Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Self-Care and Storytelling for Radiologists: A Feasibility Study

Lily M. Belfi, MDa,†, Sheryl G. Jordan, MDb, Alison Chetlen, DOc, Lori A. Deitte, MDd, L. Alexandre Frigini, MDe, Sosamma T. Methratta, MDf, Jessica Robbins, MDg, Ryan Woods, MDMPHh, Thad Benefield, MSi, Ann K. Jay, MDj

A B S T R A C T

Rationale and Objectives: Physician wellness and burnout mitigation strategies have become priority practices in recent years. Despite these efforts, however, physicians living with the psychological effects of the current COVID-19 global pandemic, political stressors, and social injustices, face ever increasing threats to their personal and professional well-being. This manuscript investigates the process of storytelling as a self-care practice for radiologists.

Materials and Methods: The AUR Well Being Ad-Hoc Committee introduced and approved Storytelling Geek Week, a virtual workshop held by The Moth, a Peabody award-winning storytelling nonprofit group. Nineteen AUR members applied and were selected for participation in the workshop which occurred over 5 days in November 2020. Anonymous electronic surveys were sent to participants before and after the workshop to gather feedback on their experience.

Results: Of the 19 AUR member participants, 12 (63%) completed the pre-workshop survey and 8 (42%) completed the post-workshop survey. Participant current state of well-being was found to be increased between the pre- and post-course surveys, with a statistically significant adjusted P-value of 0.017. All 8 post-workshop respondents reported that they would recommend the workshop to others. With regard to how participation in the workshop impacted their well-being, representative free text responses include, “helped with processing emotions,” and “felt more connected to strangers.” Regarding shifts in perspective as a result of workshop participation, representative free text responses include, “more empathetic” and “started focusing on hope and gratitude rather than sadness and anxiety.”

Conclusion: Participants in a storytelling workshop reported a positive impact on their perceived sense of well-being. Respondents also reports shifts in their sense of empathy and connectedness to others. This type of intervention may help to mitigate burnout and build community during challenging times.

© 2021 Elsevier Inc. All rights reserved.

Introduction

Radiologists around the world are living with psychological effects from pandemic stressors, political stressors, social injustice, work-life balance struggles, and, perhaps, personal struggles. The rapid emergence of COVID-19 and the collective efforts to minimize its spread have severely disrupted the normal lives of much of the world’s population. To contain the spread of COVID-19, most people living in the United States have been advised to stay at home and work from home since March 2020. For the first time in many people’s lives they are experiencing an unwanted and prolonged separation from human connection.1 In adults, the negative psychological effects of quarantine include confusion, anger, and post-traumatic distress.2-4 Duration of quarantine, infection fears, boredom, frustration, lack of necessary supplies, lack of information, financial loss, and fear of stigmatization appear to increase the risk of negative psychological outcomes.2

Despite wellness strategies and burnout prevention for radiologists and trainees having been priority topics in recent years, the onset of the practices necessary to combat COVID-19 disrupted even individuals with otherwise stable personal wellness.

For resident trainees, fatigue mitigation, well-being, teamwork, and professionalism are all addressed in the Accreditation Council for Graduate Medical Education (ACGME) Common Program Requirements. As mandated by the ACGME, residency programs, in partnership with their sponsoring institutions, have the same responsibility to address resident well-being as they do to address other resident competencies. The clinical learning environment must emphasize commitment to the well-being of students, residents, faculty physicians, and all members of the health care team.6

For attending faculty radiologists, the expectation is that physicians and all members of the health care team share responsibility for the well-being of one another. Activities to assess and support physician well-being include administering safety surveys, ensuring the...
availability of counseling services, and emphasizing the safety of the entire health care team. 4

A multipronged intervention including health policy measures for strengthening mental health services globally and promoting psychosocial wellbeing is likely to prove essential for the long-term mental health of the population. There is emerging evidence that storytelling has multiple benefits including identifying emotional states, developing a vocabulary to allow self-advocacy, encouraging the use of strategy, and promoting a sense of hope. Stories are powerful tools that convey thoughts, ideas, and values while encouraging purposeful discussion. 5 In this manuscript, the Association of University Radiologists (AUR) Well Being Ad-Hoc Committee members share the experience of a group of radiologists participating in a storytelling workshop.

