

1 **Title:** *Med Moth: A Storytelling Platform for Improving Wellness in Medical Education*

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3 **Author names:** Michelle Silver

4 **Degrees:** MD

5 **Affiliations:** Hospital of the University of Pennsylvania Department of Internal Medicine, 3400 Spruce
6 Street Philadelphia, PA 19104*

7 Correspondence should be addressed to Michelle Silver, 105 Brinley Ct, Philadelphia, PA 19146;
8 telephone: 339-225-2138; e-mail: michelle.silver8@gmail.com.

9

10 **Author names:** Sarah Ohnigian

11 **Degrees:** MD

12 **Affiliations:** Beth Israel Deaconess Medical Center Department of Internal Medicine, 330 Brookline Ave
13 Boston, MA 02215*

14

15 **Author names:** Hugh Silk

16 **Degrees:** MD, MPH

17 **Affiliations:** University of Massachusetts Department of Family Medicine and Community Health, 55 Lake
18 Avenue, North, Worcester, MA 01655

19

20 **Author names:** Michael Ennis

21 **Degrees:** MD

22 **Affiliations:** University of Massachusetts Department of Family Medicine and Community Health, 55 Lake
23 Avenue, North, Worcester, MA 01655

24

25 **Author names:** Judith Savageau

26 **Degrees:** MPH

27 **Affiliations:** University of Massachusetts Department of Family Medicine and Community Health, 55 Lake
28 Avenue, North, Worcester, MA 01655

29

30 *Research was conducted at the University of Massachusetts Medical School prior to the graduation of first
31 and second authors, who are now listed with their current institutional affiliations

32

33 **About the author:** Michelle Silver is a second-year Internal Medicine resident at the Hospital of the
34 University of Pennsylvania (Philadelphia, PA) where she started training after receiving her medical degree
35 from the University of Massachusetts Medical School (Worcester, MA). Her career interests include primary
36 care, medical education, and exploring the role of narrative medicine for medical trainees and professionals.

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16
17 **Personal, Professional, and Institutional Social Network accounts.**

- 18 • **Facebook:** <https://www.facebook.com/UMassMed/>
- 19 • **Twitter:** @UMassMedical

20
21 **Discussion Points:**

- 22 1. A live storytelling platform in medical school can create positive personal and professional
23 development outcomes, for both students and faculty.
- 24 2. Storytelling is an underutilized form of mindfulness in the medical community that has the potential
25 to foster resilience in trainees.

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27 **Publisher's Disclosure:** *This is a PDF file of an unedited manuscript that has been accepted for*
28 *publication. As a service to our readers and authors we are providing this early version of the manuscript.*
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1 **ABSTRACT.**

2
3 **Background and Objectives:** Burnout is a major issue amongst medical students and professionals that
4 demands a solution. Mindfulness has been shown to decrease clinician and student burnout. Storytelling,
5 as a form of mindfulness, leads to reflection. Few publications study the effect of storytelling on student and
6 clinician wellness. To address wellness within their medical community and utilize the underexplored
7 method of narrative medicine as a curricular enhancement, the authors designed and implemented a novel
8 storytelling platform, *Med Moth*, at the University of Massachusetts Medical School (UMMS) and associated
9 hospital (UMass Memorial Medical Center).

10 **Methods:** Members of the community were invited to storytelling events to listen to and share stories about
11 formative medical experiences. Four events were held between 2017-2018. After each event, participants
12 received a survey inquiring how attendance benefitted them personally and professionally.

13 **Results:** Clinicians, students, and faculty comprised the 104 first-time attendees surveyed. *Med Moth*
14 produced a strong perceived benefit to surrogate measures including emotional exhaustion and
15 depersonalization, defining characteristics of burnout, as well as professional development; 66% of
16 participants rated 4-5 (out of 5) in these three measures. Nearly all attendees (96%) rated 4-5 for overall
17 experience. Lastly, medical students reported a higher benefit regarding professional development than
18 clinicians ($p=0.002$).

