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Under the Surface

Student Mental Health: An Acupuncture Pragmatic Intervention Service (HAPI)

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ABSTRACT

The number of students experiencing mental health problems at university has risen six-fold since 2010, with estimates of one in four students waiting for counselling services. The impact of poor mental health on students is significant physically, emotionally, socially and academically, with student suicide rates rising. Using a longitudinal pragmatic investigation, this study by The Acupuncture Academy (TAA) in Leamington Spa sought to examine the impact of a short course of acupuncture, for students aged 18-30 with current mental health issues. The acupuncture was delivered in a multibed environment (a large room with several couches separated by screens). Validated outcomes measures were used to assess changes in anxiety, depression, wellbeing and patient-determined symptoms and impacts. Results indicate that all outcomes had significantly improved at the end of treatment and one-week follow-up, and that these improvements appear to remain after three months. 84% of the sample planned to continue with acupuncture and would recommend it to others, and 89% believed that a similar service would be beneficial at their university. These results suggest that acupuncture may be an effective treatment for student mental health issues, particularly while waiting for counselling, and that a multibed clinic is both feasible and acceptable to students. It is recommended that future research extends the sample size and includes a waitlist control group to extend these findings.

BACKGROUND

The number of young people experiencing mental health issues continues to rise: in 2020, one in five young adults were identified as having a 'probable mental disorder' with young women more likely to be identified (27.2% versus 13.3% of young men) (NHS digital, 2020). 50% of mental health problems are established by the age of 14, and 75% by the age of 24 (Kessler et al, 2005). In recent years, statistics indicate that only one in four young people who sought NHS treatment for a diagnosable mental health problem actually received treatment, with services being stretched to breaking point (Campbell, 2018).

For those young people at college or university, the pressures of study, living away from home, money worries and social problems may prompt or exacerbate mental health issues (Universities UK, 2018). For the majority of students reporting mental health problems, the onset was in school and for only one in ten, the problem developed while at university (NICE 2020).

The impacts of student mental health issues include academic failure, dropping out of education, poor career choices and, at worst, suicide (House of Commons Library, 2020). The Student Housing Company (2016) found that 96% of students have felt stressed at university, 56% feel stressed all the time, and 71% currently experience, or have experienced, one or more forms of mental illness such as depression, anxiety or an eating disorder. A large-scale survey of university students found that 22% reported a current mental health diagnosis and 34% had experienced a psychological problem warranting professional help (Pereira, 2020). However, 40% of students who describe themselves as having mental health issues say they would feel too ashamed to speak to a mental health professional (The Student Housing Company, 2016). Consequently, the actual extent of the mental health crisis for students is likely much larger than reporting and referral statistics suggest. What is undeniable is that the problem is getting worse: the number of first-year UK university students reporting a mental health problem increased six-fold between 2010 and 2020 (Office for Students, 2021).

Despite the reluctance amongst many students to seek help, 94% of institutions have seen a steep increase in the numbers trying to access support services (Marsh, 2017). The rise in numbers has led to additional demands on student mental health services and further strains on both academic and therapeutic staff (Advance HE, 2018; Byrom, 2015; Thorley, 2017). Students are waiting longer for support: despite attempts to cut waiting times by limiting the number of sessions offered, students wait an average of three weeks from initial assessment, although the wait at large universities can range from eight to fifteen weeks (Yeung et al, 2016; Broglia et al, 2017). In 2016-17, up to one in four students at UK universities were waiting for counselling services (Institute for Public Policy Research, 2017). However, the increased strain on support services is not only attributable to greater numbers: a study profiling student mental health and counselling effectiveness suggested that over the past decade there has been an appreciable rise in the complexity and level of psychological distress that students present with (Broglia et al 2020).

In 'Minding our Future: starting a conversation about the support of student mental health', Universities UK (2018) explain that whilst waiting for a referral, 'students are missing classes, falling behind with coursework, and needing help.

The impact on grades can be huge'. A 210% increase in students leaving their courses early due to mental ill health was recorded between 2009 and 2015 (Marsh 2017). However, the most serious potential impact of student mental health issues is suicide – the leading cause of death in young people aged 20-34 in the UK (Office for National Statistics, 2018). Whilst young women are more likely to be identified as having a mental health issue, it is men who are most affected by suicide, accounting for 27.1% of male deaths in that age group versus 16.7% of female deaths. A survey of UK medical students found just under 15% of the respondents revealed that they had considered committing suicide at some point during their studies (Billingsley, 2015). Amongst UK university students, annual deaths by suicide increased by 79% between 2007 and 2015 (Institute for Public Policy Research, 2017). There is concern that actual suicide rates amongst UK university students may even be considerably higher than reported: a 2017 study of official suicide records concluded that there was an underestimate of as much as 50% among young people (Vaughan 2018). (It should be noted that none of these sources explicitly highlights statistics for international students studying in the UK, so it isn't clear whether this issue affects such students more or less.)

