control group.

Participants in the intervention group self-completed a questionnaire at baseline, prior to the first session of the Mindapples programme. This comprised a socio-demographic

schedule, the WEMWBS, the self-efficacy and resilience scale and the multiple choice quiz about mental effectiveness. Participants in the control group self-completed the same questionnaire at the same time.

At the end of the Mindapples programme, the intervention group self-completed a second questionnaire comprising the three outcome measures (WEMWBS; self-efficacy and resilience; knowledge of mental effectiveness). The control group self-completed the same questionnaire at the same time. Finally, both the intervention and control groups completed this same questionnaire again three months later to evaluate the enduring impact of the training. The number of students who completed each questionnaire decreased at each administration (figure 1). Each participant was issued with a unique identifier which they were asked to use on each questionnaire to enable us to measure change over time for each individual. Students were provided with a £5 Amazon voucher for completion of each questionnaire.

Focus groups for students in the intervention group were scheduled when the final questionnaire was due to be completed. Students completed this at the beginning of the group whilst waiting for it to start. The group discussion was largely directed by the experiences of the students, though the researchers asked about both the highlights and less useful aspects of the training; their overall experience of the Mindapples programme and what they felt they gained from it; and their thoughts on how it impacted on their ability to study and manage their stress whilst on placement. The interim findings of the evaluation were presented to the students to elicit their thoughts about how they resonated with their experiences. One group was held in each of the two sites, with 6 participants in one and 14 in the other. Focus group participants were self-selected and therefore most likely to be those who were the most positive about the training.

3.5 Mindapples programme

Mindapples adapted their training programme 'Your Mind: A User's Guide' for use with the undergraduate nursing students. The eight-session training programme is usually delivered in weekly sessions but had to be compressed to fit within the teaching block when the students were at university. This was achieved by holding some double sessions to ensure all the eight sessions were included within the six weeks available.

Finding a time and venue for the training proved complex. Some of the difficulties included understanding a highly complex timetable for the nursing students and negotiating with a large number of lecturers across two sites to establish convenient times for the sessions. We scheduled the Mindapples programme in the same room after a lecture to retain the greatest number of students. However, the nursing lectures were often taught in a number of different

rooms and they did not always conform to their published time slot. The local investigator ensured that the students knew when and where the Mindapples training programme was being held by maintaining close communication with them. University email and electronic course media had little effect, but mobile phone text messaging appeared effective in communicating with the students to remind them about the sessions. Mobile phone communication also worked in the other direction when course representatives alerted the local investigator that a lecture finished early enabling him and the Mindapples trainer to arrive early at the site before all the students had left. Without such communication it was doubtful if there would have been many students available at the time the session was scheduled.

Students who completed at least six of the eight sessions were provided with a certificate of completion. This served as an incentive for, and recognition of, their participation. They were also provided with meal vouchers for attending, as sometimes the Mindapples programme encroached on their lunch time. Accurate registers of attendance were therefore kept, with careful attention being paid to students who tried to 'sign in' absent colleagues.

3.6 Analysis

An intention-to-treat analysis was conducted of the 101 students who completed the baseline questionnaire. Outcome data were assessed according to which group students were allocated to, irrespective of how many sessions of the Mindapples programme the members of the intervention group attended. Students were not excluded from the analysis if they had missing data. Missing outcome data was imputed by utilising the last recorded value, assuming the null hypothesis of no difference occurring over time.

We used chi-squared tests and t-tests to evaluate the differences between the intervention and control groups at baseline, and paired t-tests to evaluate change over time on our three outcome measures from baseline to post-training and three-month follow-up. Repeated measures multivariate analysis of covariance (MANCOVA) was used to control for the potential confounding effect of baseline differences between the intervention and control groups.

The focus groups were audio recorded for analysis. Focus group data analysis was informed by grounded theory (Strauss and Corbin, 2008), but was both inductive and deductive as it was guided by both the participants and the researchers.

3.7 Ethical approval

Ethical approval for the study was obtained from the Department of Social Policy and Social Work Research Ethics Committee at the University of York, which was confirmed by the Research Ethics Committee at the participating London university.

