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RESEARCH

Students' Experiences of the Undergraduate Pharmacy Degree, and the Potential Role of Mindfulness – A Thematic Analysis

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ABSTRACT

Objective. The objective of this qualitative study was twofold; to (a) determine pharmacy students' experiences of stress as part of the current pharmacy degree, and (b) explore the potential of incorporating the principles of mindfulness into course work in the undergraduate degree.

Methods. Undergraduate pharmacy students from the five Schools of Pharmacy (SOPs) in Ireland were invited to take part in focus groups (FGs) between February and November 2016. Recruitment occurred via emails, sent by gatekeepers within each of the pharmacy schools. FGs were audio recorded, anonymized and transcribed by the researcher (MOD). Transcripts were analysed using the Braun and Clarke method of thematic analysis, and coded in QSR International NVivo Qualitative Data Analysis Software Version 11. Ethical approval was obtained

Results. Twenty pharmacy students (60% female) representing all years of study from three of the five SOPs participated across five focus groups. The five key themes that emerged were (1) so much to do, so little time (2) the role of lecturers (3) we're smart people, we want to do well (4) learning by doing and (5) mindfulness as a coping tool.

Conclusions. The findings of this study support the hypothesis that students experience stress and would welcome mindfulness-based interventions as a management option in the degree. In particular, the emphasis that mindfulness places on experiential learning would be well-received by students.

Keywords: pharmacy, stress, student, mindfulness, undergraduate

INTRODUCTION

Stress, defined as "a mismatch between demands and the perceived ability to cope with these demands", can have a negative impact on the physical health, mental health, and academic performance of health care students.[1, 2] Pharmacy students in particular demonstrate higher stress levels than the general population, regardless of year of study. [3, 4] Furthermore, health care student stress is reportedly linked to subsequent stress as a health care practitioner.[5] The psychological challenges and responsibilities associated with managing patients as a health care professional can lead to depression and burnout, negatively impacting upon personal well-being.[6] These findings are concerning, as high levels of stress can compromise patient safety, through poor decision-making and an increased risk of medication errors.[7] A recent study reported that 68% of 1,737 actively practicing pharmacists experienced job stress and role overload.[8] A further study showed that pharmacists were more likely than surgeons or physicians to resign from their jobs due to high stress levels. [9] The role of mindfulness to increase job satisfaction and patient safety in pharmacists or pharmacy students has not been evaluated to date.

Mindfulness, defined by Dr. Jon Kabat-Zinn as "paying attention in a particular way, on purpose, non-judgmentally, to the present moment" is a practice that changes how one relates to their present experience, breaking old habits of worry and rumination and cultivating an attitude of acceptance, rather than struggling to change the unchangeable in life.[10] Mindfulness Based Stress Reduction (MBSR) developed by Dr. Kabat-Zinn in 1979 to help hospital patients,[11] has subsequently shown benefits in non-clinical populations, and has produced promising results in educational settings.[12] [13] Pharmacy students have not been represented in the literature to date. Hence, this study's research question was twofold; to (a) determine pharmacy students' experiences of stress as part of the current pharmacy undergraduate degree, and (b) explore the potential of incorporating the principles of mindfulness into course work in the undergraduate degree.

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METHODS

Focus groups (FGs) were conducted with undergraduate pharmacy students between February and November 2016. All five pharmacy schools in Ireland; University College Cork (UCC), Trinity College Dublin (TCD), Royal College of Surgeons in Ireland (RCSI), Queens University Belfast (QUB) and Ulster University (UU), were invited to participate, with approval from local ethical committees. The FG method was chosen as it was felt that participants would interact, and prompt thoughts and ideas in one another at a depth that may not occur in an interview setting.[14]

The method of sampling used was purposive and aimed to recruit representatives from all year groups, male and female, with a representation of mature students. Snowball sampling, where existing study subjects recruit future subjects from among their acquaintances, was used in addition when uptake was low. Recruitment occurred through email, sent by a gatekeeper (an academic or administrative member of staff) in each of the five pharmacy schools.

