



Step Siblings: a Novel Peer-Mentorship Program for Medical Student Wellness During USMLE Step 1 Preparation

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Abstract

Introduction The US Medical Licensing Examination (USMLE) Step 1 exam has proven a difficult stressor for medical students during their training, even with the advent of pass-fail scoring. The preparation period before the exam places students at high risk for burnout and depression, leading to impaired exam performance and other serious consequences including suicide. Many medical schools already provide academic support for students during USMLE Step 1 preparation, yet to date, there are no published programs specifically geared towards mental health support during this time.

Methods Students from the Larner College of Medicine at the University of Vermont developed the “Step-Siblings” program to partner pre-clinical level students preparing for Step 1 (Little Sibs) with clinical-level students (Big Sibs) in an effort to promote near-peer mentorship and support for those studying. Big Sibs were trained to offer emotional support and wellness advice, but specifically not to provide academic counselling. The pilot program was evaluated by student surveys.

Results Our program successfully paired Little Sibs ($n=125$) with Big Sibs ($n=75$) several months preceding the Step 1 dedicated study period, achieving the intended effect of reducing burnout and fostering a supportive community during a notoriously isolating and emotionally challenging time. Survey results indicated that a majority of Little and Big Sibs found the program helpful.

Conclusions This student-driven mentorship model is simple to implement, easily generalizable to other medical schools and other board exams, and bears the lasting benefit of combatting the stress and burnout so prevalent in medical education.

Keywords Peer mentoring · USMLE · Step 1 · Wellness program · Burnout

Introduction

The US Medical Licensing Examination (USMLE) Step 1 outcomes play a significant role in medical students’ ability to obtain the residency position of their choice, and as such, there is an enormous amount of pressure to succeed. Preparing for this exam is notoriously a stressful period and is consistently rated among students as the single most anxiety-inducing event throughout medical school [1, 2]. Rates of burnout, depression, and even suicide among medical students have been shown to increase during the Step 1 preparation period [1–3]. Furthermore, anxiety has been shown to have negative effects on cognitive activity, which can lead to lower academic scores [4, 5]. For many reasons,

the USMLE has changed the Step 1 exam from the original point-based scoring system to a pass-fail scoring system beginning in January 2022 [6]. This shift was intended to alleviate pressure surrounding the exam and encourage a more holistic application review process for residency candidates. However, the change may have the unintended effect of shifting the object of stress from Step 1 to other aspects of the residency application [3]. Mott et al. [3] performed focus group interviews at six medical schools regarding this decision to move to pass/fail scoring and found that students “explicitly stated skepticism or disbelief that a pass/fail Step 1 would improve their well-being,” as they felt “pressure to re-allocate time and resources to other academic pursuits” due to uncertainty about the impacts on the residency selection process. Thus, while the decision may have alleviated some student anxiety regarding Step 1, it has also introduced new fears, highlighting the importance of medical schools being proactive in their wellness support for students during the Step 1 study period.

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Medical schools have historically provided academic and career-focused mentoring programs. Many medical schools have implemented interventions aimed at improving academic support for board exam preparation [7–9]. No studies were identified describing programs specifically aimed at increasing student wellbeing and mental health support during the Step 1 preparation period.

