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## **Experiences with a universal mindfulness and wellbeing programme at a UK medical school**

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## **Abstract**

Evaluation of a universal, mental wellbeing and mindfulness programme in a UK graduate entry medical school

### **Design**

Mixed methods: measurement of mental wellbeing and mindfulness in 2 cohorts at 3 time points over 15mths; descriptive, regression and repeated measures analysis with post hoc pairwise comparisons; qualitative interviews with purposive sample of 13 students after 1yr analysed thematically; spontaneous anonymous feedback on the course.

### **Findings**

The course was a surprise to students, and reactions mixed. Respect for its contents grew over the first year. Most students had actively implemented a wellbeing strategy by the end of the course and an estimated quarter were practicing some mindful activity.

In the context of an overall decline in wellbeing and limited engagement with mindfulness practice, increases in mindfulness were protective against this decline in both cohorts ( $p < 0.001$ ).

A small minority of students thought the course was a waste of time. Their attitudes influenced engagement by their peers. The mindfulness and wellbeing practices of the facilitators were evident to students and influenced perceived effects.

### **Research Limitations**

The uncontrolled nature of this observational study and low response rates to the survey limit conclusions. Further research in other medical education settings is needed.

### **Practice Implications**

Results are encouraging, suggesting modest benefit in terms of changing attitudes and practices and a modest protective effect on the wellbeing of students who engaged.

### **Originality/value**

This is the first study of a universal wellbeing and mindfulness programme in a UK medical school. Universal programmes are rare and evaluation studies are scarce.

## Background

The mental health and wellbeing of medical students has been a cause for concern for over three decades [Firth-Cozens et al., 1987]. These concerns have been expressed on different levels: first in terms of the duty of care that universities owe to students [Cohen & Rhydderch, 2013]; second in terms of career-long mental health and burnout [Dyrbye et al., 2014; Department of Health, 2008] and the sustainability of the profession [GMC, 2016]; and third in terms of the implications for professionalism, patient safety and compassionate care [Webb et al., 1998; Fahrenkopf et al., 2008; Lebensohn et al., 2014].

A variety of solutions have been proposed, many of which focus on identification and support services for those who develop mental health problems [Cohen & Rhydderch, 2013]. The General Medical Council in the UK now requires that medical schools provide appropriate support for students who develop problems, through personal tutor systems and occupational health services [GMC, 2009]. Some medical schools have also started offering programmes that aim to provide support for the mental health of all students in the context of personal and professional development (PPD) [GMC, 2015; Kalet et al., 2007; Muir et al., 2002].

The teaching of mindfulness is attracting attention as one approach for the prevention of mental health problems in this context [Dobkin & Hased, 2016]. Mindfulness has been defined as 'paying attention, on purpose, in the present moment' [Epstein, 1999]. A variety of programmes have been developed with different users in mind. Most medical school programmes [Dobkin & Hutchinson, 2013] are based on Mindfulness Based Stress Reduction (MBSR) [Kabat-Zinn, 1990; Salmon et al., 2011] which was developed to address chronic illness, pain and stress but can also address psychological wellbeing [Brown et al., 2003]. All programmes cultivate compassionate self-awareness, self-acceptance and self-regulation. They can lead to a greater capacity to stay in or return to a state of calm in stressful situations, a reduced tendency to perfectionism and enhanced emotional intelligence, leading to more compassion for patients and better working relationships with colleagues [Dobkin & Hased, 2016]. Mindfulness predicts resilience [Keye & Pidgeon, 2013], defined as 'the capacity and confidence to bounce back from risky and stressful adverse events, upsets and reversals of fortune, both strengthened and resourceful as a result of the experience' [Edmonstone, 2013], which helps protect against burn out, substance abuse and mental health problems. Early programmes based on MBSR have been offered to medical students as electives [Salmon et al., 2011; Rosenzweig et al., 2003; Shapiro et al., 2007] but in the last few years, programmes offered as part of the core curriculum have been developed, evaluated, and shown to have a positive effect on many indicators of mental health and professionalism [Salmon et al., 2011; Hased et al., 2009; de Vibe et al., 2013].