19 **Conclusions:** This pilot study of a novel storytelling platform demonstrates positive personal and
20 professional development outcomes, both during and after training. Medical schools, residency programs,
21 and medical institutions should strongly consider the implementation of such a wellness platform to build
22 resiliency and to mitigate burnout through reflection.

23
24 **Keywords:** Medical Education; Curriculum development; Promoting Professional Wellness; Medical
25 Humanities; Narrative/Reflective Writing (Source: MeSH-NLM).

1 INTRODUCTION.

2 Clinicians and medical students face high rates of stress and burnout.^{1,2,3} These symptoms adversely affect
3 mental health and manifest as depression, anxiety, and fatigue.⁴ In a recent study of 4,000 US medical
4 students, 49% reported signs of burnout.¹ Depression is also more common among medical students and
5 residents than the general population.⁵ These issues are not only deleterious to the health of medical
6 providers, but also to their patients.⁴

7
8 Burnout is unequivocally present among medical students and professionals and requires a solution.
9 Mindfulness can decrease burnout and improve depression and anxiety, while cultivating compassion,
10 empathy, and personal and professional identity development.^{6,7,8,9,10} Mindfulness training teaches
11 participants to approach lived experiences in an introspective way. Reflective practice is one application of
12 mindfulness. It leads to understanding one's beliefs and values in the context of one's colleagues and
13 patients. Medical students who engage in reflection display more mature thinking, certainty with
14 professional choices, and report a positive learning experience.¹¹

15
16 Storytelling is an excellent means of reflective practice, allowing one to be present, compassionate, and
17 deepen community connections. A recent article by Perri Klass entitled "Morality Tales" discusses the trend
18 toward medical humanism with students and residents increasingly "tak[ing] time to consider and describe
19 the complex aspects of medical stories that get left out of the formalisms of the medical record."¹² Outside
20 of medicine, storytelling is well-established. Novelist George Green embraced its impactful nature when
21 creating The Moth, an internationally acclaimed storytelling organization.¹³

22
23 There are only a few studies that directly assess the effect of storytelling on student and clinician burnout.
24 One study shows that medical students who participated in storytelling sessions with peers demonstrated
25 an increase in the empathy score.¹⁴ Other published accounts of storytelling's effect on clinician burnout
26 are mainly personal accounts of physicians who cite benefits such as improved patient relationships and
27 collegial communication.¹⁵

28
29 To address burnout within our medical community, we created a novel storytelling opportunity at UMass
30 Medical School (UMMS), and associated hospital (UMass Memorial Medical Center). Inspired by The Moth,
31 *Med Moth* was created to provide a platform for members to listen, share, and reflect. *Med Moth* was
32 created to positively impact personal wellness and professional development through sharing clinical
33 perspectives and experiences. We aimed to identify individual characteristics that correlate with a higher
34 impact of this platform.

METHODS.

Participants (attendees and speakers) were members of the UMMS community including medical students, nursing students, clinicians, faculty, and administrators. Participants were recruited via Facebook, student events, web-based school news outlets, posters, and listservs.

We held four, 1.5-hour events (March 2017 to October 2018), each with 8-10 speakers. Stories were prescreened for protected patient information. Speakers shared poetry or prose with topics ranging from clinical mistakes, “why medicine,” to comedic misunderstandings with patients. Refreshments were provided.

Using web-based data collection (Google Forms, Google LLC, Mountainview, CA), we emailed the survey three days after an event as a group message to all recipients who signed-in to the event. Participants were able to see all recipients of the email. Regarding the survey, multiple choice and free text questions characterized attendees by demographics and traits including affinity toward storytelling and an hourly breakdown of work, study, exercise, etc. Likert-scaled questions, ranging 1 (a little) to 5 (a lot), assessed the degree of positive effect of attending *Med Moth* on two major domains of interest: personal wellness and professional benefit. Personal wellness was divided into emotional exhaustion and depersonalization (based on the Maslach Burnout inventory), and professional benefit assessed how events would influence clinical practice.³ Where appropriate, we combined categories of ‘often’ and ‘very often’ and reported as mean_{often/very often}, and the same for ‘never’ and ‘sometimes’ response options. The study was approved by the UMMS Institutional Review Board.