The medical education literature demonstrates the importance of supporting medical student wellness and reducing stress throughout the entire educational experience, given the established link between burnout and suicidal ideation, and increased suicide rates among doctors relative to the general population [2]. Wellness committees and other institutional wellness programming are becoming more common, and even requisite, at medical school institutions [10, 11]. A systematic review by Shiralkar et al. [12] provides an overview of such published efforts, most of which are aimed at first and second year medical students. Interventions have typically involved education and sessions for meditation, self-care, mindfulness, and emotional reflection, with almost all of these having a positive impact on student wellbeing. However, a 2014 qualitative study by Encandela et al. [4] raised the point that given the overwhelming number of wellness-centric resources available, students may spend excessive time looking for the right resource, which could ultimately be one that is not evidence-based, and may even be counterproductive. They thus recommended the importance of medical schools providing students with approved evidenced-based resources. In 2021, a randomized control trial by Waechter et al. [5] demonstrated the effectiveness of *any* school-assigned participation in wellness interventions in decreasing student stress, burnout, and anxiety, concluding that “the type of wellness activity is not as important as requiring engagement in some form of wellness activity.” Students participating in any school wellness activity had better outcomes as measured by the following validated wellness questionnaires: the Perceived Stress Scale, the Center for Epidemiologic Studies Depression scale, the Maslach Burnout Inventory, the State-Trait Anxiety Inventory, and the General Health Questionnaire [5]. The success of students who participated in wellness activities supports an opt-out (versus opt-in) approach to recruitment for wellness support programs.

Though engaging in any institution-required wellness activity in medical school has demonstrated effectiveness, the structure of the wellness intervention remains important. Near-peer mentoring, in which mentor and mentee are close in experience level, has often been cited as beneficial because the mentor and mentee can relate to each other easily [9, 13–15]. Andre et al. [13] describe a successful near-peer mentoring program in which MS4 students led small group discussions regarding specialty choice, residency application, and life as a medical student. Many medical

schools utilize a similar near-peer mentoring program in which new M1 students are paired with an upperclassman “Big Sib” who can act as a resource [14]. A 2008 review by Frei et al. on medical school mentorship programs recommended the “tiered” approach in which students in advanced years mentor younger students (though, it acknowledged a lack of standardized outcome measures across studies to support this) [9]. The “near-peer” mentoring model lends itself well to structured wellness-support programs by pairing students with a go-to person in whom they can develop trust, but has not to our knowledge been implemented previously for Step 1-specific wellness support.

These support programs are well-structured and effective, but do not specifically address the issue of wellbeing during the Step 1 dedicated study period. A recent compilation of 477 medical student surveys recommended developing a support system as one of the key strategies to preventing Step 1-related burnout [2]. The authors determined that “the emotional distress experienced by students during Step 1 study is largely unrelated to their actual academic performance on practice questions or exams, and that all students benefit from additional emotional support during the dedicated study period,” further underscoring the need for structured wellness support during the time of Step 1 preparation [2]. To date, there are no programs reported in the literature serving this purpose, despite the number of other published wellness interventions and the demonstrated need [2, 4, 10–12].

To address this deficit, we developed and implemented the “Step Siblings” (Step Sibs) program at the University of Vermont Larner College of Medicine (LCOM). The program emerged as an initiative from the College of Medicine’s Wellness Committee, with support from members of the Student Council. The program was specifically designed without an academic advising component, as this need was already sufficiently met by other measures in place at the University of Vermont. The Step Sibs program was entirely student-developed and run, requiring minimal faculty support and no funding from the LCOM. The primary aim of this study was to assess if near-peer mentoring as used in the Step Sibs program helps to decrease stress during Step 1 studying. Secondary aims included using student feedback to determine which aspects of wellness mentoring (resource sharing, perspective, etc.) are most beneficial to such programs, and what future changes would make the Steps Sibs program even more effective.

Methods

The University of Vermont LCOM initiated the Step Sibs program in October of 2020 as the second-year class of medical students began to prepare for their USMLE Step 1

exams, with a school-imposed test deadline of March 2021. This timing was intentionally selected because it was considered early enough in the academic year to connect most of those studying for Step 1 to an upperclassmen mentor before their dedicated study period began and late enough in the academic year to avoid inducing undue stress for those who may not have begun Step 1 preparations yet.