A topic guide, as summarized in Table 1 was developed based on a review of previous literature, and discussion among the authors. The guide was refined after the first focus group in terms of the wording of questions, referring to field notes which were written immediately afterwards. However, no changes were made to the question content so this focus group is included in the final analysis. All questions were used in each session, however discussions were also allowed to develop naturally, to facilitate emergence of unanticipated themes.

The first two FGs were conducted by MOD and MK (both qualified pharmacists and involved in academic research). MOD conducted subsequent FGs independently, and made reflective notes immediately afterwards. FGs were conducted within the respective pharmacy school buildings, during times convenient to the students. MOD presented herself as a researcher, and did not engage in discussion about the topic guide prior to the FG, to reduce the risk of bias. Demographic information, including gender, age category and year of study was collected (Table 2). FGs were audio recorded using a Dictaphone (Olympus VN-741PC), and written informed consent was obtained. MOD prompted and explored issues that came up where appropriate, allowing for the emergence of unprompted information and themes. Participants were informed that they could request copies of the transcripts of their contribution if desired. The audiotapes were anonymized and transcribed by MOD,

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to allow for immersion in the data, and preliminary familiarization with the findings. As per the Francis method of sampling, the final FGs presented no new themes, and generated no new data at which point it was agreed that data saturation had been achieved.

Transcripts were analysed using the Braun and Clarke method of thematic analysis,[15] and coded in QSR International NVivo Qualitative Data Analysis Software Version 11. Initial familiarization involved several readings of the transcripts, all of which were initially coded by MOD. LS (a qualified pharmacist and a senior academic) independently coded a sample of the transcripts. Agreement between coders was high, and disagreement was resolved by discussion. Codes were named in language that remained true to the opinions and experiences of the participants. MOD then grouped the codes into initial themes, and verified them by reading the corresponding excerpts, and the entire data set again, before naming and defining them. Agreement with LS was reached through discussion at each stage. The study is reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ), details of which are available in Appendix 5.

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RESULTS

Twenty pharmacy students (60% female) representing all years of study from three of the five schools of pharmacy participated across five FGs. The average number of participants per FG was 4 (ranging from 2 to 7 participants). All but one participant identified themselves as Irish, and two participants held a previous degree. Almost half of participants (45%) reported experience of working in a pharmacy setting.

Five key themes emerged through analysis of the transcripts: (1) so much to do, so little time, (2) the role of the lecturer (3) we're smart people, we want to do well, (4) learning by doing, and (5) mindfulness as a coping tool. The themes are summarized in Figure 1, with specific quotes given in Appendix 1.

The first theme, "so much to do, so little time" was illustrated by the fact that participants' student experience is greatly influenced by the workload they need to complete within the pharmacy course, with some people becoming completely overwhelmed by it all. The need to multitask hinders student progress, and multiple deadlines falling at the same time increases pressure on students. The workload of the degree leaves very little time for anything else in pharmacy students' lives, and this

has a negative impact on other areas. Participants voiced concerns regarding tensions between college and weekend work, or attempts to have a social life as a student. The time pressure that students felt was in the vast majority of cases down to the course work itself, regardless of outside influences. Some students spoke about actually ceasing optional activities in times of extra pressure, e.g. no longer attending sport training in the evenings at home because they were staying in college to study. This was despite the fact that these optional extras often helped to reduce stress.

"The role of the lecturer" in the student experience emerged as a strong theme. The general feeling from participants was that lecturers are quite accessible, but limited in the support that they can offer. The relationship that the student has with individual lecturers can be variable, and affects the student experience. While some students had developed good communication links with lecturers, other felt that a lack of such links hindered them from accessing the support they needed.

"We're smart people, we want to do well" was illustrated via the fear of failure that participants articulated, and the negative way it affects their performance. Primarily, fear of failure as a student – not achieving high grades, failing a year, not completing the course. Linked to this fear of failure is the constant comparison to previous personal achievements in school, and a desire not to let anybody down. Students reflected on their experience of the Leaving Certificate (the state examination for school-leavers in Ireland, and the main determinant for entry into third level education) versus their performance to date in university end of semester examinations. One participant voiced an opinion that there is a link between the critical thinking that is required in the course, and the self-criticism that students experience. Coupled with fear of failure as a student was fear of failure in the future, as a health care professional. Participants were very aware of the responsibilities that they will face as health care professionals, and the impact that their actions will have on patient health. Many vocalized a fear of handling adverse events in the future. Participants attributed recurrent procrastination to this fear of failure, particularly in relation to study for exams.