4 Results

4.1 Participant socio-demographic characteristics

The socio-demographic characteristics of the sample can be found in table 1. Participants in the intervention group had a higher mean age than those in the control group (4.3 years (95%CI=0.9 to 7.8) and were more likely to be of non-White British ethnic origin (86.0% vs. 61.4%). Also, whilst the intervention group was recruited from both sites, the control group was only recruited in one. This is an important limitation of the study as it may have introduced a cohort effect , with the control group performing differently than the intervention group. This needs to be evaluated in larger study with a control group recruited from exactly the same population as the intervention group. However, there were no differences between the groups in terms of gender or living status.

Table 1. Participant socio-demographic characteristics

	Intervention group n=57 (%)	**Control group** n=44 (%)	**Test statistics**
Gender			χ^2=1.94, df=1, p=0.16
Female	51 (89.5)	35 (79.5)	
Male	6 (10.5)	9 (20.5)	
Age Mean (s.d.)	33.9 (8.1)	29.6 (9.1)	t=2.51, df=95, p=0.01
Ethnicity			χ^2=8.1, df=1, p=0.01
White British	8 (14.0)	17 (38.6)	
Other white ethnicity	2 (3.5)	3 (6.9)	
Black Caribbean	2 (3.5)	7 (15.9)	
Black African	31 (54.4)	11 (25.0)	
Other black ethnicity	2 (3.5)	0 (0)	
Indian	2 (3.5)	0 (0)	
Chinese	2 (3.5)	0 (0)	
Bangladeshi	0 (0)	1 (2.3)	
Other ethnicity	8 (14.0)	5 (11.3)	
Living status			χ^2=2.2, df=1, p=0.14
Single	30 (52.6)	29 (65.9)	
Married or cohabiting	27 (47.4)	14 (31.8)	
Site			χ^2 cannot be computed due to a lack of variability in the variable
Site 1	33 (57.9)	0 (0)	
Site 2	24 (42.1)	44 (100)	

4.2 Feasibility of delivering Mindapples training

The Mindapples team adapted the training, which they normally deliver to businesses, for undergraduate student nurses. The learning materials were sufficiently generic and transferable

to make this process reasonably straightforward. However, as discussed above (see section 3.3), there were practical challenges in delivering the programme to the student nurses because of the organisation of their degree programme. As the Mindapples team were external to the university, and as the research team were not based in the same department as the nurses, communication about dates, times and venues, and changes in the programme, were of utmost importance. However, the Mindapples training was optional for the student nurses and beyond their normal curriculum, so their attendance demonstrated their motivation to learn. It is likely that logistical problems would be eased if future programmes were designed into the university's schedule from the outset.

Students in the intervention group (n=57) attended a mean of 5.4 (s.d.=2.1) sessions. Almost a quarter of these students (n=13, 22.8%) attended all eight sessions, which demonstrated their continued commitment to this voluntary training programme in the face of other academic, work placement and family demands on their time. This also demonstrated that it was feasible to deliver the Mindapples training to undergraduate nursing students.

4.3 Baseline comparisons

At baseline there were no significant differences between the intervention and control groups on their mental wellbeing, ability to cope with stress and knowledge of mental effectiveness (table 2).

Table 2. Outcome measures at baseline

	Intervention group mean (s.d.)	**Control group** mean (s.d)	**Test statistics**
Mental wellbeing (WEMWBS)	51.1 (9.1)	50.2 (8.3)	t=0.49, df=98, p=0.62
Ability to cope with stress	12.4 (2.1)	12.4 (2.5)	t=0.10, df=98, p=0.92
Knowledge of mental effectiveness	6.4 (2.3)	7.3 (2.2)	t=1.84, df=98, p=0.07

4.4 Outcome measures at follow-up

At post-training, the intervention group had increased mental well-being (mean paired difference = 2.3 (95%CI=0.5 to 4.2)), an increased ability to cope with stress (mean paired difference = 0.9 (95%CI=0.4 to 1.4)) and increased knowledge of mental effectiveness (mean paired difference = 1.1 (95%CI=0.6 to 1.7)) (table 3). Improvements in students' knowledge of mental effectiveness post-training were correlated with attendance at more sessions of the

Mindapples training (r=0.32, p=0.02), suggesting that the sessions had a cumulative effect on their knowledge. The increased ability to cope with stress (mean paired difference = 0.9 (95%CI=0.3 to 1.5) and increased knowledge of mental effectiveness (mean paired difference = 0.9 (95%CI=0.3 to 1.5) of the intervention group was sustained at three months follow-up. In contrast, there were no changes in the control group on the three outcome measures over time (table 3).

