

Moving toward a complex systems view in medical student wellbeing research.

Kenneth I Mavor^{1,2} and Kathleen G. McNeill³

¹ School of Psychology and Neuroscience, University of St Andrews, St Andrews,
United Kingdom

² ANU Medical School, Australian National University, Canberra, ACT, Australia.

³ Research School of Psychology, Australian National University, Canberra, ACT,
Australia.

Commentary on “Depression, Anxiety and Psychological Distress in Medical
Students outside North America: A systematic Review”

This is the peer reviewed version of the following article:

Mavor, K. I., & McNeill, K. G. (2014). Moving toward a complex systems view in medical
student well-being research. [Commentary]. *Medical Education*, 48(10), 941-943.

...which has been published in final form at

<http://onlinelibrary.wiley.com/doi/10.1111/medu.12544/full>

This article may be used for non-commercial purposes in accordance With Wiley

Terms and Conditions for self-archiving.

(<http://olabout.wiley.com/WileyCDA/Section/id-817011.html>)

The paper by [Anonymised]¹ in this issue of *Medical Education* reminds us that there are still a number of important factors not well understood about medical student wellbeing despite an extensive literature². This most recent review raises a number of important questions, both about what we think we know about the prevalence of various threats to psychological wellbeing in our students, and also about how we come to know it; that is, how should we approach this kind of question in future. We recently argued³ that we need to move beyond prevalence studies to explore the underlying processes through which medical students come to experience distress or conversely to become more robust^{3,4}. We think that prevalence studies will remain of use if they systematically address some of these processes. We also argue for a more comprehensive approach to research on medical student wellbeing that may require a change in how the research is done. In this commentary we want to focus on two specific issues: (1) the way that stress and wellbeing become part of the complex system of medical student formation, and (2) how we might seek better quality research samples and at the same time conduct more process-oriented research.

A systems view

Prevalence studies assume that the health conditions being investigated are outcomes; focusing on their occurrence and perhaps some systematic covariates of the degree of prevalence, such as age and gender. However, we argue that the dimensions of psychological wellbeing often investigated in medical students, have meaning beyond the health conditions themselves and might have paradoxical effects on other aspects of wellbeing. Let us consider the sources of stress for medical students: some stress is imposed by life, some by the mechanics of medical school or hospital life, and some

is understood to naturally accompany a medical career. Heyworth, for example, writes of stress as a “badge of honour” in emergency medicine⁵. Similarly, many other medical specialties involve taking on distinctive forms of stress. That particular stress, therefore, is not just an outcome, but is also a meaningful experience within that chosen career path and the identity associated with it. As such, an accentuation of stress may even strengthen the identity. That is, the more stress one experiences of a particular kind, the more one may feel like a member of the medical profession or specialty group within it. This does not diminish the potential impact of stress nor dismiss the question itself, but acknowledges that some stress is identity-potent: it has a special meaning in the context of a professional identity. By extension, some other indicators of distress such as those measured in depression and burnout scales might also have potency and meaning for particular professional identities over and above (or even paradoxical to), their typical psychological impact and interpretation. This has important implications for intervention.

Given this, we suggest that it would be helpful to take a complex systems perspective, and to treat prevalence studies as partial snapshots of the system. Both the medical student, and the schools in which they are embedded, are complex dynamic systems; and both systems are, in general, highly successful. The students would not be in medical school if they were not consistently exceptional, and the system of medical training has obviously evolved for its purpose over many years. Both are, however, confronted with significant changes. The General Medical Council (GMC) in the UK identified several emerging challenges in a recent snapshot of the health training system, noting that doctors will need to work more in teams, treat a greater number of co-morbidities, gear up for an ageing population, and deal with European work time

regulations⁶. In the latter case, work time regulations aimed at reducing stress and fatigue, may also have paradoxical effects that can lead to greater stress, such as doing more in less time, more handovers and less continuity in patient care, and conflicting expectations⁷. As Morrow, Burford, Carter and Illing note in their report to the GMC, this “is not a simple causal relationship ... but a change to an already complex system”^{7, page iii}.

Medical school is a time of significant formation and re-formation for students, with changes in identity and social networks alongside the acquisition of knowledge. In the context of medical school, typical predictors of wellbeing may not apply, or at least will apply in complex and contextual ways^{3, 8}. Therefore, a systems perspective has important implications for how we research wellbeing processes in medical students.

Implications for research

[Anonymised]¹ note in their review that prevalence studies vary widely in factors such as sample size and methodological clarity. A major issue is small (and presumably also localised) samples. Researchers are under pressure to publish and when a researcher first becomes interested in the salient issue of medical student distress, the first instinct might be to start with yet another snapshot. So we end up with many small prevalence studies published, and likely many more that are never published. On the other hand, researchers who seek a large multi-centre sample are faced with extreme limitations on survey size in order to get the official support of schools that know their students feel over-studied. Under such pressure there is no room for much more than the outcome measures. For similar reasons longitudinal studies are rare, expensive, and limited.

We agree, therefore, that it is worthwhile to pursue large, high-quality, multi-centre, longitudinal studies, but we also believe that it would be a waste if more process-oriented measures continue to be overlooked. This will involve discussing with medical schools, and with the students themselves, the importance of investigating the more complex dynamics of their formation experience alongside snapshots of their emotional states. In our experience students are so used to doing prevalence studies that they balk at longer questionnaires asking about their social networks or how they see themselves as a medical student. It has also been our experience that when we discuss with students and graduates what we see as the paradoxical processes of stress, wellbeing, and identity formation in medical school that we are touching on a very real experience for many. In this way, a complex systems approach to medical student wellbeing may provide a platform for starting some important conversations at many levels: with researchers, educators and students.

References

1. Anonymised. Depression, anxiety and psychological distress in medical students outside North America: A systematic review. *Medical Education*. this issue.
2. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Academic Medicine*. 2006;81(4):354-72.
3. Mavor KI, McNeill KG, Anderson K, Kerr A, O'Reilly E, Platow MJ. Beyond prevalence to process: The role of self and identity in medical student well-being. *Medical Education*. 2014;48(4):351-60.

4. Howe A, Smajdor A, Stöckl A. Towards an understanding of resilience and its relevance to medical training. *Medical Education*. 2012;46(4):349-56.
5. Heyworth J. Stress: A badge of honour in the emergency department. *Emergency Medicine Australasia*. 2004;16(1):5-6.
6. General Medical Council. The state of medical education and practice in the UK: General Medical Council, UK2012.
7. Morrow G, Burford B, Carter M, Illing J. The Impact of the Working Time Regulations on Medical Education and Training: Final Report on Primary Research. A Report for the General Medical Council: Centre for Medical Education Research, Durham University 2012 August, 2012.
8. Michalec B, Keyes CLM. A multidimensional perspective of the mental health of preclinical medical students. *Psychology, Health and Medicine*. 2013;18(1):89-97.