A primer in resilience training for German medical students – A necessary step in building a resilient healthcare workforce

Jan Kiesewetter, Bria Dimke, Johanna Huber

Resilience training in the higher education context is important, especially for future workplaces that are prone to burnout. However, little is known about whether and how resilience can be trained. In this study, we present a preliminary evaluation of a resilience training for health care professionals and medical students. To validate the training's effects, we utilised an adapted version of the Maslach Burnout Inventory – Human Services Scale (MBI-HSS). A repeated measures ANOVA showed that the training sessions did significantly affect participants' MBI-HSS scores with a large effect. Implications for resilience research and training to build a more resilient healthcare workforce are discussed in the article.

1 Background on resilience in healthcare

Resilience is a widely-used catchphrase that has gained momentum and recognition in recent years. It is commonly used to describe resistance to the psychological strains of life. Especially during the current COVID-19 pandemic, it seems more important than ever for healthcare workers to maintain a high degree of functionality. Resilience holds promise to help curb the negative effects of burnout, thus resulting in less health impairment despite stress (Grossman et al., 2004), higher work satisfaction (Shanafelt et al., 2015) and last but not least higher work performance (Loehr, Loehr, & Schwartz, 2005). However, little is known scientifically about the resilience status of the modern workforce, and specifically whether and how resilience can be improved. Our article presents a short preliminary evaluation of resilience training for health care professionals and medical students (Kiesewetter & Dimke, 2018). Before reporting the results, we first take a look at the scientific constructs related to resilience that have been under investigation a lot longer: burnout and stress among medical students, physicians and healthcare staff. We then present the scarce evidence on resilience.

1.1 Physician burnout

Physicians and nursing staff have been found to be prone to burnout (Buser, Schneller, & Wildgrube, 2007; Schüler & Dietz, 2004). Physicians' social behaviour and attitudes towards their job and patients have been shown to change due to their employment of non-functioning coping mechanisms (Möller, Laux, Deister, & Schulte-Körne, 2013;

Schüler & Dietz, 2004). In studies with nurses, general impairment in quality of care has been observed as well as medication errors (Maiden, Georges, & Connelly, 2011). These can also be attributed to non-functioning coping mechanisms for difficult situations and emotional blunting. The consequences for burnt-out staff and employers are grave and include decreased job performance (Parker & Kulik, 1995), reduced job commitment (Cherniss, 2016) and stress-related health problems (Maslach, Schaufeli, & Leiter, 2001). For medical students, a recent review reports burnout rates between 27% and 75%, a wide range with a great deal of regional variance. Overall burnout prevalence is often measured with the Maslach Burnout Inventory, which includes the subcomponents emotional exhaustion, depersonalisation and low personal accomplishment. The prevalence of these three subcomponents range from 0% to 86%, 0% to 89.9%, and 0% to 87.1%, respectively (Rotenstein et al., 2018). No studies from Germany were included in this review. In a German study with data from 2008, final-year medical students reported a clinically-relevant burnout rate of 20% and moderate burnout scores across the whole sample (Koehl-Hackert et al., 2012). The sample was drawn from one city. In addition, the German medical education system has undergone several changes since 2008, so it is difficult to say how representative the data is for today's medical student population.

1.2 Stress in medical school

In the field of medical education, little is known about students' coping mechanisms. It is known that stress among medical students is rather high, with dangerously high stress levels between 21% and 90% reported (Fares, Al Tabosh, Saadeddin, El Mouhayyar, & Aridi, 2016). However, students' diagnostic accuracy for difficult patients showing disruptive behaviour was found to be lower than for difficult patients showing friendly behaviour (Hege et al., 2018). The reason, again, might lie in non-functioning coping mechanisms, which impair working memory capacity, an effect that has been long known in cognitive psychology experiments (Eysenck, 1985).