Table 3. Change in outcome measures over time

	Baseline mean (s.d.)	**Post-training** mean (s.d)	**Follow-up at 3 months** mean (s.d.)
Intervention group			
Mental wellbeing (WEMWBS)	51.1 (9.1)	53.4 (10.4)*	53.1 (8.0)
Ability to cope with stress	12.4 (2.1)	13.3 (1.8)***	13.3 (2.0)**
Knowledge of mental effectiveness	6.4 (2.3)	7.5 (2.7)***	7.3 (2.5)**
Control group			
Mental wellbeing (WEMWBS)	50.2 (8.3)	50.9 (9.0)	49.3 (9.4)
Ability to cope with stress	12.4 (2.5)	12.9 (2.5)	12.2 (2.5)
Knowledge of mental effectiveness	7.3 (2.2)	7.3 (2.4)	6.9 (2.1)

Differences from baseline: *p<0.05, **p<0.01, ***p<0.001

Table 4. Interaction effects for intervention/control groups[1]

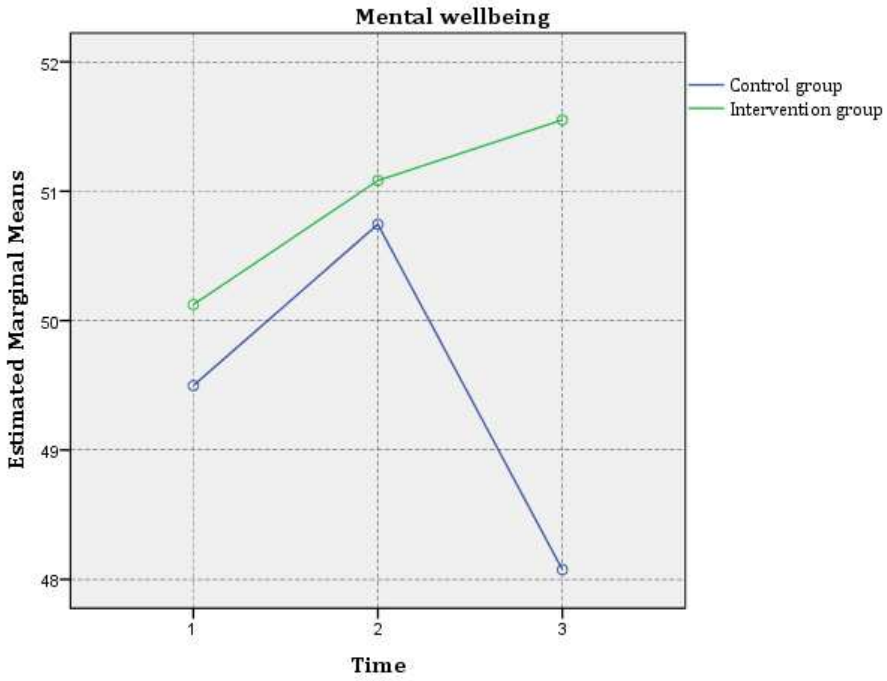
	Variables[2]	**df**	**Mean Square**	**F**	**p**	**Partial η^2**
Mental wellbeing (WEMWBS)	Time	1.72	1.16	0.01	0.99	<0.01
	Time x group	1.72	53.87	1.83	0.17	0.02
Ability to cope with stress	Time	2	0.17	0.10	0.90	<0.01
	Time x group	2	7.78	4.70	0.01	0.05
Knowledge of mental effectiveness	Time	1.53	0.48	0.25	0.72	<0.01
	Time x group	1.53	9.08	4.65	0.02	0.05