The theme of "learning by doing" was strongly presented. Students articulated the idea that what's taught most effectively during the degree is delivered in a hands-on, practical manner, through workshops and tutorials. Participants appreciated experiential learning, and gave many examples of active skill development, which they spoke of in a positive light. Having experience of working in a

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pharmacy setting, while not compulsory, was viewed as being very beneficial in terms of applying what you've learned.

These four themes all fed into the overarching theme of "mindfulness as a coping tool" within the pharmacy degree. There was a generally positive response to the suggestion of introducing a mindfulness course to pharmacy students, grounded in the view that there needs to be some sort of mental training implemented, in order to benefit future patients as well as the participants themselves. There was a lack of awareness around supports that were already available within the university setting, and the support that was offered was not always very accessible. Participants valued the idea of having something to prevent rather than cure excessive stress.

In general, participants had some understanding of what mindfulness is, often informed by previous experience of mindfulness in other settings. However, some common misconceptions of mindfulness were voiced also, including the idea that mindfulness is about getting rid of all thoughts, and achieving a state of relaxation. Some participants raised questions around the feasibility of "teaching" stress reduction, feeling that stress is a very individual thing, unique to each person, which one needs to personally experience and then handle in their own way. Other stress management strategies such as yoga or sport were mentioned, however the extra-curricular nature of these activities hindered regular participation, and students voiced the opinion that no one method would suit everybody.

In terms of how to deliver mindfulness training, it was apparent from the suggestions received that a mindfulness course would have to be interactive, with mixed reactions to the suggestion of an online course. It was felt that the best way to include mindfulness into the curriculum would be as part of the weekly college schedule, in an existing module – clinical pharmacy was the place where students felt it fit best. Early introduction of such training was recommended, although there was ambivalence about whether first years would understand the need for this type of learning. It was felt that only students who were stressed would take part, and that this could in itself be a barrier to participation, with people becoming conscious of how they would be perceived if they signed up. It was conveyed that some incentive would be required for an optional course e.g. certificates or credits. Otherwise, busy schedules and a heavy workload would limit uptake. The standard MBSR

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course was considered by participants to be too long, a shorter course that could be incorporated into the timetable could be a viable option that students would take part in.

DISCUSSION

The five themes that emerged from these focus groups provide an insight into the current experience of pharmacy students within the degree, and the role that mindfulness could play in that experience. Challenges that students encounter as part of the degree, and fears that they have of future responsibilities as health care professionals could potentially be addressed through mindfulness training.

The preference for experiential learning that these focus groups have highlighted is encouraging, suggesting that an approach such as mindfulness would be well received by pharmacy students due to its experiential nature; it first immerses learners in an experience, and subsequently invites reflection about the experience to develop new skills, or new ways of thinking (16). Rather than simply providing students with didactic teaching about stress and wellbeing, experiential mindfulness techniques may be useful for those who benefit from having hands-on examples to bolster their traditional learning.[17]

These focus groups have provided rich information regarding the overwhelming pressure that pharmacy students find themselves under with regards to completing a professional course. This reflects findings from previous research that pharmacy students were the most likely undergraduate group to suffer from stress.[3] Undergraduate health care students in general experience moderate levels of stress, with a correlation between stress and academic achievement.[18] A systematic review conducted by the authors has found benefits of mindfulness for other health care students, which serves as an indicator of effectiveness for this particular cohort.[13] However, the theme of being overburdened in terms of scheduled coursework cannot be overlooked, and should influence course design – how much time can pharmacy students realistically commit to weekly mindfulness classes and/or daily practice? Such a course would need to fit into an already busy schedule, and be presented as part of the curriculum to achieve buy-in, without being made compulsory.