The quality and effectiveness of existing student mental health support provision is not well established, partly because the culture and practice of collecting routine data varies across student counselling services. Around half of UK institutions have not used any validated outcome measures to evaluate their services (Broglia et al, 2017). However, data from over 5,500 students obtained by the Association of University and College Counselling (AUCC, 2012) suggested that approximately 75% of students felt their academic outcomes were improved following counselling. Likewise, using pooled data from four university counselling services, Broglia et al (2020) found that 66% of student clients with planned endings to their course of counselling reported a 'reliable improvement' in their mental health issues. Nevertheless, a survey by Student BMJ found that 80% of medical students who had experienced treatment for a mental health problem whilst at medical school thought the level of support available to them was either poor or only moderately adequate (Billingsley, 2015).

Although psychological treatment approaches for anxiety and depression are the preferred first-line approach for many young people, most clinical guidelines in the UK, Europe and the USA suggest pharmacological options for young people with moderate to severe illness or who are unable to effectively engage with psychological therapies. Murphy et al (2021) explored SSRI medication use in young people, concluding that these are a reasonably effective treatment for depression and anxiety in this population; however, psychiatric adverse events need further investigation, and the effects in the long term on brain development, physical growth, sexual function and fertility are not well understood and were emphasised in this study as key concerns.

There have been calls for provision of a 'wider range of mental health and wellbeing options' more generally (Marsh, 2017) and there is some precedent for acupuncture as part of this provision. Since 2016, Anxiety UK, a large, long-established charity, has been running a pilot project in conjunction with the British Acupuncture Council (BACC), offering their members a course of six to twelve traditional acupuncture treatments for anxiety and anxiety-based depression (Anxiety UK, no date). Results indicate that 77% patients showed a reliable improvement, when assessed by validated measures, and that acupuncture compared favourably to the improvements from NHS talking therapies. The Atlas men's wellbeing programme, run via a London GP surgery, offered both counselling and acupuncture to address stress, anxiety and depression, and found both treatments, alone and in combination, significantly improved the men's wellbeing (Cheshire et al, 2016). An evaluation of the Stand Easy acupuncture service, a charity providing free acupuncture to veterans living with Post-traumatic Stress Disorder (PTSD) across Norfolk, found that four in five (80.8%) participants experienced a reliable and clinically significant improvement (Fraser, 2018).

Patients are already choosing acupuncture privately for their mental health care: in 2012, those seeking help for psychological issues accounted for around 13% of patients seen by independent acupuncturists (Hopton et al, 2012). Both experimental and clinical research findings support patients' use of acupuncture for mental health. For example, acupuncture has been shown to immediately improve functional connectivity in patients with major depressive disorder who had abnormalities in the default mode network of the brain compared to healthy subjects (Deng et al, 2016).

The landmark 'ACUDeP' pragmatic randomised controlled trial in 2013 (MacPherson et al, 2013) compared acupuncture with counselling and usual care for patients with moderate to severe depression. Both acupuncture and counselling were associated with significantly reduced depression at three months compared to usual care alone, and although the difference in outcomes between acupuncture and counselling patients was not significant, 33% of acupuncture patients were classified as improved (moved from a depressed to a non-depressed score) compared to 29% of counselling patients. Consequently, an analysis of this study found acupuncture to be cost-effective compared with counselling or usual care alone, although the ranking of counselling and acupuncture depends on the relative cost of delivering these interventions (Spackman et al, 2014).

The strongest evidence for acupuncture in the treatment of anxiety has been found in specific acute anxiety situations, such as medical operations (Pilkington et al, 2010). Although it has not been specifically studied, this may equate to the acute anxiety prompted by pressures of study or exams. A 2013 review found encouraging results of acupuncture for post-traumatic stress disorder (Kim et al, 2013), with one study reporting large effects of acupuncture maintained at follow-up, similar to the effects of CBT (Hollifield et al, 2007), suggesting 'acupuncture may be

an efficacious and acceptable non-exposure treatment option for PTSD'. There is also promising evidence for acupuncture for anxiety associated with substance misuse (Na et al, 2017); anxiety and perfectionism associated with eating disorders (Fogerty et al, 2010); and anxiety measured as a secondary outcome for disorders such as hyperventilation, musculoskeletal pain, and insomnia (BAcC, 2015).

There is little evidence available on acupuncture in the student population specifically. Although aimed at school children, the 'Space for Acupuncture' project at Stanford Community School in Somerset UK is nevertheless relevant: the acupuncture was well received by the young people being treated for anxiety, stress and ADHD, who reported marked improvements in wellbeing, happiness, sleep and energy (Rabone, 2006).