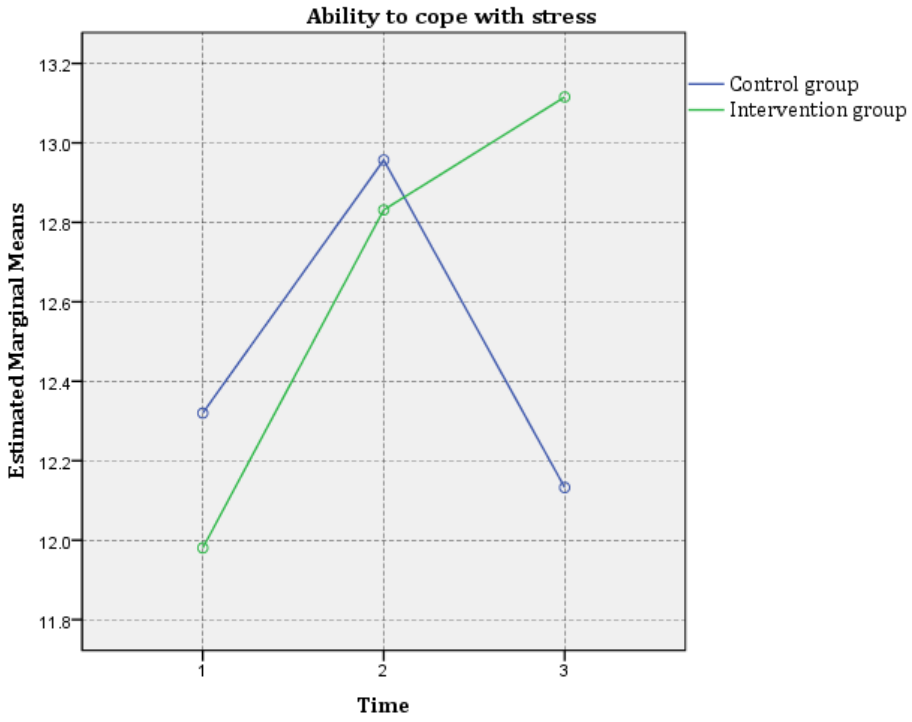
[1] Covariates entered into the model = group, age, ethnicity
[2] Interaction effects of covariates are omitted for brevity

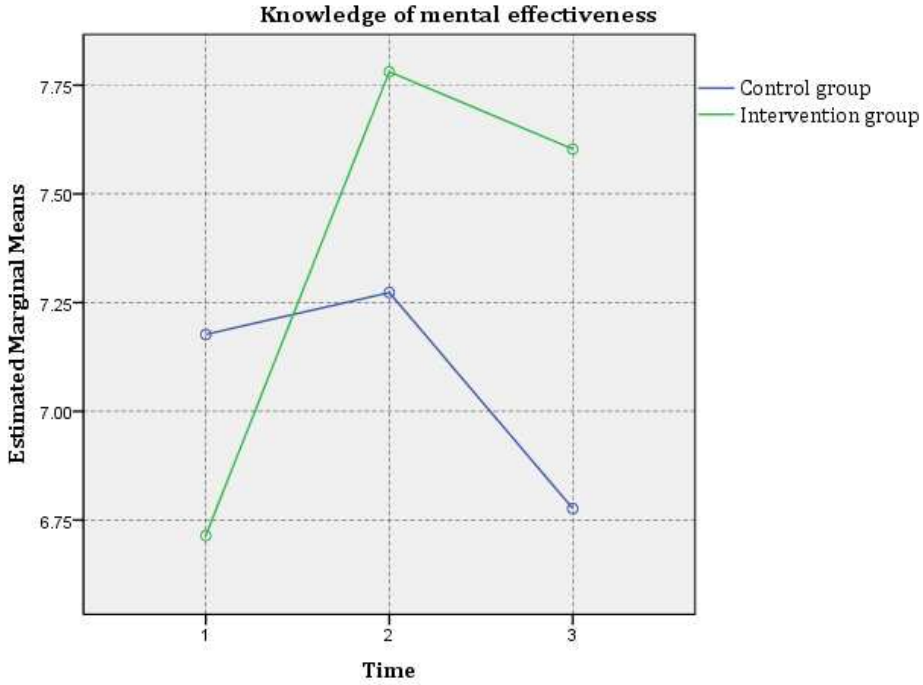
To control for the baseline differences between the groups in age and ethnicity, we undertook a repeated measures multivariate analysis of covariance. There were significant group by time interaction effects found for students' ability to cope with stress ($F(1,87)=4.70$, $p=0.01$, partial $\eta^2=0.05$) and their knowledge of mental effectiveness ($F(1,87)=4.65$, $p=0.02$, partial $\eta^2=0.05$) with moderate effect sizes (table 4). These findings indicate that improvements

in the intervention group over time could not be explained by baseline differences between the groups. There was also a non-statistically significant trend towards a group by time interaction for mental wellbeing (table 4). There were no significant interaction effects of age or ethnicity by time, though it is possible that as the intervention group, who were on average slightly older, may have had greater motivation to attend extra-curricular activities. Figure 2 illustrates the change over time by group of the three outcome variables, controlling for age and ethnicity.