Materials and Methods

The AUR Well Being Ad-Hoc Committee introduced and approved Storytelling Geek Week, a virtual workshop held by The Moth, a Peabody award-winning storytelling nonprofit group. Promotional information regarding the workshop was advertised broadly through social media (Twitter, Facebook, and Instagram) and through targeted communications to AUR membership via electronic mail. Any AUR member (medical student, resident, fellow, faculty) was eligible to apply to participate in the workshop; the application requested the applicant’s institution, position and/or title and a brief less than 300-word summary of the story they would like to tell. A maximum of 25 workshop positions were available to AUR members through the financial support of the AUR Research and Education Foundation, facilitated by designated donor funding.

The Moth’s Storytelling Geek Week Virtual Workshop occurred over 5 days (Monday-Friday) during November 2020. The first 3 days consisted of 45-minute sessions each day led by 2 Moth instructors. Each session taught participants the essential elements of storytelling, with each session building on the next. Assignments were given for participants to hone their stories for the following day. The sessions included sharing in the main group as well as in smaller groups. At the end of day 3, participants chose their 5 favorite stories from the group’s individual stories to be shared on the final day. On day 4, each of the 5 chosen participants had a 1:1 story-coaching session with the Moth instructors to develop and refine their stories. On day 5, all participants joined an interactive virtual showcase where the 5 select stories were told.

Applicants selected for the workshop received pre-workshop and post-workshop surveys. The pre-workshop survey contained 7 questions which sought information on the participants’ feelings toward storytelling, sense of community, recent accomplishments, and overall sense of well-being. The post-workshop survey contained 13 questions, the first 7 of which were the same as the pre-workshop survey, and an additional 6 questions which sought information on the participants experiences during the workshop, the workshop’s impact on their well-being, and any shifts in perspective that might have occurred during the workshop. These electronic surveys were self-administered and voluntary. All responses were anonymous. There were no exclusion criteria and data were collected using SurveyMonkey (San Mateo, California). The surveys are included in their entirety in the Appendix.

The survey results were evaluated using 2-sided Wilcoxon-Mann-Whitney tests. The Wilcoxon-Mann-Whitney test has been demonstrated to have similar power and type I error rates for analyzing Likert data, compared to the 2-sample t-test. 6 All P-values were adjusted simultaneously using the false discovery rate method in order to control for type I error. 7

This study was exempted by the lead author’s Institutional Review Board.

Results

Nineteen AUR members applied and all were selected to participate in the storytelling workshop. 12 (63%) completed the pre-workshop survey and 8 (42%) completed the post-workshop survey.

Adjusted 2-sided P-values < 0.05 were considered evidence of a difference in scores between the pre- and post-survey. Adjusted 2-sided P-values > 0.05 were considered inconclusive. Results from this analysis are shown in Table 1A.
The statement with the lowest weighted average response (2.92) on the pre-course survey was, “I feel confident with storytelling.” The statement with the highest weighted average response (4.58) on the pre-course survey was, “I enjoy listening to others share their stories.” All weighted average responses increased on the post-course survey, with the exception of the statement, “I am satisfied with my current level of engagement with others and sense of community,” which remained the same.

The participant current state of well-being was found to be increased between the pre- and post-course surveys, with a statistically significant adjusted P-value of 0.017. Results from this analysis are shown in Table 1B.

All 8 post-workshop respondents reported that they would recommend the workshop to others. Open text comments from respondents are shown in Table 2. Overall, respondent feedback regarding the workshop was very positive. With regard to how participation in the workshop impacted their wellbeing, representative free text responses include, “helped with processing emotions,” “felt more connected to strangers,” and “allowed myself to be more open.” Regarding shifts in perspective as a result of workshop participation, representative free text responses include, “more empathetic” and “started focusing on hope and gratitude rather than sadness and anxiety.” Words used to describe the overall experience in the workshop included “freeing,” “motivating,” “fun,” and “appreciative.”