The program was offered as an opt-out option for students studying for Step 1 or “Little Sibs.” This group included both M2 and M3 students (due to COVID-19, many M3 students postponed their Step 1 exams by a year.) The program was offered as an opt-in option for those M3 and M4 students who had already taken Step 1 or “Big Sibs.” Recruitment was conducted entirely via email following this opt-in or opt-out approach. Little Sibs were paired at random with Big Sibs, with many Big Sibs taking more than one Little Sib due to the greater number of Little Sibs enrolled. At the beginning of the program, Big Sibs attended a mandatory 1-h training session explaining the intentions of the program and expectations for the Big Sib-Little Sib relationship (full training materials included in Appendix A). Big Sibs were encouraged to provide support, encourage wellness activities, and offer connections to other resources (academic, wellness, counselling, etc.) They were also advised to share perspectives on their own study experience.

The training explicitly instructed Big Sibs not to provide Little Sibs with academic advice regarding Step 1 studying, as the program was intended to be a support only for well-being and mental health during the study period. Rationale for this separation included an existing peer tutor program, concern regarding lack of formal academic tutor training of Big Sibs, and concern for the sharing of unsolicited or non-evidenced based study advice which may have worked well for one student but may not be the best advice for a particular Little Sib’s learning style. Big Sibs were instructed to initially contact their Little Sibs via email to identify their Step 1 test dates and specific mentoring needs and to explain their roles as well as the program’s goal of ensuring wellness support during the often-isolating Step 1 dedicated period. Big Sibs were also encouraged to provide their phone numbers to Little Sibs for further contact.¹ It was recommended that Big Sibs ask their Little Sibs how frequently they would like to communicate. It was also recommended that Big Sibs check-in at least once a month with an encouraging message and more frequently as the Step date approached. It

¹ We recommended that Big Sibs contact their Little sibs at least once a week, but noted that this amount would vary among Big-Little Sib pairs. We recommended increasing amounts of contact as Little Sibs’ exam dates approached and advised Big Sibs to be persistent in their encouragement to Little Sibs, who might be less responsive during this stressful time period. Due to COVID, we did not encourage in-person meetings between big and little sibs.

Table 1 Student characteristics

Characteristic	N (%)
Little Sibs	
Enrolled in Step Sib program	125/140 (89%)
M2	121/123 (98%)
M3	4/17 (24%)
Withdrew from program	2/125 (2%)
Response rate to survey	69/125 (53%)
Big Sibs	
Enrolled in Step Sib program	75/233 (34%)
M3	42/104 (40%)
M4	33/111 (30%)
Paired with 1 Little Sib	44/75 (59%)
Paired with 2 Little Sibs	31/75 (41%)
Response rate to survey	40/75 (53%)

was emphasized that Little Sibs should not feel pressured to initiate communication or respond if they did not wish or need to. During the training, Big Sibs were instructed to come to the Step Sib Program Coordinators and the Dean of Student Wellbeing if they had any concerns about their Step Sibling or were unsure of how to respond or connect them with wellness resources.

Step Sibs was evaluated using anonymous surveys of both Little and Big Sibs. As this was a pilot program, a more subjective and less time intensive evaluation method was chosen in order to (1) elicit student reflections on the program’s effect on their stress levels and overall wellness and (2) to seek feedback for future improvements to the program. Once all Little Sibs had taken their Step 1 exam, we evaluated the program via Qualtrics surveys sent out to all participants (full surveys included in Appendices B and C). Ten questions were sent for evaluation on a Likert Scale with effort to keep the questions as similar as possible between Big and Little Sibs for ease of comparison. Each survey ended with a space for optional open-ended comments. Response data was evaluated for trends in agreement and disagreement. Qualitative thematic analysis was performed on student comments.

Results

The Step Sibs program successfully enrolled 89% of eligible M2 and M3 students taking Step 1. A total of 75 M3 and M4 students elected to become Big Sibs. By the start of their clerkship year, 91% of the Little Sibs had taken Step 1, the recommended deadline set by LCOM. Further student characteristics are displayed in Table 1.