Given this background of increasing numbers of students developing mental health issues, greater severity of the issues students experience, the strain on existing support services, the unsuitability of pharmacological interventions for many young people, and the existing evidence of the effectiveness of acupuncture for mental health issues, acupuncture may provide an appropriate alternative or adjunctive treatment option for students. An independent off-campus acupuncture clinic would offer students the opportunity for a discreet service, away from their university environment, and those reluctant to talk to a mental health professional may find this intervention more acceptable. Furthermore, a multibed environment could contribute to the cost-effectiveness of treatment and the feasibility of such a setting in this context is useful to explore. Thus, the primary aim of this study was to determine the clinical effectiveness of a short course of acupuncture for students with mental health issues, with the secondary aim of examining the feasibility of providing acupuncture to this population in a multibed environment.

METHODS

Ethics

Ethical approval was obtained from the independent NCA Research Ethics Committee (REC). A detailed information sheet was provided to each patient, and informed consent was obtained from all who participated. Additional measures agreed with the REC included:

- If participants' baseline screening scores fell into the moderate or moderate-severe category for anxiety or depression, their GP was contacted to inform them, and the participant was advised to make an appointment.
- If participants' baseline screening scores fell into the severe category for anxiety or depression, their GP was contacted to inform them, and the participant was asked to contact either their own CAMHS support team or a local crisis centre before leaving the clinic.
- All the study acupuncturists completed a full day of mental health training and reviewed their undergraduate training on mental health red flags and suicide risk.

- Procedures being put in place to follow in the event of any participant attending the clinic whose behaviour might threaten the safety of other patients and/or practitioners.

Design

The study was a pragmatic, prospective intervention trial. A pragmatic trial seeks to test an intervention in the context of everyday clinical settings in order to maximise the applicability and generalisability of the treatment under investigation: it aims to examine 'whether an intervention actually works in real life' (Patsopoulos, 2011 p.218). To mitigate contextual variables, participants were selected based on specific criteria, all practitioners were trained at the same college, and all treatments were provided in the same clinic.

Patient Sample

Participants were recruited through flyers to student hubs, local universities and colleges, including Warwick university and medical school, and Warwickshire college. Thirty-eight¹ students completed a course of eight treatments. All participating students were aged between 18 and 30 years (average age 23.6 years) with a current self-reported mental health issue, who were not receiving any form of intervention or treatment for the issue besides medication, such as counselling or psychotherapy. Exclusions included current or recent acupuncture treatment. Eighty-four per cent were female and 29% of all participants had previously experienced acupuncture. Forty-two per cent were currently taking medication for their mental health, and 66% had sought other help besides medication in the past, predominantly counselling/psychotherapy. Additional patient characteristics are in Table 1.

Table 1: Sample characteristics

Year of study	
1st	37%
2nd	21%
3rd	29%
4th	13%
Term-time residence	
College or university halls	6%
Shared rental accommodation	34%
Living in family/parental home	42%
Living alone	18%
Duration of main mental health issues	
0-4 weeks	0%
5-11 weeks	0%
3 months to 1 year	16%
1-5 years	42%
Over 5 years	42%

1. The sample did not reach the planned size of 50 because the progress of patients' treatments was significantly disrupted by the lockdowns imposed during the Covid pandemic.

As part of the intake and initial diagnosis, patients were asked to report their main symptoms and impacted activities. The most common issues were anxiety, depression and associated physical symptoms, e.g. tension in shoulders, tight jaw and/or chest, teeth grinding, nail biting, fatigue, poor sleep, restlessness, etc. The most impacted areas of the patients' lives were studying, sleep, socialising/friendships/relationships, exercise, and general motivation.

Practitioners

Six practitioners provided the treatments for the students at the multibed clinic. All the practitioners had obtained their Professional Licentiate in Acupuncture² at the same BAAB-accredited training institution in the UK and were members of the BACC.

Intervention

All treatments were provided in a multibed clinic environment. Each student was offered eight treatments, weekly if possible, to be completed within three months. The first treatment also included a detailed consultation (traditional diagnosis). The treatment approach used by all practitioners was Five Element acupuncture.

Outcome Measures

At treatment one, patients were asked to complete an initial questionnaire, requesting information on the patient's studying circumstances, their mental health issue, the impacts and any current and/or previous treatments. Patients also completed each of the outcome measures to provide a pre-treatment benchmark: GAD-7, PHQ-9, SWEMWBS, MYMOP (below). Prior to treatments two to seven, patients were asked to complete MYMOP, rating the issues and impacts specified at treatment one. Prior to treatment eight, patients completed all the outcome measures to provide Time 2 data. One week after treatment eight, patients were asked to complete MYMOP, again using the issues and impacts specified at treatment one. Three months after treatment eight, patients were asked to complete all outcome measures to provide Time 3 data.