Figure 2. Estimated marginal means of outcome measures over time







4.5 Process evaluation

The focus group data supported the positive findings of the quantitative data. The main themes to emerge from the analysis of this data are presented here.

4.5.1 Motivation to attend

The students talked about how the Mindapples training fitted in well with their final year. They were learning about research and were keen to be part of a study. They also saw the training as a learning opportunity to enhance nursing skills and enhance their readiness for practice:

> *"It was appealing when we were spoken to about it in the area that we were final years and would be going off to work soon – and to me it sounded like it would help to teach us people skills and personality types we would need to know in the workforce – and it did, it really did actually help"*

The training was identified as an opportunity to find ways to manage increasing stress levels in both personal and working life:

> *"We were going through quite a stressful time when we started and I think we wanted to know how we could cope better ourselves and I think that was one of the motivations"*

The students felt that the course was relevant to them and enabled them to make immediate changes in their lives, such as using strategies to manage stress or develop time management skills. The benefits of attending were apparent early on and this was a factor in maintaining motivation to attend:

> *"I was too engrossed, impetuous – taking on peoples cases too much… I needed to work on this aspect of my personality maybe, someone pointed out, and so that is why I took on the Mindapples course. I was going through the different things [in the training programme], like, I self-criticise all the time, I always evaluate my actions, what I'm doing and so I found it was a good programme for me"*

One participant noted that she had signed up and committed to the course and so not attending was never an option for her. Others mentioned that the practical arrangements made coming along easier such as the timing of the sessions being straight after lectures and usually in the same room. The length of each session (one hour) was identified as about right as concentration levels dipped after this and in addition to the teaching hours participants felt they did not have much more time to give to the training:

"On one occasion two lessons were put together 'cos of a bank holiday – it felt that the hour was enough, so put two hours together was a little bit too much, too much, after a full day of lectures"

Good communication from the Mindapples team was appreciated, such as text reminders, and also being given information about each session that explained things clearly. The meal vouchers and amazon vouchers were also identified as helping participants to attend.

4.5.2 Barriers to attending

Focus group participants were self-selected and likely to be those who were the highest attenders at the training sessions. However, they were able to provide some insights into why people either missed sessions or left before the end of the course. Some, for example, felt that they did not need the Mindapples training:

"People who are quite sure of themselves and they know what motivates them, know their personalities – because it was at quite a basic level – I thought that some people thought they knew it, that it was common sense"

It was thought that other students preferred to concentrate on university work as two essays were due in during the time the training course took place. Also, childcare prevented some from attending.

Focus group participants identified that what were barriers to some were incentives for them to attend. For example, the training was seen as a way to assist them in managing their university workload. One participant missed a long train journey on a pre-purchased ticket as she did not want to miss the session.

When asked if the training felt accessible to everyone the group acknowledged that it might have helped that they had some background knowledge:

"Maybe you have to think about the fact you know biology quite well, a little bit of psychology - maybe a lay person might find it a bit technical – they said in one of the lectures about how we as a group look at things differently to how others do – examples of how others look at things differently – describing the brain….we looked at it quite differently from other people, that was interesting to know"

4.5.3 Benefits of the Mindapples training

Focus group participants were very positive about the Mindapples training. One went as far to say:

> *"It's important to everyone – the world would be such a better place, it should be compulsory"*

There was strong agreement that one of the most helpful aspects of the training was how each session was relevant to them. They said that it helped them to understand that they were not alone in having high levels of stress and occasional difficulties in coping:

> *"I think that [learning about] the way your mind works and how I think sometimes isn't unique to me. It's well recognised and you cannot pigeon hole yourself, but you can see themes emerging and think, yes, I'm like that or like that. You can identify with what the Mindapples team was telling us, explaining to us about how the mind works, that was quite interesting and that's been quite interesting for this [nursing training] course as well"*

Group training was identified as a positive as this prompted discussion about different personality types and differing viewpoints:

> *"We all think differently so when we went through a questionnaire about what type of person you are, in groups we compared and contrasted, some similarities and some differences, which opened our eyes to show that we are all different"*

The two trainers were identified as a key factor in making the sessions enjoyable. They were described as:

> "*Interactive – they got us on board, explaining things to us, relating it to everyday life"*

The way in which the trainers delivered the sessions and the activities they used impacted on how participants felt during the sessions and how engaged they became:

> *"[The sessions were] friendly, nice, comfortable, you could talk openly about yourself and your experience, how it is, what it is"*

"The quizzes – they were revealing, and the presentations and contributions to sessions – they weren't so formal. It was relaxed, interactive, we could be true and say what we thought and not feel we were being judged or assessed – and able to recognise self, know what you are"

"You didn't get bored, they were gripping, it was interactive as well, asking our opinion, puzzles, mind games that kept you gripped – short and sweet, just enough, fitted in with day ok"

The participants clearly differentiated their experience of the training from their experiences of lectures on their course noting differences in their relationship with the trainers and also the presentation style which they felt kept them engaged. The group appreciated the trainers using personal anecdotes to illustrate key aspects of the training:

"They were more open, interactive with us, very – energetic – you feel involved and equal to them"

"They were energetic – very lively, I felt fully awake, never get bored like you do in lectures. They were practical and about real life, you relate to them, things about time resources, examples of scenarios where she [the trainer] went to do a presentation, they bring their personal situations to sessions"

The term 'relevance' was used repeatedly by the focus groups in terms of how the training seemed to apply and make sense to their everyday lives. The use of theory and the opportunity to learn about different personality types and how this may impact on the ways in which stressors are handled was also valued:

"[I] discovered myself more - knowing who I am, helped me to focus on my weaknesses and how to manage myself and not make the same mistakes again, to manage stress, it really helped me – I know who I am based on those questionnaires, I understand myself, I can plan ahead if facing challenging situations or stressful situations"

The impact on their day to day lives was noted:

"It highlighted different aspects of how we think – brought that to the surface, making us conscious of how we do things and why we do it that way and that there could be a better way of doing it – just basically making our minds stronger"

"I've learnt to let go a bit more - whatever happens happened, not sure if from Mindapples or just me"

"I'm a better mother, wife and a better friend. Honestly, because I take time out and don't see it as a burden 'cos I've got an assignment in the back of my mind. I make time to enjoy myself for a few hours in the par. That's fine. Go for it. Don't think about the assignment. Enjoy it, it's OK. This is something I'll take on for the rest of my life – and that is good. Don't beat yourself up. Take time to enjoy, time to work. It's perfect for me. I'm a better person"

4.5.4 Impact on nursing practice

Participants identified the impact of what they had learnt may have on their future nursing practice, such as being able to 'think outside the box' and understand that different people manage stressful events in different ways. Increased self-knowledge was identified as leading to increased skill levels for practice:

"'Leadership, we had a placement about leadership and management - influencing people, communication, increasing self-awareness, also learning about mirroring and that people tend to copy you and mirror you - which is helpful with communication to acknowledge that"

"I'm more self-aware and can manage others better as you know how your personality is and how you deal with stress or any difficult situations so you would benefit your practice"

"Dealing with patients, different people with different minds, see how their minds work and where they're coming from, and you understand them better, and learn that everyone isn't the same, we all are different"

The training was described as an opportunity to develop knowledge that was not included in the nursing course:

"I think it's relevant to nursing. We don't as adult nurses touch on the mental health side of nursing so it gave us a little bit of an insight into psychology, the mind"

This highlights the importance of including teaching on mental health in the adult nursing curriculum if it is not currently there.