The importance of the role of the lecturer in relation to student experience presented strongly, and this is something that the Mindfulness Based Interventions Teaching Assessment Criteria

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(MBITAC),[19] the competency guidelines for mindfulness teachers, explicitly addresses. Three of its six domains relate to the teacher's interaction with students, and their engagement with participants, namely embodiment, inquiry and holding of the group. These competencies are not necessarily highlighted as important in a traditional lecturing role, but could provide students of a mindfulness class with the support and interaction needed to enhance their student experience, cultivating a feeling of support.[20]

The "fear of failure" that participants articulated is reflective of the high academic achievers who sign up for courses such as pharmacy. Pharmacy students have been shown to be highly "achievement" orientated,[21] which can feed rumination and procrastination. Previous research has found that mindfulness is negatively correlated with rumination.[22, 23] Mindfulness training as part of the pharmacy degree could enable participants "to see more clearly the patterns of the mind, and to recognize when mood is beginning to dip without adding to the problem by falling into analysis and rumination". [24]

Participants voiced the opinion that something incorporated into the pharmacy course could be extremely beneficial, due to the challenge of attending extra-curricular activities. While there was doubt from some participants regarding the feasibility of teaching stress reduction through mindfulness, this may be due to the misconception of mindfulness being a process of "emptying your mind". [25] While the stress itself cannot be changed, mindfulness is a way to change one's relationship with stress. Some participants voiced the view that "exams are enjoyable", which illustrates how a person's perception determines their experience, and through mindfulness, pharmacy students' perceptions of stress may be altered in a positive way. This builds on the findings of a previous study which found that test anxiety was associated with students' perception of course load and ability to manage time.[26]

Limitations of this study include the fact that not all pharmacy schools were represented by those who took part in the focus groups. Also, this study was undertaken in Ireland, and may not be fully representative of the experiences or views of pharmacy students in other countries. Nonetheless, it provides pharmacy educators with valuable insight into the challenges that pharmacy students face and the reaction students may have to incorporating mindfulness into coursework.

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CONCLUSION

This study has provided valuable insight into the perceptions of pharmacy students of the current pharmacy degree in Ireland, and provides potential benefits and challenges of incorporating mindfulness into coursework. The experiential nature of such a course would suit the active learning and engaged teaching methods that pharmacy students seem to respond to best, and the content of a mindfulness course could help to address some of the pressures of the current programme of study.

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Table 1. Topic Guide for Focus Group Discussions

1. What skills does the current pharmacy degree develop?
2. Do you feel that the degree course prepares you mentally for your future profession?
3. What factors affect your ability to study/perform in college?
4. What emotions do you experience around exam time/college deadlines?
5. Do you think that there is a need for mental support/training in the pharmacy degree?
6. What ways do you think such support could be delivered?
7. What do you know about mindfulness?
8. What would help/discourage you from participating in a Mindfulness module?
9. What are your views about online delivery of modules?
10. What would be the optimum length of time per class? Why?

Table 2. General Demographic Characteristics of Pharmacy Student Focus Group Participants (N=20)