Warwick Medical School (WMS) is relatively small, admitting 160-180 graduate entry students annually to a 4 year course. In 2013, a new curriculum was introduced, including a wellbeing and personal development programme running in the first fifteen months. The programme covers the components of PPD as laid out in the Outcomes for Graduates (Tomorrow's doctors) curriculum [GMC, 2015] and encourages students to consider their own mental wellbeing (defined as 'feeling good and functioning well, [Stewart-Brown, 2015]) together with the activities and approaches that support this. All students are introduced to mindfulness including the evidence-base and experience of brief practices. Students are required to make personal wellbeing plans in the first week of the course and later write an assessed reflection on progress in implementing their plans.

## Research Questions

What are the effects of a universal programme addressing mental wellbeing and mindfulness in a UK medical school in terms of students' attitudes and practices with regard to:

- the importance of protecting their personal wellbeing and
- the development of skills in mindfulness,
- impact on their mental wellbeing and mindfulness

What are the key factors influencing students' learning in terms of their understanding, appreciation and practice of mindfulness and wellbeing-related activities?

## Methods

### *The programme*

The WMS wellbeing and personal development programme is summarised in Table 1. The programme comprises lectures, group work and self-directed material for further study. Group work occurs in stable groups with a trained facilitator. Each session (1-2 hours in length) includes both a brief guided mindfulness exercise and a group task focussing on PPD topics.

Table 1 Here

Facilitators for the programme were recruited from the staff of the medical school and wider university, based on their enthusiasm for supporting the course, prior involvement in WMS teaching and experience of mindfulness practices. The initial group included doctors, allied health professionals, nurses and researchers. Two facilitators had, or were in the process of acquiring mindfulness teacher training accreditation; the remainder had variable experience of mindfulness or meditation. They were involved in developing the course from its inception and, as part of this, received mindfulness and facilitation training. Facilitators met together before and after each group-work session to compare experiences and to monitor the overall student experience of the programme. They also attended twice yearly faculty development sessions to develop the course and their skills in mindfulness and mental wellbeing.

In the first year of the programme, 10 facilitators worked with groups of 8-9 students. In year 2, 6 facilitators worked with groups of 17-20.

Attendance at sessions was compulsory. Students were invited to engage with the brief mindfulness practice part of the session; if they did not want to do so they were invited to sit quietly and observe, or leave the room for that part of the session.

### **Evaluation**

A mixed methods evaluation was undertaken.

#### ***Quantitative evaluation- mental wellbeing and mindfulness monitoring***

Students completed mental wellbeing and mindfulness scales (Warwick-Edinburgh Mental Well-being Scale (WEMWBS) [Tennant et al., 2007] and Freiberg Mindfulness Inventory [Walach et al., 2006] in class at course entry, 6 and 15 months for two consecutive student cohorts. They used their scores to reflect on their mental health and the meaning of mental wellbeing. Both scales are well

validated, widely used fourteen item Likert scales. WEMWBS scores are strongly and negatively correlated with validated scales of depression (CES-D: 0.84 [Bianca, 2012], such that WEMWBS scores <44.5 can be used to indicate possible depression. Change scores are correlated with clinical observation in counselling populations [Ragonesi, 2013], and clinically important change has been estimated using different methods as 3 and 8 points [Maheswaran et al., 2012].

Mean and median WEMWBS and Freiburg scores were examined at the three time points; change was assessed using the paired sample T- tests; correlation between the two measures was assessed using Pearson 2-tailed correlation coefficients. Predictors of mental wellbeing at each time point were assessed using regression analysis, and predictors of change over time using repeated measures mixed model analysis.

All statistical analyses were carried out using SPSS version 23.

#### ***Quantitative – online questionnaire.***

Students were invited to complete an on-line structured questionnaire including questions on mindfulness and wellbeing practices and views on the programme at course completion. To increase response rates the number of questions was reduced in the 2014 cohort

#### ***Qualitative evaluation – interview study***

All students from the first cohort were invited to take part in an interview study carried out 4-8 weeks after the end of the first year of the programme. Invitation was verbal and through an advert in class social media. Interested students received an information sheet on the study and completed a consent form. Thirteen of these were purposively selected (by AMC) for interview to ensure inclusion of both genders and students with a range of initial wellbeing scores, taught by a range of facilitators. The research interviewer (TW) was blind to the wellbeing score of each interviewee. Semi-structured interviews were carried out, 9 face to face and 4 over skype, as a guided conversation with set questions and opportunities to probe where new topics emerged during interview. The topics and questions were developed by TW and SSB to enable reflection on the course and the mindfulness component in particular. The questions in later interviews were modified to cover topics raised by students in early interviews. Interviews were confidential, lasted on average 20 minutes (range 14-30min), electronically recorded, anonymised and transcribed in full. Three independent researchers (TW, SJ, EH) checked audio recordings against transcripts for accuracy, and developed coding frames [Green & Thorogood, 2013, Braun & Clarke, 2006] independently based on two interviews each. These frames were discussed and compared and an agreed frame (available on request) with sub-codes applied to all transcripts. The initial coding categories were revisited after all transcripts were coded, and through comparison, refined and merged into three overarching themes. The three independent analyses were then merged.