4.5.5 Impact on academic practice

Students agreed that the training had been helpful to their studying as they had developed time management skills and ways to manage the stress around writing assignments and balancing their work-load:

"I feel now more motivated to do things earlier and not to leave them because I now acknowledge about resources and time being an important resource, to do things better"

"If a job is worth doing, it's worth doing properly. So the Mindapples helped me to take a step back, relax. That was when I got my highest grades"

"I can use my own resources – time management, learn how to plan – starting things and finishing them – this helped with both essays, going to the library, having a plan, make use of resources. When I went on placement I sorted it out in time, learnt how to manage time and not be angry with others. I manage my emotions better…"

4.5.6 Perceived changes on outcome measures

The interim findings of the self-completed questionnaires were presented to the students to elicit their thoughts about the impact of the training on them. They agreed that there had been an improvement in their knowledge about mental effectiveness and provided some examples of the ways in which they retained this and continued to apply what they had learnt to their day to day lives:

"We remember some of the sessions. It sticks in. We could see Andy [course facilitator] in our minds. People remember better if they actually interact during sessions"

"We are practising – really practising!"

The students spoke about how they continued to experience high levels of stress due to the demands of their course, but they felt that the way in which they dealt with this stress may have changed:

> *"We cannot avoid stress but we can deal with it. We can challenge it differently. It's not the end of the work. I say 'everything will be alright'. I have to do something, use diversion to manage my stress. And some of the techniques we've been taught, we're using them. Like recognising first symptoms of stress in yourself so you know when to relax and distract your thoughts from the stressful situation"*

Commenting on the improved scores in both groups in their ability to cope with stress, the students explained that at the time of the baseline questionnaire there was an essay due so everyone was more stressed. Some wondered if the questionnaire focused their thoughts on this which may have led to some improvement within the control group:

> *"Maybe it gave them the thought to provoke their thinking, make changes in my life or improve? Just giving them the questionnaire maybe changed perceptions?"*

In explaining how they had changed their approach to handling stress after the training they commented:

> *"Sometimes you are stressed but you don't think about how to deal with it. Its making you think about it so it makes you deal with it – helps you to reorganise your thoughts and emotions"*

> *"[The] tips on how to cope with stress, we have put it into practice – subconsciously"*

Reflecting on the findings about mental wellbeing, the students commented on the relationship between the sessions attended and overall benefit of the course:

> *"Attend more, benefit more. The session could be related to life and every day situation. [Give yourself time to] step back…"*

> *"We are still under a lot of stress. Being third year students there is a lot of pressure, lots to cope with. Maybe it's related to the point of submission of essays. This had an impact on the*

group. We started to dwindle. Maybe you do need all the sessions to get the full benefit from the course"

"We cope with stress differently – you were already doing those things before the training. Just more aware of it, that this is what I've been doing – increased awareness – we were doing those things – but conscious now of what we were doing unconsciously"

"I think where we are on this course, it continuously asks more of us throughout every month throughout this third year. So I think you may not see much change, as we're probably even more stressed as we're going through the year. That could make a difference possibly. We've reach a plateau at the moment. Maybe by Feb when we have finished….mental wellbeing will go up"

The participants also suggested that if the training had taken place in the first year of the course their changes in stress levels and mental wellbeing would have been greater.

4.5.7 Suggested improvements to the Mindapples training

The timing of the training was seen as a potential barrier to some participants attending. In the third year of nursing training the work-loads and stress levels were highlighted as already being high. The students suggested that the training should be offered in the first year to achieve the maximum benefit of learning ways to manage workload and accompanying stressors:

"At the beginning a lot of students were attending, later on most of them were not coming, I felt. I wish they could all be here as it's quite helpful but it could be, maybe, they were worried about academic work"

There was an overwhelming sense of the participants wanting others to benefit from the training as they perceived they had done, but also an acknowledgement that those who would perhaps benefit the most are too overwhelmed with other work to consider attending.

Ways of overcoming these barriers were discussed. Students suggested that if more than one course was running participants could 'mix and match' to catch up on missed sessions. If the booklets from each session were available online, participants could also easily catch up on missed sessions. The students did not feel that there would be any negative effect on group dynamics if the participants changed from week to week. This reflects the general enthusiasm of the students to open the training up to as many as possible in order to share the benefits.

Whilst the general view was that the training was good as it was, a couple of focus group participants noted that one session was more general and less useful to the participants personally:

> *"A session mid-way, scientific part, perhaps people lost interest, I found the session a bit boring but know we need to know it but less relevant to us"*

Overall though, the sessions were seen as relevant and useful. The suggested improvements reflected a desire by the participants to embed the sessions more into the nursing course to help as directly as possible with day-to-day work and stress management.