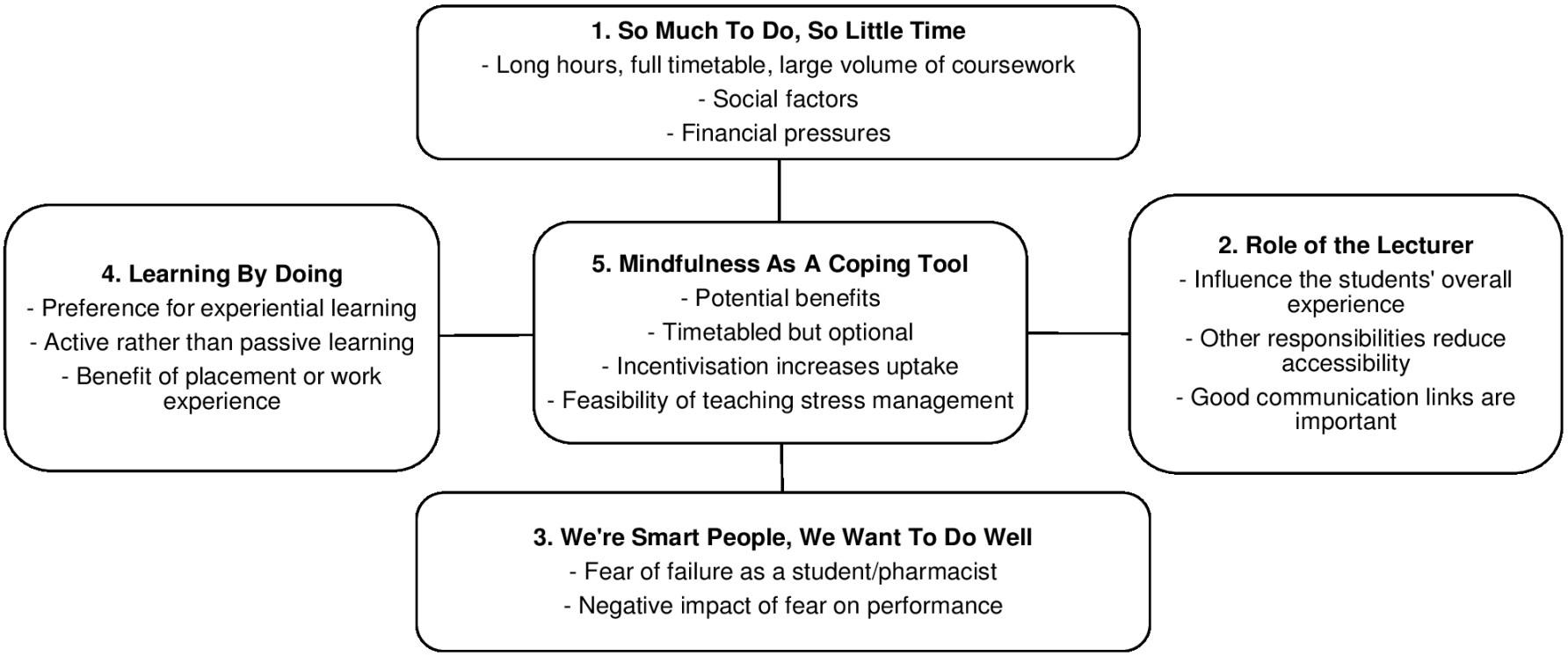
Demographic Characteristics	**Proportion %**
Age Range	
18-20 years (n=7)	35
21-23 years (n=10)	50
24+ years (n=3)	15
Irish (n=19)	95
Female (n=12)	60
Year of Study	
1st year (n=4)	20
2nd year (n=5)	25
3rd year (n=3)	15
4th year (n=8)	40

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Previous Pharmacy Experience (n=9)	45
Previous Degree (n=1)	5
Children (n=1)	5

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Figure 1. Key Themes of Students' Experiences of the Undergraduate Pharmacy Degree, and the Potential Role of Mindfulness



Appendix 1. Key Themes with Supporting Quotes from Focus Group Participants Regarding Students' Experiences of the Undergraduate Pharmacy Degree and the Potential Role of Mindfulness

Theme	Quotes
So Much To Do, So Little Time (Theme 1)	"I think definitely last year before Christmas a lot of people found it very hard. I can hear it in my voice already (emotional)…because a lot of people did find it very hard (emotional)… I know in my class alone several people were put, well got prescribed medications to cope with anxiety and stuff last year" "Many a time I used to cut down questions and predict stuff, hope it would come up…you just can't cover it all like, you can't cover everything!... you just hope to God this comes up and if it doesn't you could end up repeating another year" "Rent prices are only going up and it's more and more difficult…I'm lucky in that respect but I'm still aware that a lot of people have to pay their rent, they have to get their food so I mean a job at the weekends is pretty much the only thing…it might not be the best thing academically but financially it has to be done." "I had to go at the weekend to work back home and I did it for ten weeks, and then I was off for a few weeks, and then I did it at Christmas time and I worked, maybe for two weeks. That cut straight into my study time and I ended up failing an exam over it"
The Role of the Lecturer (Theme 2)	"I know the lecturers are very accessible. They are very good to respond to your emails and stuff like that, but I just think that the time they have they're quite limited as well you know, so they can only do so much." (FG1, P3) "I feel like they're only just in here to teach…I know it's trying to strike a balance between like their work, their own research work and their lecturing work" "Like we're lucky that our lecturers, they are very good to us…but sometimes they're not always there, or sometimes you're not even close to your lecturers…personally I'm not best friends with any lecturers so I don't feel like I can go to them and be like, express how I'm feeling to them."
We're Smart People, We Want To Do Well (Theme 3)	"Not to get too deep or psychological about it but like to get into pharmacy you have to do so well in the Leaving Certificate…so that to come into college and to suddenly be not doing as well as you've always been doing is very tough… …so I think you get so stressed by that complete flip of how well you perceive yourself to be doing" "In general we are very competitive people that go into courses like this, like we're smart people we want to do well" "I struggled to get into this course in the first place…now that I'm in it I don't want to let myself down, or I don't want to let my parents down you know……I don't want to disappoint people and I don't want to disappoint myself as well" "In our course we're taught very much to be critical about what we're doing and that can definitely, like I've seen it transpire into personal life, and people becoming very critical of themselves when they didn't need to be" (FG1, P4) "Pharmacy is I think is it the second or third most sued profession? So when people kind of talk about that, kind of the idea that are we really mentally prepared to face a claim?"