#### ***Qualitative- spontaneous feedback from routine evaluation.***

Free text comments on the programme, made in the generic feedback questionnaire students are invited to fill in after each six week block of the medical course, were collated.

#### ***Ethical Approval***

The protocol for the study was approved by the Biomedical and Scientific Research Ethics Committee at Warwick Medical School REGO-2014-764) on 21 May 2014.

## Results

### ***Quantitative - mental wellbeing and mindfulness monitoring***

The mean age of students in the two cohorts respectively was 23.7 years (cohort 1) and 25.0 years (cohort 2). 60.1/56.5% were female in cohorts 1 and 2 respectively. Response rates for WEMWBS and Freiburg varied from 96 to 67% of the two cohorts at different time points (Table 2)

Table 2 Here

Scores for both mental wellbeing and mindfulness were normally distributed at all time points. Mean scores are shown in table 2.

Mental wellbeing scores were average for this age group at baseline [Tennant et al., 2007]. They declined by more than 5 points between entry and 6 months in both cohorts, recovering somewhat by 15 months in cohort 1, but not cohort 2. Repeated measures analysis showed a large (partial  $\eta^2$ : cohort 1=.256/cohort 2=.293) and significant ( $F=20.68/16.60$ ;  $p<.001$  in both) effect of time on mental wellbeing in both cohorts. In cohort 1, post hoc pairwise comparison showed reduction in WEMWBS from entry to 6 months ( $p<.001$ ), gain from 6-15months ( $p<.001$ ) and an overall decline from entry to 15 months ( $p=.036$ ). The same analysis on cohort 2 showed reduction between entry and 6 months ( $p<.001$ ); and between entry and 15 months ( $p=.002$ ); but no difference between scores at 6 and 15 months ( $p=.687$ ).

Mindfulness scores showed a very slight decline and then rebound in cohort 1. This was marginally significant in repeated measures analysis based on complete cases ( $F=3.156$ ;  $p=.046$ ), but with no difference between individual data points on post hoc pairwise comparisons. In cohort 2 there was a more marked decline which was significant on repeated measures analysis based on complete cases ( $F 9.345$ ;  $p<001$ ). Post hoc pairwise comparison in this cohort showed reduction between entry and 15 months ( $p<.001$ ) only.

Mental wellbeing and mindfulness scores were significantly ( $p<.001$ ) correlated at all three time points in both cohorts (Pearson correlation coefficients in cohort 1= 0.56/0.55/0.65, and cohort 2= 0.47/0.72/0.62).

The deterioration in mental wellbeing over the first six months of the course affected a high proportion of both cohorts; a 3-7 point deterioration was observed in 30.3% cohort 1 and 14.1% cohort 2, and an 8 or more point drop in 36.1/51.7% of the two cohorts respectively. 12%/10.7% of students in the two cohorts respectively had scores indicating possible depression at the start of the course and 45.9%/55.5% at 6 months. Recovery by 15 months was greater in cohort 1 with only 19.4% of students with scores of this level compared to 44.7% in cohort 2.

Regression analysis to investigate predictors of mental wellbeing at 6 and 15 months showed baseline WEMWBS to be predictive in both cohorts at 6 months (cohort 1: $t=3.63$ ;  $p<.001$ /cohort 2:  $t=2.07$ ;  $p=.041$ ); and at 15 months in cohort 1 ( $t=2.7$ ;  $p=.007$ ) but not cohort 2 ( $t=.15$ ;  $p=.88$ ). Neither age nor gender were predictive in either model. Mindfulness score at baseline was marginally predictive at 15months in cohort 2( $t=1.75$ ;  $p=.08$ ) only.