Sixty-seven percent of Little Sibs and 70% of Big Sibs communicated with their counterpart via phone, with the majority of others using email. We did not ask respondents

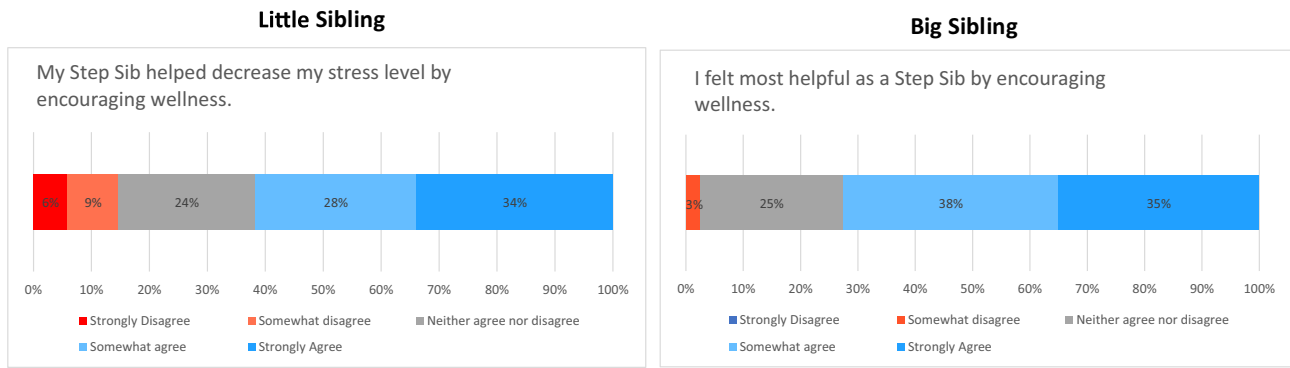


Fig. 1 Student responses regarding amount of contact

to specify whether they primarily used texting or phone calls. As shown in Fig. 1, 77% of Little Sibs felt that they were contacted by their Big Sibs “just the right amount.” No Little Sib reported being contacted too frequently. As shown in Fig. 2, for the majority of Big Sibs (68%) and Little Sibs (88%), this amounted to contact “several times throughout the program.”

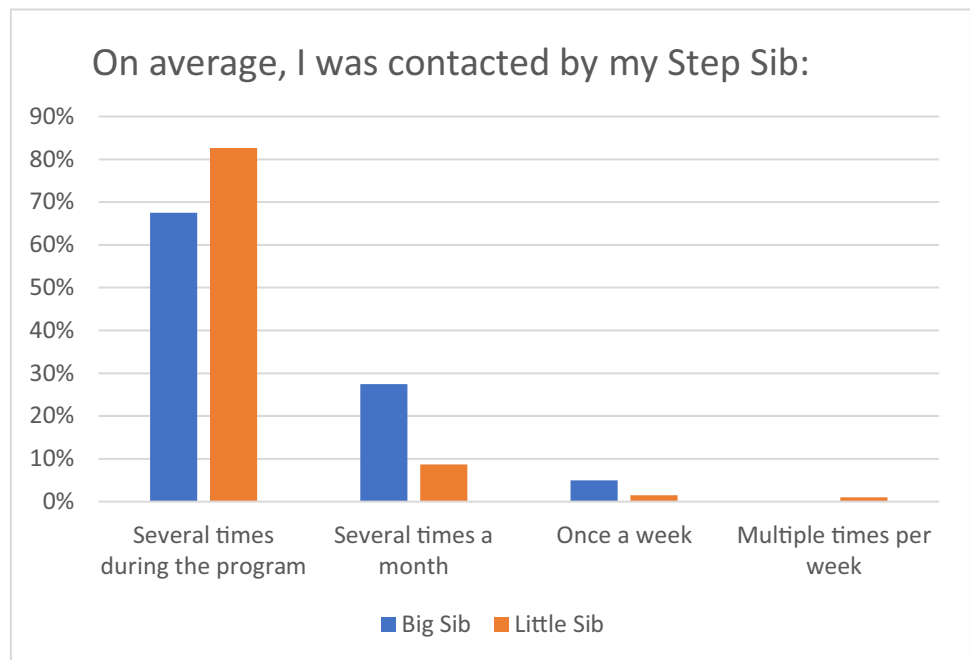
Of the Little Sibs, 56% either somewhat or strongly agreed that they found the program helpful. Of the Big Sibs, 53% either somewhat or strongly agreed that they felt helpful in their roles as Big Sibs. As seen in Fig. 3, 62% of Little Sibs either somewhat or strongly agreed that the program reduced stress levels through encouragement of wellness. Both Little and Big Sibs either somewhat or strongly agreed that sharing perspective and experience was helpful, 62% and 70%, respectively. Both groups either somewhat or strongly agreed that sharing resources was the least helpful