Using SPSS statistical software (SPSS v.23, IBM Corporation, 2015), survey questions on emotional exhaustion, depersonalization, and professional benefit were analyzed using chi-square tests, student t-tests, correlations, and non-parametric equivalents for ordinal data. We used cumulative scores across all questions within a category (e.g., the two 5-point questions for emotional exhaustion yielded a maximum score of 10). We reported average scores per question to demonstrate trends.

We assessed relationships influencing the impact of *Med Moth*, including level of training and participant characteristics. For each question, analyses were conducted across all three domains. For select analyses, original Likert scale responses were dichotomized for bivariate analyses. We used survey responses from first-time attendees only and excluded subsequent responses in the current analysis. We combined responses from residents and mid-level practitioners (e.g., nurse practitioners) with attending physicians to compare medical students to clinical practitioners.

1 RESULTS.

2 *Med Moth* experienced a growing number of attendees (41 participants in March 2017; 85 in October 2018):
 3 236 total attendees including 175 first-time attendees. There were 151 survey responses (64% response
 4 rate). Analyses representing 104 surveys from first-time attendees showed a larger proportion of females,
 5 medical students, primary care, and senior clinicians (Table 1).

6
 7 Nearly all first-time attendees (96%) endorsed a high overall experience rating of 4-5 out of 5. Perceived
 8 benefits in emotional exhaustion, depersonalization, and professional development were strong; two-thirds
 9 (66%) of participants reported high ratings of 4-5 out of 5. Most (92%) reported they would “definitely” attend
 10 another event (Figure 1).

11
 12 Medical students reported a significantly higher benefit for professional development compared to clinicians
 13 ($p=0.002$; Table 2). Across all other measures, there were equally positive responses between groups.
 14 Participants who frequently sought storytelling outlets outside of *Med Moth* reported a greater personal
 15 benefit of attending the event. Specifically, those who often seek storytelling media as a listener or reader
 16 reported higher benefit against emotional exhaustion than those who rarely seek this out (mean_{often/very}
 17 _{often}=9.41; mean_{never/sometimes}=8.63; $t=-2.86$; $p=0.005$; Table 2). Those who sought storytelling as a speaker
 18 or writer reported higher benefit against depersonalization (mean_{often/very} _{often}=15.00;
 19 mean_{never/sometimes}=12.55; $t=-9.59$; $p<0.001$; Table 2). No significant relationships were found with the
 20 remaining domains.

21
 22 There were no significant correlations between hours of sleep or self-care hours (exercise, relaxation,
 23 hobbies) and *Med Moth* ratings within any domain. However, there were moderately strong correlations
 24 between personal and professional ratings for all participants ($r=0.637$, $p<0.001$), and within stratified
 25 analyses among medical students ($r=0.680$, $p<0.001$) and clinicians ($r=0.672$, $p<0.001$).

26
 27 In open-ended text, participants described many benefits to attending *Med Moth*, including the promotion
 28 of optimism, resiliency, admiration, and inspiration. One student wrote: *Earlier in the day I was feeling tired*
 29 *and burnt out [...] I needed to remember why I wanted to be a doctor. This event was refreshing,*
 30 *enlightening, fun, and enjoyable. I left with a pep in my step and feeling energized and inspired. It reminded*
 31 *me [...] there are events like this where we can learn more about each other and take time to reflect and*
 32 *grow. Another student commented: I often feel an underlying pressure to be perfect in medical school, and*
 33 *it is so powerful to hear the clinicians we aspire to be like also having faced situations that were far from*
 34 *perfect. These sessions have helped me ground my experience and realize that medicine will always be a*
 35 *process. Two faculty wrote: This was a new experience for me [...] one that was enriching and personally*
 36 *gratifying. Hearing the other stories, I was moved by the messaging with emotions ranging from laughter to*

1 *tears; and: I've been at UMMS a little over 2 years, and this is the first time I've really felt connected to the*
2 *community.*
3

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1 DISCUSSION.