Repeated measures analysis to identify predictors of change in mental wellbeing over time (Table 3) showed neither gender nor age to be significant. Change in mindfulness score was associated with change in mental wellbeing in both cohorts ( $P<.001$ ). Students with an increase in mindfulness scores from baseline to 6 months showed no change in mental wellbeing scores (cohort 1:  $n=41$ ;  $t=-$

.01;  $p=.98$ /cohort 2:  $n=44$ ;  $t=.75$ ;  $p=.46$ ); in contrast among students with a decrease in mindfulness scores during that time period, a significant drop in mental wellbeing was observed. (cohort 1:  $n=80$ ;  $t=9.63$ ;  $p<.001$ /cohort 2: $n=69$ ; $t=10.09$ ; $p<.001$ ). Students whose mindfulness scores increased between 6 months and 15 months showed an increase in mental wellbeing (cohort 1:  $n=58$ ;  $t=6.93$ ;  $p<.001$ /cohort 2:  $n=32$ ;  $t=-4.63$ ;  $p<.001$ ), whereas those whose scores decreased during this time period showed a marginal decline (cohort 1:  $n=49$ ;  $t=2.08$ ;  $p=.04$ ) or no change (cohort 2:  $n=44$ ;  $t=-.17$ ;  $p=.866$ ).

### ***Quantitative- on line questionnaire***

Response rates to the on-line questionnaire administered at the end of the course were poor: 63 (37.0%) students in cohort 1 and 32 (20.9%) in cohort 2. Using amalgamated responses ( $n=95$ ) for both cohorts (there were no significant differences between the two cohorts) for the questions asked of both cohorts, the most common reaction to hearing about the wellbeing course was surprise or curiosity with 25% reporting feeling pleased and 10% negative. A minority of respondents (37%) had heard of mindfulness before starting the course and 10% had tried mindful activities including meditating, yoga, tai chi or meditative prayer. Only 34% of students reported a positive response to their initial experiences of mindfulness on the course, but a further third reported more positive feelings at the end of the course. Additional questions asked of cohort 1 suggested that by the end of the course 94% of students had wellbeing strategies and for 56%, these were at least quite well implemented. The most popular strategy was physical activity: the next most common strategies included making time for relationships and socialising, getting enough sleep, taking breaks and relaxing. 27% of these students reported practicing some form of meditation or mindfulness at least once a week.

It was possible to link WEMWBS and mindfulness scores to questionnaire responses only for 51 responders in cohort 1 and analyses provide some indications that the course had a positive effect. Those who managed to implement their course-based wellbeing strategies had higher mindfulness scores after six months (Mean Difference (MD)=4.80;  $t=-2.41$ ;  $p=.02$ ) and 15 months (MD=5.10;  $t=2.89$ ;  $p=.006$ ). Those who found them useful had higher WEMWBS (MD=5.30;  $t=-2.16$ ;  $p=.03$ ) and mindfulness scores (MD=4.36; $t=-2.29$ ; $p=.02$ ) after 6 months and higher mindfulness scores (MD=3.75; $t=-2.18$ ; $p=.03$ ) after 15 months in contrast to those who did not implement or did not find them useful.

### ***Qualitative- interview study***

Themes emerging from the framework analysis were:

- The starting point: ignorance of wellbeing and mindfulness, and initial reactions to the course
- Students reflections on and learning from the course and changing attitudes over time
- Influences on the way the course was received, including peer attitudes and facilitator skills and experience

#### ***The starting point: relative ignorance of wellbeing and mindfulness and initial reactions to the course***

Most of the students interviewed said they had not given much thought to wellbeing before coming to Warwick: what it was, its relevance for them or its relevance to medicine. They had not expected it to be part of the medical course:



*'I didn't really know what wellbeing necessarily meant- [...], so to be honest I probably thought it was a little bit wishy-washy, like my very first impression, probably just a bit of a hand-holding thing.'* (Interview 52)

On probing, however, participants were able to offer definitions of wellbeing. These frequently involved being able to cope with negative emotions or mental states in a constructive way. One interviewee talked about having 'tools' which she recognised as contributing to her wellbeing, she just has not labelled then in that way before.

*'And I think I naturally did, you know, if things were getting too much for me I had my tools for it but I didn't see them in that way.'* (Interview 69)

Sport and exercise were mentioned by many participants as a key way they used to keep stress in check.

Few participants were familiar with the term mindfulness before they started the course, even those who were regular meditators.