When asked about ways to maximize the impact of this kind of workshop experience, almost all comments mentioned time: Time to prepare, more time in sessions, more time to attend every session.

Writing is a Form of Self-care

The act of storytelling, fostered by the well-being intervention described herein, is a self-reflective practice. Writing, when used as a reflective practice, can be an incredibly powerful tool for stress-reduction. A “reflective practice” incorporates emotions, actions, experiences and responses and uses that information to add to the individual’s existing knowledge base and reach a higher level of understanding. The individual engages in attentive, critical, exploratory and iterative interactions with their thoughts and actions to change them; hence, it is a powerful tool in experiential learning. Reflective practice has been identified as a critical part of the learning cycle and has been used in education as a self-assessment tool, for professional development, and to enhance medical students’ learning experiences.

Expressive writing has been employed as an intervention after a negative event, to improve well-being. Writing about a negative event enables the subject to modify emotional perceptions of the event and reduces stress and improves coping strategies. In 1986, the first study on expressive writing reported objective and self-reported significant benefits in physical health in college students who wrote for 15 minutes on 4 consecutive days about the most traumatic or upsetting experiences” of their lives. A substantive body of literature has since documented the physical and psychological benefits of reflective writing in multiple groups in society, including those with depression and posttraumatic stress disorder.

The positive impact of reflective writing on adaptive coping strategies and work relational communication satisfaction in a diverse group of health care professionals has been documented. Peer storytelling was identified as beneficial in a group of grieving oncology nurses using a virtual environment and has been described in “Dinner and Stories” chronicling the experience and impact of nonfiction reflective storytelling in a group of nurses and other healthcare providers. Themes in their collective experience included the need for a culture of care and the concept of storytelling and writing as healing. The authors reported the benefits in storytelling and sharing “the emotional residue accrued through caregiving.” Expressive writing has been shown to be an important strategy for preventing and managing the effects of compassion fatigue.
Journaling has often been named an important activity in the stress-reducing and burnout prevention or mitigation toolbox; however, one can benefit further from this self-reflection activity by seeking a more active and creative self-expression (prose, if you will) role in one’s writing. Journaling with the intent of eventually sharing with others may help organize one’s thoughts and emotions, making it easier to self-express the issues and emotions that matter to oneself, the author. It also means placing oneself in a vulnerable position. This may not be, at first, acceptable or advisable for certain professionals, particularly physicians who are historically taught or encouraged to be stoic, tough and hide feelings and emotions; however, being able to process one’s feelings and share with one’s own community helps the one who is sharing at the same time it fosters increased connection and community with peers. Of note, these themes of connection, and vulnerability were relayed by many of the participants.

**Storytelling Cultivates a Sense of Community**

Bruce et al. emphasized the benefits of storytelling as a community approach and social process of support, corroborating perceived therapeutic benefits of writing and telling stories with enriched meaning-making, emotional conveyance, and therapeutic connections between storytellers and listeners. Enhancement of one’s creative writing and storytelling ability through participation in a group program benefits the teller, their audience, and community; patients are also benefitted. Krasner et al. report short-term and sustained improvements in well-being and attitudes associated with patient-centered care following participation in a mindful communication program.

Cronin et al. emphasized storytelling as potential relief from burnout and avenue for success in personal development in its offer of support and hope. Barrett et al. report storytelling as an avenue in the search for relief, “as a pause or escape from daily life, a momentary disinvestment of the self in search of relief, or an imaginative field for experimentation, self-reflection, and self-definition.”

**Study Limitations**

There were several limitations to our study. First, we report results of a single storytelling exercise limited to a small group of radiologists who chose to participate in this type of experience; this limits the generalizability of our findings. In addition, the storytelling experience was short in duration and limited to physicians only. Finally, pre- and post-surveys were limited in scope evaluating the radiologists’ subjective experience with storytelling and overall well-being.