GAD-7: A brief measure for assessing Generalised Anxiety Disorder

GAD-7 is a validated 7-item scale for measuring and assessing the severity of generalised anxiety disorder in both clinical and research settings. It is a widely used measure and enables norm comparisons with multiple populations (Spitzer et al, 2006). Respondents rate how they have felt over the past two weeks in relation to the 7 items, from 'not at all' to 'nearly every day' resulting in a sum score between 0 and 21. Cut-off points are shown in Table 2.

2. This qualification, awarded by a private specialist acupuncture training college, is fully accredited by the BAAB as equivalent to a UK honours degree, meeting the standard required for membership of the UK British Acupuncture Council.

Table 2: GAD-7 sum score interpretation

GAD-7 score interpretation	
0-4	Minimal anxiety
5-9	Mild anxiety
10-14	Moderate anxiety
15+	Severe anxiety

PHQ-9: A brief measure for depression severity

The PHQ-9 is a reliable and validated 9-item scale to assess the severity of depression in clinical and research populations. It is widely used and enables comparisons with multiple populations (Kroenke et al, 2001). Respondents rate the extent to which they have been bothered by the problems described in the 9 items over the past two weeks, from 'not at all' to 'nearly every day', resulting in a sum score between 0 and 27. Cut off points are shown in Table 3.

Table 3: PHQ-9 sum score interpretation

PHQ-9 score interpretation	
0-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

SWEMWBS: Short Warwick-Edinburgh Mental Wellbeing Scale

The SWEMWBS is a validated 7-item measure of mental wellbeing, designed to be used with the general population across a wide variety of settings, including health services. Published norm studies enable comparison with other relevant populations. Respondents rate how they have felt over the past two weeks in relation to the 7 items, from 'none of the time' to 'all of the time'. Scores are summed and then transformed, using a conversion table. The UK norms for SWEMWBS are (Ng Fat, 2017):

Mean: 23.5; SD: 3.9
 Low mental health: 7-19.5
 Average mental health: 19.6-27.4
 High mental health: >27.4

SWEMWBS has been validated against GAD-7 and PHQ-9 and scores <18 indicate moderate to severe depression or anxiety (Shah et al, 2021).

MYMOP: Measure your medical outcome profile

MYMOP is a brief, problem-specific, validated measure for patients to rate, using a 7-point scale, the two most important symptoms related to their condition/issue, their impacted activities, and overall

wellbeing. Validation studies have shown MYMOP to be practical, reliable, and sensitive to change in both conventional and alternative health settings (Paterson, 1996). MYMOP rating changes of 1-point or more are clinically significant (Guyatt et al, 1998).

After the MYMOP items, two additional questions were asked in relation to this specific investigation:

- To what extent is your mental health problem affecting your daily life? Please score this from 0-6 (0 = not at all to 6 = all the time).
- To what extent is your mental health problem affecting your studies at college or university? Please score this from 0-6 (0 = not at all to 6 = all the time).

RESULTS

Outcome Measures

Between treatment one and treatment eight, the participants' severity of depression and anxiety decreased (Table 4, Figures 1 & 2). At the beginning of treatment, 68% of students had moderate or severe anxiety and 69% had moderate to severe depression. By treatment eight, these percentages had dropped to 11% and 16%, respectively. Paired sample t-tests for these decreases were significant: GAD-7 $t(37) = 9.712, p < 0.0001$; PHQ-9 $t(37) = 9.710, p < 0.0001$, indicating that a course of eight treatments had significantly reduced students' anxiety and depression.

At treatment one, the students' mean SWEMWBS score indicated low mental health for the sample, with 68% falling in the low mental health category. By treatment eight, the mean SWEMWBS indicated average mental health for the group, with over 83% reporting average or high mental health. (Table 4, Figure 3). A paired sample t-test was significant: $t(37) = -7.08, p < 0.0001$, indicating that a course of eight treatments had significantly improved the students' mental health.