2 Responses to *Med Moth* were overwhelmingly positive. Nearly all participants reported a high overall rating
3 and indicated they would return. For emotional exhaustion, depersonalization, and professional
4 development, greater than two-thirds of participants rated the benefit of attending Med Moth highly. Many
5 attendees commented the program was inspiring and promoted optimism and resiliency.

6
7 Regardless of role, there was a positive correlation between personal and professional ratings, emphasizing
8 benefit across all domains. Medical students reported higher benefit for professional development
9 compared to clinicians which seems logical. More importantly, clinicians and medical students reported a
10 positive impact to emotional well-being and resistance against depersonalization – core features of burnout.
11 Not surprisingly, individuals who seek storytelling outlets demonstrated greater benefits to emotional
12 exhaustion and depersonalization. Overall, *Med Moth* appears to impact all participants on a humanistic
13 and relational level. These findings echo a published systematic review showing that medical students who
14 participate in storytelling sessions with peers demonstrate an increase in empathy scores.¹⁴ Studies on
15 mindfulness further support these sentiments; One study shows that medical students who engage in
16 reflection display more mature thinking, certainty with professional choices and a more positive learning
17 experience with their clinical training.¹¹ Other studies demonstrate that mindfulness training improves
18 measures of depression and anxiety, cultivates empathy, and inspires more thoughtful decision making in
19 medical students and physicians.^{8,10} *Med Moth* not only compliments existing literature demonstrating the
20 importance of reflection amongst medical professionals, but also suggests an impactful and unique solution.

21
22 This study is timely; medical humanities are expanding and the need for wellness is now.^{5, 7-11} Narrative
23 medicine essays about wellness are increasing in number and relevance in columns such as The Journal
24 of the American Medical Association's "A Piece of My Mind" and New England Journal of Medicine's
25 perspective pieces. Health policy journals are following suit (e.g., Health Affairs section entitled "Narrative
26 Matters"). The Accreditation Counsel for Graduate Medical Education (ACGME) now requires every
27 accredited residency program to address well-being "and attend to resident and faculty member burnout
28 [and] depression."¹⁷ Therefore, the application of a platform like *Med Moth* has major potential in the larger
29 realm of medical education. Barriers to medical storytelling will have to be addressed, including disregard
30 of medical humanities as a valid form of education enrichment, lack of time, and denial of burnout in
31 medicine.

32
33 With regards to limitations, our study may lack generalizability (conducted in one school and hospital). Our
34 sample size of 104 limited our ability to conduct detailed subgroup analyses and the 64% response rate
35 may not reflect all attendees. Voluntary attendance and self-report may have yielded more positive reviews.
36 Furthermore, bias could occur from the medical school being a small community and participants not
37 wanting to be negative towards the student organizers of Med Moth.

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Our study serves as a pilot that begins to quantify the benefits of storytelling in medicine. We propose that a more objective and validated study of *Med Moth* and similar storytelling programs in medical communities be conducted. Ideally, data should be collected across multiple medical and health professions schools for required storytelling events to increase sample size and generalizability in exploring potential discrepancies between regions and cultures. Future analyses should also assess change-over-time to identify the benefits of attending multiple events.

Conclusively, storytelling events have great potential as curricular enhancement within medical education to help build resiliency and mitigate burnout. Medical institutions should strongly consider the implementation and evaluation of such a platform to produce well-trained clinicians who provide empathetic care while also finding joy in their work.

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