5 Discussion

5.1 Main findings

This study has found that it is feasible to adapt and deliver the Mindapples training programme to undergraduate student nurses. There were difficulties in the delivery of the programme due to the study investigators being outside the department in which the student nurses were based. These were largely overcome by the investigator from within the university who liaised with the students, academic staff and Mindapples team to ensure that the training went ahead at a time convenient for the students.

The main finding of this study is that the Mindapples training statistically significantly improves nursing students' ability to self-manage stress and increases their knowledge of mental effectiveness over time. This improvement was maintained three months later. It is also associated with short-term improvements in mental wellbeing. The charisma of the presenters and the novelty of the training style helped to engage the students and maintain their interest in the programme. However, the content had an effect on their knowledge of mental effectiveness, as those who attended more sessions scored higher on the knowledge quiz, illustrating that it was 'substance' as well as 'style' which made the difference.

The students were very positive about the Mindapples training and provided many examples of how it had helped them in their personal lives, on their clinical placements and in their academic study. They recommended that it should become embedded within the nursing curriculum and suggested that it would have most impact in the first year of the programme before stress levels and workload build up. They were also keen to share what they learnt and wanted others to benefit from the training, which gives a strong indication of its value to them and how it might be scaled up through peer coaching and champions.

5.2 Study limitations

The research team encountered practical difficulties in co-ordinating the training in a different department to which they are based. Communication with the students was not easy and the training could not be scheduled in a regular weekly slot in students' timetables. Some students missed sessions due to them being rescheduled at short notice because of other unavoidable commitments which the students had. These problems were somewhat overcome by the local investigator based at the university where the training was being held keeping the communication open between the students, academic staff and the Mindapples team. If the

training were hosted within the researcher's department these difficulties could have been largely avoided.

The researchers were unable to randomise students to the intervention or control group for practical reasons. Although group differences were controlled for in the analysis, future research will benefit from full randomisation to minimise any potential selection bias. A larger sample and lower loss to follow-up will also help us to estimate the effectiveness of the training with a higher degree of precision. The modest effect sizes found in this study may be an underestimate of the effectiveness of the training due to the loss to follow-up during the trial.

The control group were all recruited from one site which may have introduced a cohort effect, whereby the observed difference may have been due to group differences rather than the effect of the Mindapples training. There were some differences between the groups including a higher mean age in the intervention group, which may have had an impact on outcomes. A larger study with random allocation to intervention and control groups is required to confirm if group differences explain the findings of this study.

Focus group participants were self-selected and may have been more positive about the training than those who chose not to participate. This may have led to a bias in favour of the training in the reporting of the qualitative process evaluation. Although we sought critical perspectives on the training, future evaluations will need to recruit a random sample of participants to obtain more balanced perspectives.

Finally, there was no opportunity in this study to compare the relative effects of the training on different year groups. It was not possible to pilot the training with first year undergraduate nursing students, where the effect may have been greater. It is possible that students may have developed some strategies to self-manage their stress by their second or third year.

5.3 Recommendations

1. This pilot study found that the Mindapples training programme had a statistically significant effect on students' knowledge of mental effectiveness and their ability to self-manage stress. The size of the effect on these outcomes was moderate, but it is likely that the logistical difficulties in organising the training sessions may have contributed to an under-estimate of its true effect. This indicative evidence of effectiveness suggests that the Mindapples training may be beneficial for undergraduate nursing students and higher education institutions could consider using it on their programmes.
2. A larger study is required to more accurately estimate the effectiveness of the training and to evaluate if the training has a similar effect in other student groups.

3. The efficacy of the Mindapples training programme may be improved if it were delivered as part of the core curriculum of an undergraduate nursing programme, as there is evidence that increased attendance at training sessions is correlated with increased knowledge of mental effectiveness. However, this needs to be evaluated as part of a larger study.
4. The training should be scheduled in the first year of undergraduate nursing programmes to equip students with knowledge and skills in self-management of stress at the beginning of their professional careers. However, the outcomes of this need to be evaluated as part of a larger study and over a longer period of time.

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