*'I have been practicing meditation for 5 years, the word mindfulness wasn't necessarily something which was actually brought up.'* (Interview 52)

Initial reactions to learning of the existence of the course were mixed. Whilst the majority of students did not expect mindfulness and wellbeing to be formally taught as part of their medical degree, most appreciated the value of such a course, given the anticipated stresses and demands of a career in medicine:

*'I thought it was a good idea, it's well publicised that medical students and doctors [have] very stressful lifestyles...'* (Interview 65)

Some were surprised at the timing of the course, starting as it did in induction week and running through the first fifteen months of the course

*'I don't know, I was quite split on this in the sense that I thought it was appropriate and medical courses in the UK do have a reputation for being quite hard on the people involved. So I thought it was appropriate [.....]. But I didn't necessarily expect that it would be addressed to me as it were, in the first year.'* (Interview 56)

And a few had negative or dismissive reactions.

*'My very, very first reaction to it was that it was like, you know, it was a bit silly'* (Interview 71)

### **Students' reflections on, and learning from, the course and how these changed over time.**

Participants' reported varying experiences of the course. A session on team-working, where the Belbin team roles are examined, was commented on by many participants some reacting positively describing the insights as 'revelatory'; others reacting negatively to what seemed to be a way of 'pigeonholing' each other. Some students remembered and commented positively on other sessions; for example an exercise in emotional literacy.

*'And then I think the end of block 4 where there was a bit of role-play, emotional intelligence. That was a really good session, I remember that one. I think that's really important, especially for our career.'* (Interview 52)

Reflections on the mindfulness component of the sessions were also varied some positive and some negative, but the balance between positive and negative seemed to change over time.

Negativity was perceived by some interviewees as a general perception of the value of experiential versus factual learning as well as more specific responses to the exercises.

*'There was a feeling of 'why are they doing this... we are here to learn facts as it were'  
(Interview 56)*

Some participants found the experience of mindfulness something of a struggle to begin with and reported laughter and giggling. Although participants did not explicitly raise this, they would not have known or learnt to trust each other when the course started in induction week. Giggling and laughter may have been a response to nervousness.

*'I remember doing the body scan; I thought that one was quite good. [...] but we all nearly started laughing at one of them' (Interview 68)*

Others found being able to hear others breathing was challenging. The level of silence during exercises comes to be appreciated among groups practicing mindfulness, but is not common in other social or educational situations and so may provoke anxiety. This may manifest as an inability to focus.

*'Just hearing people breathe in, breathe out [...] it was hard to focus to say the least.'  
(Interview 54)*

But, as expressed by these participants, attitudes seemed to change over time as students became more familiar with mindfulness and started to feel that it could be helpful.

*'I think it has been well done and I think definitely there has been a change of attitude over the year.' (Interview 56)*

*'In the beginning it took us time to settle down and come to terms with it, whereas the end sessions we were very like, right let's get on with it, we need to do this because it's helpful.'  
(Interview 72)*

Although none of the students said so explicitly, it is likely that this happened in part because students started to feel safer with their groups and facilitators and thus less exposed by the practice.

Looking back over the course, some participants evidenced having acquired the self-reflexive attitudes that are at the heart of mindfulness and mental wellbeing:

*'Yes, I just think not one particular event but just think throughout the year when you are under stress or something [...] you're having trouble with group work or anything like that, you are thinking more like, oh, okay, what am I doing here, how can I change that? That's been quite new to me to like actually assess myself and the way I'm interacting, and I think that the focus of that part of the course has been quite a driving factor in making me think about those things... I think it's definitely been like a helpful tool in just like taking a step back, thinking about what you're thinking, why you're thinking it. I definitely do that more.'  
(Interview 69)*

Another participant illustrated adopting the skill of conscious breathing and self-talk, describing how they might approach going into an exam.

*'Right, this is all important now, I am just going to take a deep breath and kind of get into [that] sort of performance frame of mind [.....]. Now I am just going to go calm [...] and yes, I thought that was really good; that was really useful.'* (Interview 64).

Some participants recognised the value others had gained from mindfulness practices without feeling the benefit themselves.

*'I think it was nice to try some of the different techniques and stuff, the mindfulness, things like that, you know. It was interesting to be aware of them, although I don't think I found them particularly useful myself, I could certainly see how they could be useful. I saw how other people found them useful.'* (Interview 73)

And others, who did not take to mindfulness recognised the need to nurture their wellbeing and started or reconnected with activities that they saw as valuable for their wellbeing.