role of the Big Sibs. A small minority (4%) of Little Sibs commented that the program paradoxically increased their stress by providing another resource when they were already “resource-overwhelmed” or by introducing the program too early before they had started studying.

Congruent with the aims of the program, 93% of Little Sibs either disagreed or were neutral in response to the statement “my Step Sib offered unsolicited academic support and study strategies to me.” However, 55% of Little Sibs either somewhat or strongly agreed that they wished their Big Sibs had been able to offer more academic and study strategies. Thirty-eight percent of Big Sibs indicated either somewhat or strongly agreed with this desire as well.

Results and thematic analysis of the open-ended comment section are displayed in Tables 2 and 3. Twenty-seven Little Sibs (39%) and 13 Big Sibs (33%) responded with open-ended comments. Major themes from Big Sibling

Fig. 2 Student responses regarding frequency of contact



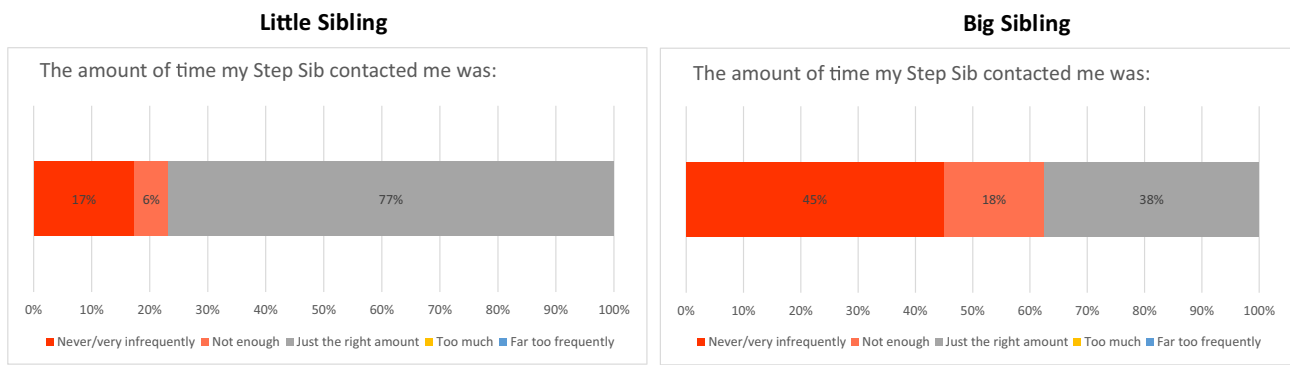


Fig. 3 Student responses regarding helpfulness of wellness support

responses included responsiveness of their Little Sib and support for the concept of the program overall. Feedback from Big Sibs indicated a wide range of responsiveness from their Little Sibs. Overall, the majority of comments from Big Sibs contained a positive reflection of the program. The major theme among Little Siblings was the desire for an element of academic support within the program. Some Little Sibs also indicated being unsure of the goals of the program. Overall reflections from Little Sibs were mostly positive as well, with the caveat that some Little Sibs found the program less useful if they already had a strong support network in place.