Table 4: GAD-7, PHQ-9 & SWEMWBS at Time 1 and 2

Measure	Treatment 1	Treatment 8
GAD-7		
Minimal anxiety	3%	50%
Mild anxiety	29%	39%
Moderate anxiety	39%	8%
Severe anxiety	29%	3%
PHQ-9		
Minimal depression	13%	58%
Mild depression	18%	26%
Moderate depression	34%	13%
Moderately severe depression	30%	0%
Severe depression	5%	3%
SWEMWBS		
Mean	19.10 (low)	24.27 (average)
SD	3.51	4.47
Low mental health: 7-19.5	68.4%	15.8%
Average mental health: 19.6-27.4	26.3%	63.2%
High mental health: >27.4	5.3%	21%

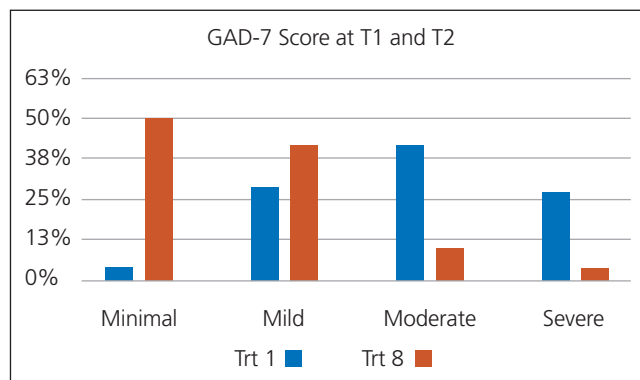


Figure 1: GAD-7 at Times 1 & 2

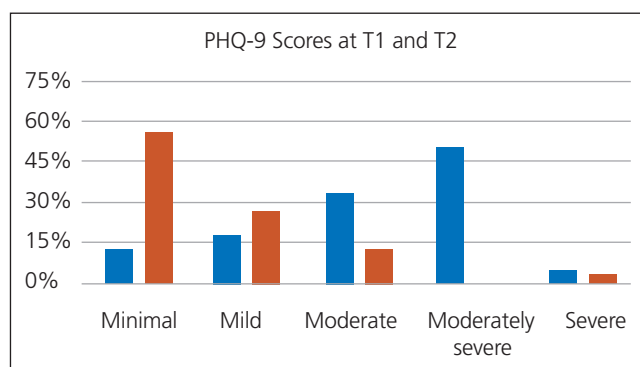


Figure 2: SPHQ-9 at Times 1 & 2

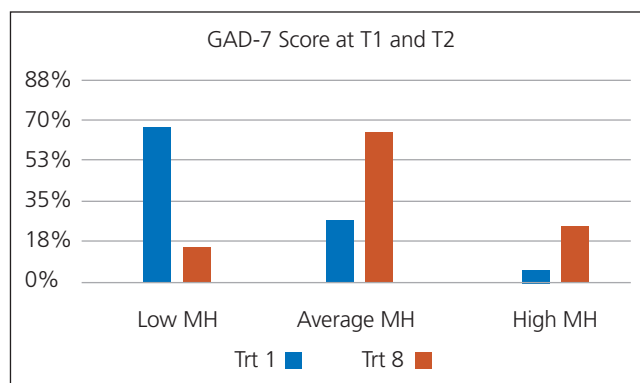


Figure 3: SWEMWBS at Times 1 & 2

Caseness: Both the NHS and Anxiety UK use the concept of 'caseness' to examine reliable improvement and reliable recovery for patients, using specific cut-off scores and changes-over-time for validated measures (NHS, 2018; Bovey 2018):

- 'Caseness' is a score that is high enough to be considered a clinical case: GAD-7 ≥ 8 ; PHQ-9 ≥ 10 .
- 'Recovery' is change from 'caseness' to 'non-caseness' in either/both anxiety and/or depression: GAD-7 ≤ 7 ; PHQ-9 ≤ 9 .
- 'Reliable improvement' is a change in one or both measurement

score (GAD-7 and/or PHQ-9) that surpasses the measurement error: GAD-7 = 4; PHQ-9 = 6, regardless of 'caseness'.

- 'Reliable recovery' is both a change to non-caseness and a reliable improvement.

The caseness, recovery, reliable improvement and reliable recovery for the participants are shown in Tables 5 and 6.

Table 5: Caseness: Number of clinical cases defined by GAD-7 and PHQ-9 scores

	GAD-7		PHQ-9	
	Pre-treatment 1	Treatment 8	Pre-treatment	Treatment 8
Caseness: No. of clinical cases	33 (87%)	9 (23%)	26 (68%)	6 (16%)

Table 6: Percentage of patients showing recovery, reliable improvement and reliable recovery from GAD-7 and PHQ-9 scores

	% Recovery	% Reliable improvement	% Reliable recovery
At treatment 8	74%	84%	68%

The MYMOP ratings at treatments one and eight are shown in Table 7. Symptoms, activities, and wellbeing all improved by at least 1.0 and the mean improvement across the 5 ratings was 2.6. This indicates that the changes in symptoms, activities, and wellbeing were all clinically significant. Ratings of impact on general life and university/college studies showed a 58% improvement between treatments one and eight.