*'But then sort of from the second semester onwards I went back to doing ballet, which was kind of like a wellbeing exercise for me.'* (Interview 68)

### ***Influences on the way the course was received***

#### ***Peer attitudes***

The crucial role played by other students in shaping the atmosphere on the course, and thus how safe it felt to engage with the practices, was a common theme raised by participants. The impact was noted at different levels – within learning groups, friendship groups and amongst the whole year group. Some students found the course relaxing and useful, others were clearly sceptical about whether it would provide any benefit and therefore felt frustrated about the time allocated to this activity. Those that were vocally negative were reported as having an important influence especially in the context of the learning group.

*'I mean not only do they construct the atmosphere during the session, but actually they're actively constructing how you approach the session before you even step foot in the room if that makes sense.'* (Interview 56)

The number in any one group who felt negatively was thought to matter

*'So if ...like the majority were into the wellbeing exercises then the rest would follow.... kind of thing'. (Interview 68)*

*But it was also thought that negative views were easier to express.*

*'Even though like some people in the groups wanted to do it, there would be like quite few of them wouldn't want to do it, and then those people would voice their opinions a lot more than the person who is going to sit there and be like well I actually want to do these [...] body scan exercises.'* (Interview 71)

Reasons why some students held such negative attitudes were explored. Responses included scepticism of value, lack of understanding, timing of the course in the curriculum and overall time constraints within the course. Although the rationale for the course had been explained in a lecture before the first session some students were perceived as:

*'not really knowing what is going on [.....] so turned up at the session slightly defensive about the whole process and not willing to take it seriously'. (Interview 56)*

There is a lot for students to take in during induction week on a new course in a new setting with a new group of peers.

For some students the timing of the sessions mattered. Those who did not see the exercises as valuable found sessions just before exams particularly stressful because they perceived them as wasting time. Others valued sessions at these times as they helped with relaxation.

#### ***The skills and experience of the facilitator***

The facilitator was universally regarded as playing an important role in influencing and shaping the tone of the sessions and how well they were received by students, but different students could react to the same facilitator both positively and negatively. In general facilitators who had an established personal practice and were able to talk about the benefits the practice had brought to them were valued.

*'She's practicing quite regularly, she's quite expert, so she did bring in a lot of like positivity about mindfulness and also how to do it.' (Interview 55)*

So were facilitators who were able to explain how mindfulness would help in medical practice.

*'...and I think the good thing is she tried to link it to medicine as well, it's [not] only for now but you can learn it as a skill and then when you actually practice medicine, when you qualify then you can bring that skill to your workplace as well.' (Interview 55).*

Inexperienced facilitation was noted, together with the effects this had on facilitators' performance, for example rigidly sticking to a script or talking too much.

*'I think it was apparent it was one of the first times she'd done it. I think talking to the other groups they had a bit more flexibility whereas ours was quite rigid.' (Interview 70)*

*But then for the next two sessions she just talked too much... the wellbeing exercise we did were very good, but then like having her talk – well it counteracts.' (Interview 68)*

Lack of confidence to deviate from what was planned and allow discussion if problems came up was a further issue.

*'[She] seemed more interested in ticking boxes than listening what we had to say. When there was an obvious problem [.....] we wanted to talk about it and reassure the person. But we just got addressed with 'there is obviously an issue here and it is something you need to address with your personal tutor'. (interview 66)*

The way in which negativity was handled was noted by the students and mattered. Many valued the facilitator giving them autonomy, emphasising that joining in the mindfulness exercise was voluntary.

*'it very much felt like he was saying, genuinely, I'm more than happy for you to step outside, but you might enjoy this...I think the voluntariness was crucial to making it an actual beneficial experience.' (Interview 73)*

#### ***Qualitative- spontaneous feedback in routine course evaluation.***

Around 5% of students in both cohorts chose to make spontaneous comments on the wellbeing programme in the anonymous online feedback opportunities after each block of teaching. Comments tended to be polarised between those who wanted more of it and those who thought the sessions were a waste of their time.

*'I really enjoyed the wellbeing session - it really helps me and my [group] to understand ourselves and each other. I would like more of these.'*

On the whole the negative comments were expressed more forcefully. The overall sense was that these students resented taking time out from what they regarded as the useful components of a very full curriculum.