Discussion

This was the program’s pilot year, and our results indicate that it was viewed overall favorably by both Big and Little Sibs as an initiative to relieve stress related to Step 1 studying. Students left many positive reflections of the program in their comments, and more than half of the Little Sibs found the program helpful in decreasing stress. A minority of students, however, did not find Step Sibs helpful. These students cited already having existing mentors or supports in place. Regardless, the program was helpful in decreasing stress for the majority of students. Moreover, the positive impact of wellness programming on even a minority of participants validates its broad availability to all: preventing even one suicide or mental health crisis is worth enrolling

Table 2 Thematic analysis of Big Siblings comments

Theme	N
Unresponsive Little Sib	6
Great concept	5
Clearer communication	3
Did not need my support	3
Limitations of the pandemic	2
More academic support	2

any number of students who may or may not stand to benefit. In light of this, we argue that the opt-out recruitment method remains beneficial for all students in that it also compels all Little Sibs to think about their wellness and connect early on with a mental health-specific support system. The program also provides the structured accountability of having an older student regularly check in to offer perspective and wellness resources. Importantly, once enrolled, the Little Sib would have no obligation to engage more than they wished or needed to. Accordingly, results demonstrated that very few Little Sibs felt pressured to communicate with their Big Sibling.

Our program was specifically designed to start several months before the Step 1 dedicated study period to give time for Big and Little Sibs to connect and establish a support system prior to the start of intensive study time. We sought institutional guidance on ideal timing to pilot the program and were mindful in the selection of this timing to not be too early and induce undue stress. We did not specifically survey students with regard to timing preference, which may be indicated for future quality improvement studies. We also used an opt-out recruitment model, which has been shown to increase enrolment and decrease the barrier of entry into health and wellness programs [5, 16]. Opt-out programs for therapy for residents have been shown to promote normalization and convenience

Table 3 Thematic analysis of Little Siblings comments

Theme	N
More academic, less wellness support	8
Positive reflection	7
Unresponsive Big Sib	5
Great concept, but...	4
Better training/expectations	3
Stress induced by program	3
Timing of contact	3
Used other mentors	2

of wellness or therapy programming, reaching those who may be less likely to engage with these due to perceived lack of need or stigma [17].

A large majority of the Step Sibs indicated that “several times throughout the program” was “just the right the amount of contact.” A minority of Little Sibs and Big Sibs reported little to no contact. Evidently, ensuring clarity of Big Sib expectations and increased check-ins with Big Sibs are areas for future improvement. Though survey responses from the less engaged Little Sibs may have polarized data from responses of more involved Sibs, we were still interested in the reflections of those who participated less. Again, it was essential to the aim of the program that the Little Sibs did not feel pressured to engage more than they wished or needed, so as not to overwhelm them.

In their training session, all Big Sibs were provided a targeted list of evidence based, institutionally approved resources for further academic, wellness, or mental health support. Interestingly, our results showed that Big Sibs were most effective in their roles by providing support through sharing their own wellness and mental health strategies and suggestions, but less helpful in connecting their Little Siblings to further resources. This is consistent with the literature on the specialized role of a near-peer in mentorship through sharing their recent experience [2, 13, 15]. Still, future iterations of the program would benefit from more specific training on appropriate times to share additional resources, with care to avoid the ‘resource overload’ phenomenon described in the literature [4]. Lastly, though check-in emails were sent throughout the program to the Big Sibs reminding them to contact Little Sibs and to assess the need for additional support, future iterations of the program would benefit a more formal mid-point check-in meeting.

A majority of Little Sibs and a large proportion of Big Sibs indicated that they wished for additional academic support from their Big Sib such as discussing study strategies and scheduling tips. Many expressed frustration at the program’s separation of academic and wellness support. One Little Sib illustrated the link between wellness and academic support for Step 1: “We need to equip students with the tools to be successful, and we also need to view academic preparedness as a form of wellness, instead of treating them as two mutually exclusive entities.” Several conclusions could be drawn from this. Firstly, the goals and rationale of the program should be more explicitly stated at the beginning. Secondly, separation of academic and wellness mentoring may not be beneficial. This may also indicate that the measures already in place for academic support surrounding Step 1 are inadequate. Big Sibs underwent a mandatory training emphasizing the program’s wellness-centric goals,

