An evaluation of mindful clinical congruence in medical students after course-based teaching
Évaluation des résultats d'un cours pour les étudiants en médecine axé sur la congruence clinique en pleine conscience

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Abstract

Purpose: We questioned whether an intensive experiential core course would change medical students' intention to practice mindful clinical congruence. Our primary hypothesis was that we would see more of a change in the intention to practice mindful clinical congruence in those who had taken versus not yet taken our course.

Methods: From a class of 179 in second year we recruited 57 (32%) students who had been already divided into three groups that completed the course in successive periods. We measured mindful clinical congruence using a questionnaire developed and evaluated for validity. We also measured students' level of stress to determine if any effects we saw were related to stress reduction.

Results: Students who had just completed the course showed a greater intention to practice mindful clinical congruence than students who had not yet started the course. There was an apparent slight increase in perceived stress in those who had completed our course.

Conclusions: We can change students' intention to practice mindfully and congruently, which we believe will prevent a decline in compassion and ethical values in clerkship. The results did not appear to be explained by a decrease in stress in students who completed the course.

Résumé

Objectif : Nous avons cherché à savoir si un cours de base expérientiel intensif modifierait l'intention des étudiants en médecine de pratiquer la congruence clinique en pleine conscience. Notre hypothèse principale était que nous verrions un changement plus important dans l'intention de pratiquer la congruence clinique en pleine conscience chez ceux qui avaient suivi notre cours par rapport à ceux qui ne l'avaient pas encore suivi.

Méthodes : Sur une classe de 179 étudiants en deuxième année, nous avons recruté 57 (32%) étudiants qui avaient déjà été divisés en trois groupes qui ont suivi le cours dans des périodes successives. Nous avons mesuré la congruence clinique en pleine conscience à l'aide d'un questionnaire dont la validité a été évaluée. Nous avons également mesuré le niveau de stress des étudiants afin de déterminer si les effets observés étaient liés à une réduction du stress.

Résultats : Les étudiants qui venaient de terminer le cours ont montré une plus grande intention de pratiquer la congruence clinique en pleine conscience que les étudiants qui n'avaient pas encore commencé le cours. On a constaté une légère augmentation apparente du stress ressenti chez ceux qui avaient terminé notre cours.

Conclusions : Nous pouvons modifier l'intention des étudiants de pratiquer la pleine conscience et la congruence, ce qui, selon nous, empêchera un déclin de la compassion et des valeurs éthiques au cours de l'externat. Les résultats ne semblent pas s'expliquer par une diminution du stress chez les étudiants qui ont suivi le cours.

Introduction

One of the challenges of intense clinical training of medical students is that it appears to lead to declines in moral development,[1] and compassion[2] during the clerkship phase. of medical school. Multiple interventions have been considered to address these declines, without a clear consensus on the best approach.[1,2,3] Although many factors may play a role in the declines observed, one unifying hypothesis is that in response to distressing clinical situations, students adopt coping mechanisms that result in distancing and detachment from themselves as persons and from their patients.[1,4]

To address this disturbing trend, we set out to teach students Mindful Clinical Congruence[5]: moment to moment non-judgemental attention to self as a person, the patient as a person, and the clinical context. Mindfulness is the awareness that arises from paying attention non-judgementally to the present as it unfolds from moment to moment.[6] This approach, based on the work of John Kabat Zinn,[7] is learnable by many groups, including medical students.[8] The aim of the program is to train students to consider more choices about the object of their attention. Congruence, from the work of Virginia Satir,[9] is, in any interaction with another person, presence to self as a person, presence to the other person as a person, and presence to the context. We project that Mindful Clinical Congruence (MCC) will allow students to stay in touch with themselves and their patients as persons, even in stressful and intense clinical contexts.[10,11]

There are very few studies on the effectiveness of teaching mindfulness or mindful clinical congruence as a core part of the medical school curriculum. According to our literature review, only three other centers have taught mindfulness as part of the core curriculum[12,13,14,15] and no other institution that we are aware of teaches mindfulness combined with congruence as a way for students to better relate to patients.

Methods

Research design

We employed a quasi-experimental design with both control groups and pretests16 to make concurrent comparisons between students who had taken and not yet taken the Mindful Medical Practice (MMP) course in different two-month periods. We took measurements before students entered the six-month period in which our course took place (pretests) and after each two-month block (Appendix A).