*'Do not feel I am gaining anything from the wellbeing sessions. See them as a distraction, and could be using the time to study!'*

The fact that the mindfulness exercises were perceived to be compulsory was a particular issue for some.

*'The one thing I struggled with was the expected meditation in the wellbeing sessions. I think that meditation is a personal reflective action so you should not be forced to do it.'*

### ***Integration of quantitative and qualitative findings***

The qualitative and quantitative findings in this mixed methods study offer different perspectives and some consistent findings. Both the interview study and the online questionnaire results are based on a sample that cannot be assumed to be representative, but they both suggest that few students had explicitly reflected on their personal wellbeing or knew about mindfulness before the course started. Discovering that both were part of the curriculum and introduced early on in the course was a surprise, viewed positively by some students but not others.

The findings from the interview study and the spontaneous qualitative feedback from a small proportion of the cohort are consistent in suggesting that reactions to the individual sessions were mixed with some seeing the point and appreciating the opportunity to learn new skills, and others regarding the sessions as an unwelcome distraction from the important learning of facts.

The online questionnaire results and the interview results both suggest that very few students were practicing meditation or mindfulness or were consciously concerned with their wellbeing when they started the course. They suggest that by the end of the course most students had adopted some practices to preserve their wellbeing and manage stress, with around a quarter trying to practice mindfulness regularly. Analysis of wellbeing and mindfulness scores replicated in two independent cohorts suggest that, in the context of an expected and observed general decline in mental health across both cohorts, the minority who were becoming more mindful were relatively protected. These results are corroborated by the online questionnaire responses which linked better wellbeing and mindfulness scores with implementation of wellbeing strategies.

From the interview study and online questionnaire, it seems that the course changed the attitudes of about a third of students from negative to positive. Some of the students who did not see mindfulness as of value to themselves at the present time appreciated that it was valuable to others or could be valuable in future. And the online questionnaire and wellbeing and mindfulness scores

suggest that those who engaged with the practices did better in terms of mental health than those who did not.

In the context of these modest successes for the course, the interview data point to several ways in which the course might be improved so the impact on student wellbeing is strengthened.

## Discussion

In the context of the well documented decline in mental health experienced by students embarking on medical courses [Cohen & Rhydderch, 2013; Firth-Cozens et al., 1987; Dyrbye et al., 2014; Department of Health, 2008], synthesis of the results of the different components of this study suggest that the new Warwick course had a modest positive impact on students attitudes and practices with regard to development of skills in mindfulness and the importance of protecting their personal wellbeing, as well as in protecting the mental health of the minority of the students who developed a regular mindfulness practice.

Answers to the second research question relating to key factors influencing success or failure of the course were addressed only by the interview data. The most modifiable of these factors was clearly the skills and experience of the facilitator. Facilitators who had a significant personal mindfulness practice provided a more accepting and authentic experience for students. Whilst during the planning stage for the course the importance of developing a personal practice was emphasised, not all facilitators were able to do so. As a result in the second year of the course, facilitation was limited to a smaller number of experienced mindfulness practitioners. This meant that the course was delivered to two learning groups combined. This may have limited effectiveness in another way because students had less opportunity to get to know and learn to trust the students who were not in their learning group.

The second issue influencing success was the negative attitude of a minority of students, which seemed to have prevented some of their peers from fully engaging in the course. Negativity arose because of the perceived lack of value of the course relative to fact-based learning and because the mindfulness exercises were perceived by some (because they were part of a compulsory PPD session), to be compulsory. Most students on the Warwick course have undertaken science based first degrees which do not include the explicit development of skills such as reflexive practice. They are faced with a large amount of new information in the first years of the course and it is understandable that they may, until they start to understand the importance of skill-based learning, at first prioritise fact-based learning. Facilitators now structure the teaching so that after the first two sessions, students who are negative about the mindfulness practice can depart before this part of the session and they actively invite students who do not want to be there to leave. The number who do so is small, but seems to provide relief for those who stay.

There is some debate amongst medical schools offering mindfulness courses as part of the curriculum, as to which year it is most appropriate to do so. The longest standing course (at Monash, Melbourne, Australia) is offered, like the Warwick one in the first year [Hassed et al., 2009], but other well established courses (eg at McGill in the US) offer mindfulness in the third year before the beginning of clinical clerkship (Dobkin & Hassed, 2016). The optimum timing may differ in graduate entry schools like Warwick and McGill and undergraduate entry schools, but mindfulness techniques have been successfully applied in both primary and secondary schools [Weare 2012] so age of itself should not be a barrier. The rationale for offering the course in year one is to tackle the decline in students' mental health which is so commonly observed and happens early in medical courses.