Table 7: MYMOP ratings at Times 1 & 2

MYMOP ratings	Treatment 1	Treatment 8	Improvement in MYMOP rating	% Patients with >1-point improvement
Symptom 1	4.66	1.95	2.71	97%
Symptom 2	4.53	1.95	2.58	92%
Activity 1	4.89	1.92	2.97	92%
Activity 2	4.69	1.94	2.75	94%
Wellbeing	3.89	1.92	1.97	82%
Impact on life generally	4.13	1.71	2.42	89%
Impact on studying	3.89	1.61	2.28	79%

Follow-up MYMOP ratings were requested at one week and three months following treatment eight. There was an attrition rate between treatment eight (n=38), one week follow-up (n=30) and three months follow-up (n=12). The results in Tables 8 and 9 reflect the scores of those students who completed all the

measures at times 3 and 4. Between treatment eight and one week, the MYMOP scores remained stable, with a slight mean decrease in ratings of 0.14. All changes in MYMOP outcomes measures remain clinically significant compared to treatment one, with a mean improvement 2.4.

Table 8: MYMOP scores for treatments one, eight and one week follow-up

MYMOP ratings	Treatment 1 (n=30)	Treatment 8 (n=30)	1-week FU (n=30)
Symptom 1	4.53	2	2
Symptom 2	4.47	2.03	2.07
Activity 1	4.76	1.90	2.22
Activity 2	4.64	1.84	2.13
Wellbeing	3.80	1.93	1.97
Impact on life generally	3.97	1.70	2.20
Impact on studying	3.83	1.57	1.53

Table 9: MYMOP scores for treatments one, eight and three-month follow-up

MYMOP ratings	Treatment 1 (n=12)	Treatment 8 (n=12)	3-month FU (n=12)
Symptom 1	4.92	2.67	3.08
Symptom 2	4.67	2.50	2.91
Activity 1	4.50	2.17	2.33
Activity 2	4.90	2.30	2.38
Wellbeing	4.00	2.17	2.25
Impact on life generally	4.25	2.17	2.75
Impact on studying	3.83	2.42	2.08

At the three-month follow-up, ratings of the symptoms had decreased slightly since treatment eight by a mean of 0.41, and activities by 0.12; wellbeing had remained stable. Whilst there was a mean decrease in MYMOP outcomes of 0.63 between treatment eight and three months, all changes in MYMOP outcomes measures from treatment one to three months remain clinically significant, with a mean improvement 2.01. Acknowledging the attrition between follow-up, this indicates that the significant improvement in MYMOP scores from the course of eight treatments was still holding for the students three months later.

The sample size at three months was not sufficient to conduct paired sample t-tests for GAD-7, PHQ-9 or SWEMWBS. The comparisons between treatments one, eight and three months

are shown in Figures 4, 5 and 6. There was a slight increase in the number of students reporting moderate anxiety; however, compared to Time 1, no students reported severe anxiety or depression. For SWEMWBS, the mean score had dropped slightly from 22.91 (treatment eight) to 20.84 (three months); however, this remained within the average mental health band.