Measurement

Since no existing scale measured the combination of mindfulness and congruence that we wished to study, we developed a 20-item questionnaire with a five-category scoring system similar to existing scales that measure mindfulness[17] and congruence.[18] We used the validity criteria suggested by Downing[19] to guide the development of our scale. We focused particularly on the content, internal structure, and relationship to other variables. The content of the initial scale based on our expertise in the area[20] was modified using detailed feedback from the seven current teachers of the course. We tested the internal validity of the resulting scale that had questions expected to yield positive, negative, or neutral responses using the results at baseline of students in our study. We found that there was an acceptable level of correlation between individual responses and the mean response within categories and the Cronbach's alpha gave results of: 0.89, 0.57, and 0.79 respectively for positive, negative, and neutral questions. In a comparison to other variables we found, as expected, a low correlation between the results on our scale and the Perceived Stress Scale. Further details of this validity testing are available from the authors on request and the resulting final scale is shown in Appendix B.

Intervention – the Mindful Medical Practice (MMP) course

In 2020 we published a detailed course guide giving the overall rationale for the course and a minute-by-minute template for each class. Because of COVID 19, we taught the course online rather than in person. We have also published a guide to the online version of the course.[21] Interested readers may easily find these.

Recruitment and ethics

We enrolled 2nd-year medical students from McGill University to participate in the study through the McGill Medical Students' Society. We collected information from students by administering questionnaires online. The research was approved by an ethics research committee at the University and students signed an approved consent form to participate in the study.

Data analysis

To test our main hypothesis that students who had just taken our course would show more change in their intention to practice mindful clinical congruence, we compared concurrent results in those who had taken versus never taken our course (Group 1 versus Groups 2 and 3 after the first two months, and Group 2 versus Group 3 after the second two months). We combined these

results using a Generalized Estimating Equations (GEE) framework with robust standard errors to allow for the fact that those in Groups 2 and 3 contributed two datapoints.[22] Since we wanted to assess a change in our students as a result of our teaching we subtracted from each student's mean response to positive, negative and neutral items their mean response to the same groups of items before the six month period of the study began. We specified in advance that if our students were changing in the direction of intention to practice mindful clinical congruence, the answers to positive and negative questions would change more in the direction predicted in those who had taken compared to those who had not yet taken our course. The results for the neutral questions served as an additional check on the tendency for students who had taken our course to answer positively to questions that asked about desirable behaviors. We also conducted the analyses above using the Perceived Stress Scale (PSS)[23] to assess the change in students' level of stress at different periods during the study.

Results

Fifty-seven students of 179 (32%) enrolled in the study and 48 (84%) completed all four phases of the research. The mean age in the whole class versus the study group was as follows: 25 years vs 24.2 years. The sex composition in the whole class versus the study group was: females - 57.8% versus 62.5%; males - 42% versus 37.5%. The comparison for sex, age and results on baseline responses to our questionnaires in the three groups are shown in Table 1.

This was not a randomized trial. Nevertheless, the relatively random distribution of students into three groups based on arbitrary decisions made by the medical school appeared to result in similar groupings. by the medical school appeared to result in similar groupings.

Table 1. A Comparison of the three groups of students who participated in the study

Variables	Group 1	Group 2	Group 3	P-value
N -- Baseline	22	20	15	
N -- Completed	20 (91%)	16 (80%)	12 (80%)	
Age**	24.6	24.5	23.3	0.3
% Female**	70	50	67	0.46
% Male**	30	50	33	
Mean and (Range) MCC				
Positive	0.688 (0.0 to 2.0)	0.573 (0.0 to 1.83)	0.744 (0.0 to 1.92)	0.613
Negative	0.098 (-1.0 to 2.0)	-0.004 (-1.0 to 0.75)	-0.100 (-1.0 to 0.75)	0.617
Neutral	0.675 (-0.25 to 2.0)	0.816 (0.25 to 2.0)	0.900 (0.0 to 2.0)	0.556
Mean and (Range) PSS	16.27 (6.0 to 32.0)	20.32 (12.0 to 36.0)	21.67 (8.0 to 32.0)	0.055

**Age and Percent female and male are calculated from responses gathered at the end of the study

The results for the change in responses from baseline for the MCC questionnaire and the PSS, combining the results after the first two months, and the second two months are shown in Figure 1.
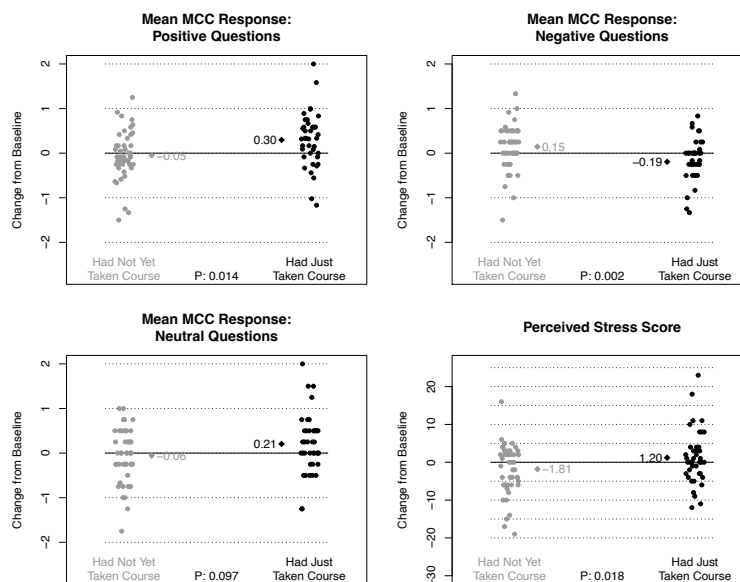