It is possible that several opportunities to engage with personal wellbeing and mindfulness are needed. Other opportunities to learn mindfulness are offered at Warwick during the four year course. A student selected component module in mindfulness is offered in year 2; some of the hospitals offering clinical teaching in years 3 and 4 provide drop in mindfulness sessions for all staff and students. Student welfare services offer mindfulness to students who self-refer or are referred

through other routes and the medical student body runs an active mindfulness society. Further evaluation at Warwick and in other medical schools is needed to establish the optimum provision.

***Limitations of this study.***

Gathering data from students on medical courses is difficult. Multiple requests for feedback and evaluation in the context of a very full timetable create evaluation fatigue. In this respect using mental wellbeing and mindfulness inventories for self-assessment, reflection and discussion as part of the course and gathering anonymised completed inventory scores during the sessions ensured a high response rate for the quantitative data. Even so some facilitators failed to gather this data in later sessions meaning that response rates dropped in both cohorts. A non-responder analysis showed responders to have similar mental wellbeing scores to non-responders at the outset, providing confidence that the results are not biased in this respect.

It is of note that average mindfulness scores did not improve during the 15 months in spite of the fact that around a quarter of students were practising mindfulness activities more than once a week and scores for some students were increasing. There are various possible explanations for this, but response shift [Howard, 2016] among students whose reflective capacities and self-awareness were not well honed at the start of the course, is one possible reason. Response shift occurs when understanding of a concept and thus the meaning of items in an inventory changes over time. Given the low proportion of students who had heard of mindfulness before the start of the course and the fact that they had not had time to discuss or reflect on the meaning of items before completing the Freiburg inventory for the first time, it is possible that this could have affected findings. Response shift may also have influenced mental wellbeing scores. Students whose capacity to reflect on their emotional and cognitive states has increased may find that they do not actually feel as good as they had previously thought. On the other hand, our results relating to mental health are entirely consistent with those of other studies in medical schools using mental illness inventories, so these results are less likely to be attributable to response shift.

Whilst response rates for the monitoring data provide reasonable assurance that the results reflect those of the whole cohort, the low response rates for the on-line questionnaire do not and must be interpreted with caution, but in most respects these data corroborate the findings of other components of this study.

Interview studies are not intended to provide representativeness. They do however provide a picture of responses to the course and some examples which show how the course affected some students. What these data cannot do is estimate the proportion of students who engaged with mindfulness and other wellbeing strategies which was why we intended to corroborate the findings with the on-line questionnaire.

It is important to note that Warwick is a graduate only entry medical course and different results might have been found in undergraduate medical courses. At the time this programme was introduced the medical school introduced a refreshed curriculum for the entire MB BCh degree and minor issues with the implementation could have influenced results relating to wellbeing in cohort 1. In the context of programmes to promote mental health and wellbeing in broader educational settings [Weare & Nind, 2011] 'whole school approaches' have been found to support effectiveness. Whilst there is increasing interest in mindfulness and wellbeing amongst the faculty at Warwick Medical School, this interest is still restricted to a minority. Modelling by teachers of what is taught on this course would have been rare.



These limitations influence the extent to which it is possible to have confidence in the efficacy of the programme or the results of the evaluation. In this situation it is important that we have presented quantitative data from two consecutive cohorts of students. Results which are replicable across both cohorts can be relied on to a greater extent than results from a single cohort, and the majority of results were replicable. In due course it may be possible to track these students as they go through medical training programmes and undertake a study to assess the long term influence of this course by comparing their wellbeing with those of previous cohorts of students or with graduate entry students from other medical schools. In the meantime it is also important that other medical schools introducing mindfulness and wellbeing programmes evaluate their courses to the fullest possible degree.

### ***Implications of the study findings***

This study shows that it is possible to implement a universal wellbeing and mindfulness programme in a UK medical school with indications of benefit to attitudes, practices and wellbeing of students who engage.

One key factor for effective implementation was the experience, skills and personal practice of the course facilitators

### ***Further research***

Further research is needed to establish ways of increasing student engagement with wellbeing practices including mindfulness, the optimum timing and extent of provision of such courses, and ways of handling negative attitudes.

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