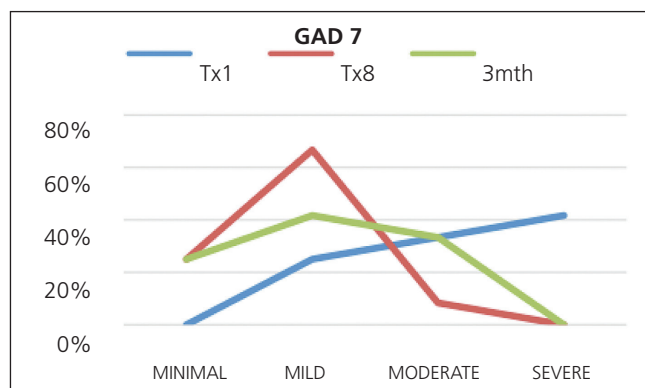


Figure 4: GAD-7 comparison for treatments 1, 8 and 3 months

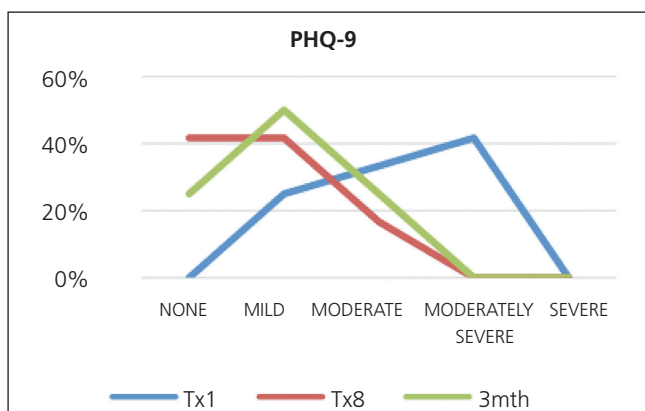


Figure 5: PHQ-9 comparison for treatments 1, 8 and 3 months

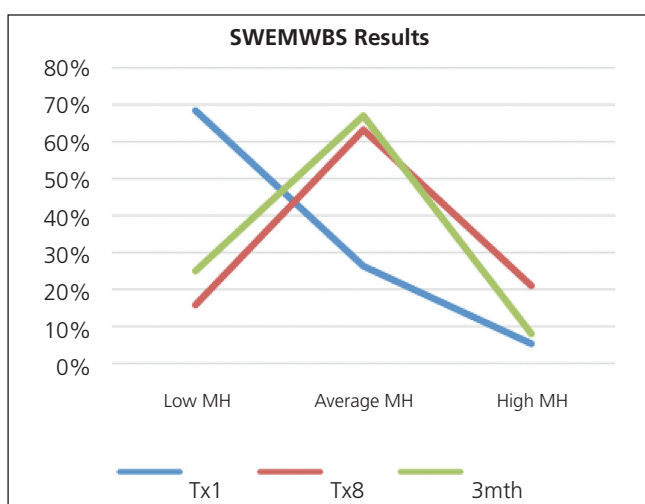


Figure 6: SWEMWBS comparison for treatments 1, 8 and 3 months

At treatment eight, 85% students reported feeling better or much better, and 84% planned to continue with acupuncture. When asked their opinions on the multibed clinic, 95% thought the clinic

environment was excellent; 100% rated their relationship with the practitioner as excellent; 100% would recommend it to a friend; and 89% thought it would be a useful support service at their university.

DISCUSSION

This pragmatic investigation, which examined the impact of a short course of Five Element acupuncture on students' mental health, identified clinically significant improvements in the students' symptoms, activities, and general wellbeing over the course of the treatments and at one-week follow-up. The data also show that anxiety, depression, and general wellbeing, as measured by GAD-7, PHQ-9 and SWEMWBS, all improved significantly over the course of treatment. Furthermore, the results indicate that these benefits may still exist after three months; however, because of attrition, more data are required to ascertain if these observed changes maintain statistical significance after three months. Prior to treatment, the sample rates of moderate to severe anxiety and depression and low wellbeing were 68%, 69% and 68%, respectively. After the course of acupuncture, these figures had reduced to 11%, 16% and 16%.

Similarly, the number of clinical cases (defined by 'caseness') dropped from 87% to 23% for anxiety (GAD-7) and from 68% to 16% for depression (PHQ-9). The percentage of patients whose GAD-7 and PHQ-9 scores showed recovery, reliable improvement, and reliable recovery (NHS, 2018) were 74%, 84% and 68% respectively. These improvements compare very favourably with those reported by Anxiety UK and the BAcC in their pilot study examining acupuncture for anxiety and anxiety-related depression and with the most recent reported outcomes for talking therapies by the NHS: the recovery, reliable improvement and reliable recovery indices were 52%, 77% and 52% respectively for the Anxiety UK acupuncture pilot (Bovey, 2018) and 51.6%, 68% and 49.1% for NHS talking therapies (NHS, 2020).

Whilst this intervention sought to examine the impact of acupuncture on student mental health, the results add weight to previous findings on the significant benefit acupuncture treatment may have for anxiety and depression in the general population. In their comparison of acupuncture, counselling, or usual care for depression, MacPherson et al (2013) found that both acupuncture and counselling resulted in significant improvements in depression, as measured by PHQ-9. They reported an average improvement in PHQ-9 scores at three months of -2.46. In our study, the average improvement in PHQ-9 was -6.69 at the end of treatment and -5.07 at the three-month follow-up, although the latter can only be considered as an observable trend because of the attrition in response rate.

Likewise, the Atlas Programme (Cheshire et al, 2016) examined patient outcomes from acupuncture and/or counselling for men with anxiety and depression, using outcome measures of Psychological Outcome Profiles (PSYCLOPS, very similar to MYMOP), WEMWBS (the extended version of SWEMWBS), and the Hospital Anxiety and Depression Scale. Significant improvements pre- to post-treatment were found for anxiety, depression (for those initially with depression), wellbeing and patient outcomes for acupuncture, counselling and combined groups. 78% of patients reported feeling better at the end of treatment, compared to 85% in our study. Similarly, Hollifield et al (2007) compared acupuncture, cognitive behavioural therapy (CBT) and a waitlist control group for post-traumatic stress disorder (PTSD), anxiety and depression. Both acupuncture and CBT resulted in significant improvements in PTSD, anxiety, and depression at the end of treatment and three-month follow-up. As with MacPherson et

al (2013), there were no significant differences between the acupuncture and counselling/CBT groups, indicating that acupuncture may be as effective as talking therapies in alleviating anxiety and depression.