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	"If you don't develop all your skills in like clinical you're going to kill someone… how do you deal with the fact that you're going to do that?... I don't think many of us would actually face that reality if it actually happened. Like it would ruin someone…" "I think people procrastinate because they're afraid of failing…that fear of jumping in but then not actually being good enough anyway is just kind of scary" (FG4, P3) "I generally like exams, I'm a really odd exception to any of these rules like!...I mean you could be stressed out depending on the exam but I mean…there's only so much material and the lecturers will examine that, and there's only certain books that they look at and they will examine those books…I'm never too stressed about them really"
Learning by Doing (Theme 4)	"We did case studies and then they brought in patients…and that was really helpful and we kind of went through their health problems, and…through their dosages and everything that they were on…I thought the application of that was really good. Kind of hopefully I'll be doing more of that like, as I go on." "When I started working in a pharmacy like, it was most things you kind of learn from dealing with customers…it's definitely preferential to work in a pharmacy like, and you kind of almost need it to some extent, to prepare you for going into community pharmacy, you know."
Mindfulness as a Coping Tool (Theme 5)	"My friend, like last year my housemate was having problems and I was trying to get her help and support and it wasn't easy at all, so like having the support within the pharmacy would be great." "I think any module that would help you to you know develop your mental thinking with regards to the profession, people would be interested in it." "yeah it was interesting enough, it was basically just kind of just complete relaxation almost, just thinking about as little as possible." "I think the more workshoppy (sic) tutorial type situations that we've done over the four years have definitely been more beneficial, you definitely learn a lot more." "people don't want to be giving up half their lunch…unless you find gaps in people's timetables…you could just find a gap in the fourth year timetable, go with that, find a gap in second year…" "some people might see it as that you can't cope with the stress or something like that, that you're somehow like weaker…people could make that assumption like…instead of actually being an actually useful tool to help you cope with the rest of your career" "If you told me this year, I'm going to give you a module on awareness, I'd be kind of like, "well I don't have time to go" you know?... just because we feel so under pressure with all those other things, I can see how people would be like "waste of time" even though I'm sure it could actually be very beneficial."

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Appendix 2. University College Cork Ethical Approval for Pharmacy Student Focus Groups

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COISTE EITICE UM THAIGHDE CLINICIÚIL
Clinical Research Ethics Committee
Lancaster Hall,
6 Little Hanover Street,
Cork,
Ireland.

Our ref: ECM 4 (ff) 19/01/16 & ECM (ddd) 10/05/16

5th May 2016

Professor Stephen Byrne
School of Pharmacy
University College Cork
Cavanagh Pharmacy Building
College Road
Cork

Re: Mindfulness in Pharmacy – a national study: focus group.

Dear Professor Byrne

The Chairman approved the following:

- Amendment Application Form signed 27th April 2016
- Removal of Dr Shane Cullinan and Aoife McCarthy MPSI as co-investigators
- Addition of Maria Kelly MPSI as a study co-investigator
- Participant Information Leaflet Version 2 dated 25th April 2016
- Consent Form Version 2 dated 25th April 2016
- Study Protocol Version 2 dated 25th April 2016
- Demographic Questionnaire Version 1.0 dated 25th April 2016.

Full approval is now granted to implement this amendment.