while Little Sibs did not have a formal orientation to the program. Big Sibs were thus left to individually introduce the program and its goals and expectations to their Little Sibs. It is therefore possible that there was a lack of transparency regarding the Big Sib’s role as purely a wellness support versus an academic mentor. In light of this, moving forward, the program will implement an orientation for the Little Sibs that acknowledges the link between mental wellbeing and academic performance, but clearly outlines the intention for the program as a wellness intervention separate from academic mentorship. This clarification could also provide an opportunity to highlight and reinforce existing academic support systems. Or, for future versions of the program, a partnership with existing academic peer tutors may be considered.

The evaluation of the program through anonymous survey was limited by the use of self-reported answers and the use of Likert Scale “agreeableness” as a survey measure. This study could be improved by future utilization of a validated screening tool for student burnout such as the Medical Student Well-Being Index that could be administered in the beginning and at the end of the program [18]. Additional changes to future versions of the program are listed in Table 4; all are based on direct student feedback.

Efforts to decrease medical student stress are proven to reduce burnout and its serious consequences such as depression, anxiety, apathy, and in the worst cases, suicide [2]. Such efforts also increase medical student happiness and likely benefit Step 1 exam scores and overall satisfaction with medical education experience [4, 7]. As previously discussed, the advent of pass-fail scoring for Step 1 does not negate the need for Step Sibs and other similar programs, as student comments reveal either a stable or increased level of anxiety related to this change and the uncertainty it creates [3]. We intentionally created this program to be easily reproducible as an entirely student run, self-supported program that would be simple to implement in any medical school where there are motivated 3rd and 4th year students who could act as Big Siblings.

Table 4 Anticipated changes to program

Further clarity in Big Sib Orientation regarding expectations: how and when to share resources
Orientation for Little Sibs/overview of program
Additional mid-program check-in with Big Sibs
Use of validated and objective measure of burnout in place of survey
Explore partnership with academic mentors
Further evaluation of ideal timing of start of program
Further evaluation of effective Big-Little Sib pairings to improve the process of matching

Conclusions

Structured peer-mentoring programs for Step 1 are lacking [14], and specifically, peer-led initiatives for increasing student wellbeing and resilience during the Step 1 study period have not been reported in the literature. Our “Step Sibs” program pairs experienced M3 and M4 students with M2 and M3 students studying for Step 1, one of the most stressful periods of students’ medical education [1]. Big Sibs were specifically trained to avoid offering academic support that can be accessed through different avenues, to preserve the purely wellness-focused function of the initiative. There was variability in the amount of contact between Big and Little Sibs and not every student found the program helpful. Nevertheless, we maintain that the success of this program is not solely defined by the breadth of its reach, but by its demonstrated helpfulness to even a fraction of the student population. Thus, this pilot program will become a permanent installation at the University of Vermont LCOM. Given its relative ease to implement (minimal need for faculty support, no funding), a “Step Sibs” model should be strongly considered by other medical schools hoping to improve students’ mental health during the Step 1 study period. This and similar programs function to increase student satisfaction and ultimately reduce burnout among a historically at-risk population.

Limitations

As discussed, this was the program’s pilot year. This study is limited by the lack of a randomized control group (i.e., two groups of students within the same college of medicine or from another college of medicine.) We were also limited by a small population size and incomplete response rate to the evaluation surveys. Additionally, due to COVID-19, we did not encourage in-person meetings between Big and Little Sibs. In the future, such an approach would be more desirable for fostering more personal Big-Little Sib relationships.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40670-022-01571-4>.

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Availability of Data and Material Original training resource and survey questions available under Supplementary Material. The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Code Availability Not applicable.

Declarations

Ethics Approval This study was reviewed and deemed exempt by our University of Vermont Institutional Review Board. The study was deemed quality improvement/program evaluation and thus not designated as human subject research.

Conflict of Interest The authors declare no competing interests.

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