**Future Directions**

Although we found that a single episode storytelling event was helpful in improving overall self-reported perceived physician well-being, in the future larger multi-institutional studies should be performed to validate our results. This could include all healthcare providers (physicians, nurses, and technologists) in a longer storytelling, narrative, or creative expression activity that fosters an in-depth creative experience. This effort at the institutional level might help to kindle greater connectivity between healthcare providers, an important aspect of well-being and team functioning. Institutional emphasis could also promote self-care by making creative expression practices part of faculty development or established mentoring programs.

Finally, national organizations should consider supporting or designing programs that promote creative expression. One idea would be to include a toolkit to promote creative expression similar to the ACR Radiology Well-being Program. There is also an opportunity to leverage organizational social media networks to promote self-care, with creative expression an essential component.

| TABLE 2 |
| --- |
| **Post workshop comments from participants.** |

| **Storytelling Participants’ Post-Workshop Free Test Comments** |
| --- |
| Did participation in this workshop impact your wellbeing? If so, how? |
| • Yes, helped with processing emotions |
| • I allowed myself to be more open with strangers. I have had a hard time being vulnerable to people that I don’t know due to some adverse interactions in my past, and it has been almost 20 years and I am starting to take down the wall that I built around myself. |
| • Yes, this was a much-needed distraction, and helpful to put to words for the first time some of this year’s experiences. |
| • Yes – very therapeutic to share stories and listen to others. Brings a sense of hope and optimism to our situation. |
| • Yes. I felt more connected to strangers and empathetic to their experiences. I remember that we have much in common and care about the same basic things. |

*How did your perspective shift, if at all, during the course of this workshop?*

• More empathetic
• I enjoyed talking to others and hearing their stories on zoom, so maybe I would do it more in person now too.
• It really reinforces that everyone has their own parallel struggles or triumphs going on, and to be mindful of that always
• I started focusing on hope and gratitude rather than sadness and anxiety.
• I see that story telling is an art and also a skill that can be learned, honed and taught. And that there are stories all around us all the time.

*How will you most immediately apply the skills learned in this workshop in your work and/or life?*

• Try to simplify my life
• I will try to connect with people that are my acquaintances by having deeper conversations and therefore finding people to build friendships with as an adult. I may also try to write short stories for publications.
• I will refine my story and hope to share broadly.
• Continue to think about the kind of person I am and how I can apply my strengths to situations around me.
• Perhaps invite colleagues to tell their stories more often and listen actively.
• What might you have changed to maximize the impact of this workshop or one in the future?
• More time to prepare
• Longer sessions
• More time each day so that each person in the workshop had at least 1 or 2 minutes to talk or share each day.
• I applied last minute, so was very tough to have free time for the workshops. I would have tried with more lead time.
• Speak up more.
• The workshop had a strong impact on me because I had the time to attend every session and reflect on every session. Giving people the time to be present for the entire thing is critical to maximizing the impact.

*Please share 1 word that comes to mind to describe your experience in this workshop.*

• Lovely
• Fun
• Freeing
• Motivating. I have a story to share and an ability to help thousands in this country, and the push was very welcome.

• Connection.
• Appreciative
Conclusion

Recently intensified stressors add to a healthcare system with preexisting high physician burnout rates. Mitigation of physician burnout requires both individual strategies and systems-based interventions to improve individual radiologist’s well-being. One such intervention with great promise is storytelling. This study reports the positive impact of storytelling on the perceived well-being of a small group of radiologist participants. Efforts such as this pursued on a larger scale may help mitigate physician burnout and build community during challenging times.

Declaration of Competing Interest

The authors confirm there are no known conflicts of interest associated with this publication. There has been no financial support for this work.

Appendix: Workshop Survey Questions

*Questions 1–7 were asked on the pre-workshop survey.
*Questions 1–13 were asked on the post-workshop survey.