Yours sincerely

Professor Michael G Molloy
Chairman
Clinical Research Ethics Committee
of the Cork Teaching Hospitals

The Clinical Research Ethics Committee of the Cork Teaching Hospitals, UCC, is a recognised Ethics Committee under Regulation 7 of the European Communities (Clinical Trials on Medicinal Products for Human Use) Regulations 2004, and is authorised by the Department of Health and Children to carry out the ethical review of clinical trials of investigational medicinal products. The Committee is fully compliant with the Regulations as they relate to Ethics Committees and the conditions and principles of Good Clinical Practice.

Ollscoil na hÉireann, Corcaigh - National University of Ireland, Cork

Appendix 3. Royal College of Surgeons Ethical Approval for Pharmacy Student Focus Groups

Royal College of Surgeons in Ireland
The Research Ethics Committee
121 St. Stephens Green, Dublin 2, Ireland.
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Dr David Smith, Acting Chair
Dr Niamh Clarke, Convenor

RCSI
ROYAL COLLEGE OF SURGEONS IN IRELAND

22nd August 2016

Michelle O'Driscoll
Cavanagh Pharmacy Building,
University College Cork
College Road,
Co. Cork

Ethics Reference No:	REC 1230
Project Title:	Mindfulness in Pharmacy - A National Study
Researchers Name (lead applicant):	Ms Michelle O'Driscoll (School of Pharmacy, UCC)
Principal investigator on the project (PI):	Dr Laura Sahm (School of Pharmacy UCC)
Other Individuals involved:	Prof Stephen Byrne, Ms Maria Kelly (School of Pharmacy, UCC) and Ms Siun Aherne (RCSI School of Pharmacy)

Dear Ms O'Driscoll,

Thank you for your Research Ethics Committee (REC) application. We are pleased to advise that ethical approval has been granted by the committee for this study.

This letter provides approval for data collection for the time requested in your application and for an additional 6 months. This is to allow for any unexpected delays in proceeding with data collection. Therefore this research ethics approval will expire on 4th **May 2017.**

Where data collection is necessary beyond this point, approval for an extension must be sought from the Research Ethics Committee.

This ethical approval is given on the understanding that:

- All personnel listed in the approved application have read, understand and are thoroughly familiar with all aspects of the study.
- Any significant change which occurs in connection with this study and/or which may alter its ethical consideration must be reported immediately to the REC, and an ethical amendment submitted where appropriate.
- Please submit a final report to the REC upon completion of your project.

We wish you all the best with your research.

Yours sincerely,

Niamh Clarke

PP Dr Niamh Clarke (Convenor)
Dr David Smith (Acting Chair)

Appendix 4. Trinity College Dublin Ethical Approval for Pharmacy Student Focus Groups

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Ms Michelle O'Driscoll,
School of Pharmacy,
Cavanagh Pharmacy Building,
University College Cork,
College Road,
Cork.

Ref. 2016-02-01

11 May 2016

Dear Michelle,

Re: Mindfulness in Pharmacy – A national study: Focus Groups

I am pleased to inform you that the above project now has approval from the School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee, with the following condition:

- The demographic questionnaire added at revision stage (Appendix 8) gathers details which potentially could identify a participant despite pseudonymization (e.g. there may be only a single person of a particular gender, age and nationality). Any presentation of results must be sensitive to this danger and report only collated demographics that cannot lead to identification of individuals.

You are reminded that any significant deviation from the research description in the application requires approval from the School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee before implementation.

Please also note the reporting requirements outlined on the Committee's website (http://pharmacy.tcd.ie/research/SoPPS_REC.php), in particular the need for:

- An immediate report in writing (by email to pharmacy.ethics@tcd.ie) of any serious or unexpected adverse events on participants, or unforeseen events that might affect the benefits/risks ratio as outlined in the application.
- Annual reports (report form on the Committee's website).
- An end of project report (report form on the Committee's website).

Please quote the reference number 2016-02-01 in any further correspondence.

We wish you success with your research.

Yours sincerely,

Sheila Ryder,
Chairperson,
School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

Sheila Ryder
Chairperson
Research Ethics Committee
School of Pharmacy and Pharmaceutical Sciences

Panoz Building, East End 4/5,
Trinity College,
Dublin 2, Ireland.