Figure 1. A comparison of the reported changes in students who had not yet done versus done the MMP course
**Changes in raw scores from baseline, in those who had and had not completed the course. P-values are based on z-tests with robust standard errors, computed with the Generalized Estimating Equations (GEE) package in the R statistical software.

For the MCC questionnaire, the mean change in those who had not yet done versus done the course were as follows: positive questions, -0.05 vs 0.30 (p = 0.014); negative questions, 0.15 vs -0.19 (p = 0.002); neutral questions, -0.06 vs 0.21 (p = 0.097). The results for the MCC scale changed in the direction predicted, with results for the positive and negative questions statistically significant. The PSS scale shows a statistically higher increase in stress in those who had done the course (p = 0.018).

Discussion

The unique feature of our MMP course is the combined teaching of mindfulness and congruence to deepen students' relationships to patients. Our results support our main hypothesis that our teaching increased students' intention to practice mindful clinical congruence as measured by students' responses on the MCC questionnaire (See Figure 1). The main strength of our study is a concurrent comparison between apparently similar students who had taken and not yet taken our course. The results did not appear to be explained by stress reduction since the level of stress was higher in students who had taken the course. Although it might be argued that changing students' intentions is not a major achievement, intentions are the bedrock of establishing a new way of being in students' future clinical practice and are justly identified as a foundational step in mindfulness.[24,25]

Limitations

There are several limitations:

1. Although we completed an initial validation of the MCC scale it should probably be tested further before being more widely adapted.

2. Because of COVID-19 we taught the course online and not in person.

3. We studied only students who volunteered for our study. This could affect the generalisability of our results since students more open to our teaching possibly volunteered.

4. Although our data reflect concurrent comparisons students were experiencing different clinical rotations at the time we compared them, which could affect our results.

We believe our results provide signals that students appear to be changing in the direction that will allow them to provide better care to patients. What we are measuring is close to the tip of students' personal icebergs,[26] below

which are feelings, feelings about feelings, perceptions, expectations, and longings that taken together contribute to students' ability to provide compassionate, and ethical care to their patients. Based on students' essays at the completion of the course[27] and other data that we have collected we believe that we are affecting them at multiple levels, but further qualitative work will be necessary to evaluate the full impact of our teaching.

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Appendix A

Timing of the Teaching of Mindful Medical Practice (MMP) Course to Different Blocks of Students

Group #	Students Responding	January / February, 2021	Students Responding	March / April, 2021	Students Responding	May / June,2021	Students Responding
1	22	Internal Medicine & MMP	22	Surgery	22	Family Medicine	20
2	20	Family Medicine	19	Internal Medicine & MMP	18	Surgery	16
3	15	Surgery	15	Family Medicine	13	Internal Medicine& MMP	12

*Students were aware of the block to which they were assigned at the time they were recruited.

Appendix B

Mindful Clinical Congruence Questionnaire

In answering the questions below please imagine an interaction with a patient in a hospital, outpatient clinic or other clinical setting during which you felt under stress. Please answer each question by comparing how you would hope to behave now compared with your likely behavior 2 months ago.

	-2 Much less likely	-1 A little less likely	0 No change	+1 A little more likely	+2 Much more likely	X Uncertain	Expected response*
To be ethical and not to be motivated by personal gain							Neutral
To be open and kind to myself							Positive
To explain clearly							Neutral
To be open and kind to the other person							Positive
To always defer to the other person's wishes							Negative
To stay aware of the clinical context							Positive
To monitor my physical sensations during the interaction							Positive
To be open and kind to both myself and the other person							Positive
To notice when I become judgemental of the other person or myself							Positive
To stay in touch with my values							Positive
To stay curious							Positive
To suppress my emotions							Negative
To use the thoughts and feelings that arise as a source of information.							Positive
To enunciate distinctly							Neutral
To stay focussed on the present moment							Positive
To notice when I become distracted							Positive
To notice when I react automatically							Positive
To insist that my expectations be met							Negative
To be unaware of my emotions							Negative
To collect important factual information from the patient							Neutral

Not shown in version administered to students.