1. I am satisfied with my level of engagement with others and sense of community
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
2. I feel confident with storytelling
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
3. I am an engaging storyteller
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
4. I enjoy listening to others share their stories.
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
5. I enjoy sharing my story
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
6. I am satisfied with my recent accomplishments
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
7. My current sense of wellbeing is
   5-Low 4-Somewhat low 3-Neither low or high 2-Somewhat high 1-High
8. I would recommend this storytelling workshop to others.
   5-Strongly disagree 4-Disagree 3-Neither disagree or agree
   2-Agree 1-Strongly agree
9. Did participation in this workshop impact your wellbeing? If so, how?
10. How did your perspective shift, if at all, during the course of this workshop?
11. How will you most immediately apply the skills learned in this workshop in your work and/or life?
12. What might you have changed to maximize the impact of this workshop?
13. Please share one word that comes to mind to describe your experience in this workshop.

References

1. Killgore WDS, Cloonan SA, Taylor EC, et al. Loneliness: A signature mental health concern in the era of COVID-19. Psychiatry Res 2020;290:113–7.
2. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 2020;395:912–20.
3. Hosain MM, Sultana A, Purushit N. Mental health outcomes of quarantine and isolation for infection prevention: a systematic umbrella review of the global evidence. Epidemiol Health 2020;42:e2020038, https://doi.org/10.4178/epih.e2020038.
4. ACCME program requirements for graduate medical education in diagnostic radiology; editorial revisions effective July 1, 2020. Page 43 ACCME common requirements. https://www.acgme.org/Portals/0/PAAssets/ProgramRequirements/CRPreresidency2020.pdf Access at: January 4, 2021.
5. Sullivan Mary A. The use of storytelling with grief reactions in children during the COVID-19 pandemic. J Psychosoc Nurs Ment Health Serv 2020;59:1–3.
6. de Winter JCF, Dodou D. Five-point likert items: t test versus mann-whitney-wilcoxon. Pract Assess Res Eval 2010;15:1–16.
7. Benjamini Y, Hochberg Y. Controlling the false discovery rate: a practical and powerful approach to multiple testing. J R Stat Soc Series B Methodol 1995;57:289–300.
8. Jorwekar GJ. Effective practice as a method of learning in medical education: history and review of literature. Int J Res Med Sci 2017;5:1188–92.
9. Fragkos KC. Reflective practice in healthcare education: an umbrella review. Education Sciences 2016;6:27.
10. Larsen DP, London DA, Emke AR. (2016) Using reflection to influence practice: student perceptions of daily reflection in clinical education. 5:285–291.
11. Asiah Mohd Sharif ZZ. ‘Students’ perceptions of their reflective essay writing experience and teacher feedback comments. Indones J Appl Linguist 2017;6:204–12.
12. Tonarelli A, Costentino C, Artioli D, et al. Expressive writing. A tool to help health workers. Research project on the benefits of expressive writing. Acta Biomed 2017;88(35):13–21.
13. Houck D. Helping nurses cope with grief and compassion fatigue: an educational intervention. Clin J Oncol Nurs 2014;18:454–8.
14. Pennebaker JW, Beall SK. Confronting a traumatic event: toward an understanding of inhibition and disease. J Abnorm Psychol 1986;95:274–81.
15. Kropan KM, Kross E, Berman MG, et al. An everyday activity as a treatment for depression: the benefits of expressive writing for people diagnosed with major depressive disorder. J Affect Disord 2013;150:1148–51.
16. van Emmerik AA, Reijntjes A, Kamphuis JH. Writing therapy for posttraumatic stress: a meta-analysis. Psychother Psychosom 2013;82:82–8.
17. Rice KL, Bennett MJ, Billingsley L. Using second life to facilitate peer storytelling for grieving oncology nurses. Ochsner J 2014;14:551–62.
18. Bruce A, Daudt H, Bredsdal S. Can writing and storytelling foster self-care? a qualitative inquiry into facilitated dinners. J Hosp Palliat Nurs 2018;20:554–60.
19. Clortlen AL, Chan TL, Ballard DH, et al. Addressing burnout in oncology nurses. Ochsner J 2014;14:551–62.
20. Krasner MS, Epstein RM, Beckman H, et al. Association of an educational program with organizational strategies to promote engagement and reduce burnout. Mayo Clin Proc 2017;92:129–46.