Tel. +353 1 896 2786
E-mail pharmacy.ethics@tcd.ie
http://pharmacy.tcd.ie/research/SoPPS_REC.php

Síle Ní Mharcaigh
Cathaoirleach
Coiste um Eitic Thaighde
Scoil na Cógaslaíochta agus na nEolaíochtaí Cogaíochta

Foirgneamh Panoz, An Taobh Thoir 4/5,
Coláiste na Tríonóide,
Baile Átha Cliath 2, Éire.

Teil. +353 1 896 2786
R-phost pharmacy.ethics@tcd.ie
http://pharmacy.tcd.ie/research/SoPPS_REC.php

Appendix 5. Consolidated Criteria for Reporting Qualitative Research (COREQ) Checklist

Category	Question	Answer
Personal characteristics		
Interviewer/facilitator	Which author/s conducted the interview or focus group?	MOD conducted all focus groups, with MK also present for the first two.
Credentials	What were the researcher's credentials e.g. PhD, MD	MOD – MPharm MK – MPharm
Occupation	What was their occupation at the time of the study?	Qualified pharmacists and research students
Gender	Was the researcher male or female?	Female
Experience and training	What experience or training did the researcher have?	MK - extensive qualitative research experience MOD - trained in conduct, analysis and theory
Relationship with participants		
Relationship established	Was a relationship established prior to study?	The researchers introduced themselves before study commencement.
Participant knowledge of the interviewer	What did the participants know about the researcher?	Participants were informed that the primary researcher was conducting the focus group as part of their PhD.
Interviewer characteristics	What characteristics were reported about the interviewer/facilitator?	Participants were told that the researcher wanted to see what the current pharmacy degree was like from their experience, and how to better support students.
Theoretical framework		
Methodological orientation and theory	What methodological orientation was stated to underpin the study?	Analysis was conducted using Braun and Clarke thematic analysis.
Participant selection		
Sampling	How were participants selected?	Participants were selected using purposive sampling and snowball sampling.
Method of approach	How were participants approached?	Participants received recruitment emails from a gatekeeper in each School of Pharmacy inviting them to contact the researcher if they were interested.
Sample size	How many participants?	A total of 20 students took part in the focus groups
Non-participation	How many people refused to participate or dropped out?	n/a
Setting		
Setting of data collection	Where was the data collected?	Data was collected in a suitable room in the respective pharmacy buildings
Presence of non-participants	Was anyone else present besides the participants and researchers?	One pharmacy school sent two staff members to sit in on the focus group, but they did not participate in the focus group in any way.
Description of sample	Characteristics of sample?	Demographic information is presented in results.
Data Collection		
Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	A topic guide was developed by the authors, and piloted on the first focus group. No changes were necessary. This focus group was included in the results.
Repeat interviews	Any repeat interviews?	No
Audio/visual recording	Did the research use audio/ visual recording?	Audio recording was conducted, with informed consent
Field notes	Were field notes made during or after FGs?	MOD made field notes immediately after the focus groups, which were used to refine the topic guide.

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Duration	What was the FG duration?	Focus groups lasted from 13- 27 mins (average 21 min)
Data saturation	Was data saturation discussed?	While participation was limited, it was felt that the final focus group raised no new themes.
Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No, however participants were informed that they were free to request transcripts of their contribution to the focus group if they so wished.
Data analysis		
Number of data coders	How many data coders coded the data?	MOD coded all five transcripts, and LS independently coded four of the five transcripts.
Description of the coding tree	Did authors provide description of the coding tree	No, a description of the coding tree was not provided.
Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived from the data itself.
Software	What software was used to manage the data?	NVivo Version 11 was used to facilitate coding of the data.
Participant checking	Did participants provide feedback on the findings>	No, participants did not provide feedback of the findings.
Reporting		
Quotations presented	Were participant quotations presented and identified to illustrate the themes?	Yes, quotations were used to illustrate the findings and were identified by focus group and participant number.
Data and findings consistent	Was there consistency data and the findings?	Yes
Clarity of major themes	Were major themes clearly presented in the findings?	Yes
Clarity of minor themes	Is there a description of diverse cases/ minor themes?	Yes

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