We recognise when setting our study results in the context of previous study findings that these cannot be direct comparisons as there are many different variables impacting outcomes. Our study population was younger than the general populations in previous studies; it may be that younger people can respond better to acupuncture (one reason being they are likely to have fewer health conditions generally).

In addition, with the exception of the evaluation of the Stand Easy service providing acupuncture for veterans with PTSD, in which the intervention comprised a blend of 'Five Element and TCM approaches' (Fraser, 2018), there appears to be no other research into the outcomes of Five Element acupuncture for mental wellbeing. Five Element acupuncturists do place a special emphasis on the 'spirit' and on the emotions as a cause of disease, employing specific protocols known as 'blocks to treatment'. It could be that this type of acupuncture approach may be particularly useful for mental health issues, but with no prior research, this warrants further investigation and direct comparison.

Strengths and weaknesses

This study had a clear and practical research question and appropriate methodology: the pragmatic and longitudinal design and the controlled sample criteria. The study design enabled the examination of the impact of the intervention in a clinical setting, which can be replicated and is, therefore, more generalisable to other similar clinical settings. It also allowed for the analysis of potential longer-term benefits of the intervention on student mental health. Outcomes were measured using validated questionnaires, allowing the examination of clinical differences and comparisons with other studies and available norm data.

The intervention began in October 2019 and had recruited 29 student participants by March 2020. On 24th March 2020, the UK was placed into full lockdown due to the Covid-19 pandemic and the BACc instructed all members to cease treating patients. This impacted the study in two main ways:

- **Sample size and attrition:** By March 2020, 42 of the planned 50 participants had been recruited and started treatment. Of these, 50% had completed all eight treatments, and the remaining 21 had their treatment halted by the pandemic. By the time the clinic reopened, 62% (13) of the halted participants were unable to restart treatment. A further 9 students were recruited, bringing the final total to 38.
- **Time-point variations:** lockdown also affected the time scales between treatment one and treatment eight because, for some students, their treatment was interrupted by several months of lockdown.

There was also attrition to the response to follow-up questionnaires. Attrition is common in longitudinal studies and impacts the follow-up sample size and, potentially, may introduce attrition bias (Cumming and Goldstein, 2016). In this study, this risk of attrition based on sample characteristics was reduced by the specific selection criteria used.

Implications for clinical practice and future research

The results from this intervention and previous studies indicate

that acupuncture may be an effective treatment for mental health issues for students and a range of other populations. 84% of students involved in this study planned to continue with acupuncture treatment, and 89% believed an acupuncture multibed would be a beneficial service in their university. The significant improvements shown in this study, coupled with the students' opinions of acupuncture in a multibed clinic indicate that provision of a similar service may be a useful addition to the student mental health services provided at universities. Given the increasing number of students experiencing mental health problems at university (House of Commons Library, 2020; Pereira et al, 2020), the long waiting times for counselling services (Broglia et al, 2017; Yeung et al, 2016), and the increasing number of students reporting worsening mental health since the pandemic (House of Commons Library, 2020), these data indicate that acupuncture can be an effective support mechanism for students struggling with their mental health at university while they wait for talking therapies. Further, the data from MacPherson et al (2013) and Hollifield et al (2007) suggest that acupuncture may provide an effective alternative to counselling, thus reducing the cost and wait-times for other student mental health services.

It is recommended that future research recruits a larger sample size and considers including a waitlist control group to further assess the impact of acupuncture compared to care as usual. It is also recommended that such a study be extended to gather sufficient longitudinal data to assess the significance of outcome changes at three and six months.

Furthermore, a direct comparison of acupuncture approaches (such as Five Element acupuncture vs. TCM) may further explore any differences in outcomes that may be attributable to the specific nature of the intervention.

Qualitative research could usefully explore students' opinions on their experience of receiving acupuncture, and being treated in a multibed setting.

CONCLUSION

Poor student mental health is a significant and rising problem in the UK, with university student support services stretched to the maximum. The impact is significant for students, in terms of physical, emotional, and social health and on their academic studies and future life choices. This intervention indicates that a short course of acupuncture can significantly improve students' mental health – even during a global pandemic – and that these improvements may prove long-term. Delivery of acupuncture to students in a multibed clinic may be a cost-effective option, whether the treatments are paid for by the university or the individual student, and the data from this study indicate that this environment is acceptable to students. These results suggest that universities could consider inclusion of an acupuncture clinic in their student health services to help mitigate the risks associated with the current student mental health crisis.

Endnote: The clinic has continued to run successfully for two days per week, as a low-cost multibed, demonstrating ongoing feasibility, popularity and demand for such a service.

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