Summarising results for burnout and stress among medical students, physicians and healthcare staff, we have found evidence of what we call the burnout–workload circle. If physicians, medical students and healthcare staff suffer from dangerously high rates of burnout and stress, higher rates of absenteeism and health-related problems are likely. This might in turn further increase workload among the remaining staff, repeating the negative cycle. Due to high workload, the quality of health care (diagnoses, care, patient satisfaction) declines. Therefore, scientific and public attention has been shifting towards resilience as a potential solution to avoid burnout and stress before this negative dynamic emerges.

1.3 Resilience in healthcare staff

Resilience is defined in a multitude of ways. Some researchers think of resilience as a sense of flexibility or adaptability (Jackson, Firtko, & Edenborough, 2007). Others define resilience as an individual's set of skills and attributes that grant them "*the ability to succeed, live, and develop in a positive way despite stress or adversity*" (Cyrulnik, 2009, p. 21). Because of resilience's dynamic nature, it differs from related traits such as "mental toughness" or "hardiness" (Coulter, Mallett, & Gucciardi, 2010).

As research shows, resilience can be learned and nurtured through training and practice (Zautra, Hall, & Murray, 2010). In the field of healthcare and healthcare providers' education, it is especially necessary to foster and maintain a level of resilience. How can one offer their best services if they are not operating as their best selves? Building a sense of resilience is clearly appealing; higher resilience can lead to a decreased occurrence of burnout (Howe, Smajdor, & Stöckl, 2012). Resilience also helps circumvent issues such as impaired concentration, increased cynicism, undermined professional development, and jeopardised care for patients (Dunn, Iglewicz, & Moutier, 2008).

In order to provide a broader range of trainings, we need to identify whether medical students' resilience can indeed be positively influenced. Therefore, in our two-part study, we sought to evaluate whether students' burnout scores decrease after a standardised resilience training.

2 Methods to evaluate the resilience training for medical students and healthcare professionals

In designing the resilience training, we conducted a literature search and adapted evidence-based training interventions from cognitive behavioural group therapy to fit the unique needs of medical students. The overall training programme encompasses a standardised five-week, 10-hour curriculum in resilience (Kiesewetter & Dimke, 2018). The training provides students with techniques and strategies for managing strong emotions, establishing mindfulness practices, increasing their self-compassion, separating their emotions and patients' emotions, and fostering a work-life harmony. We have outlined the training in the supplemental material. A sample activity from the training is so-called emotional speed dating. During the emotional speed dating, pairs of students sit across from each other and ask each other six questions in a specific order. The questions are designed in a way to have students open up about their emotions during patient encounters. The learning objectives for this activity is that students learn that A) it is normal to experience patients' emotions and have their own emotions as well and B) it is normal to struggle with some of these emotions. After

the activity, the whole group can discuss how to deal with emotions in a professional way to remain mentally healthy. The details of the activity have been published in Medical Education (Kiesewetter & Dimke, 2020).

To validate the training's effects, we applied an adapted version of the Maslach Burnout Inventory-Human Services Scale (MBI-HSS); MBI-HSS is a psychometric scale designed by Maslach, Jackson, Leiter, Schaufeli, and Schwab (1986). The MBI-HSS is designed to assess three subcomponents of burnout: emotional exhaustion, depersonalisation, and diminished sense of personal accomplishment.

The original MBI-HSS contains 22 items measuring the three subcomponents of burnout. Of these, we chose to include 16 items because the other items did not seem to fit the student context (Vanheule, Rosseel, & Vlerick, 2007). Items are written in the form of statements about personal feelings such as "I feel frustrated from my work". Participants complete the scale by answering items in terms of the frequency with which they have personally experienced a given feeling or phenomenon. Answers are given on a 7-point Likert scale ranging from 0 = never, to 6 = every day (ibid.).

Design: Second- to sixth-year medical students at LMU Munich were invited to sign up for the 10-hour resilience training for course credit. Participation was voluntary. Students were required to answer the MBI-HSS before the first and after the final training session. All participants gave their consent to take part in the study.

3 Results – What we train when we train resilience

We trained four training cohorts according to the training manual (N = 31 students, 70% female, mean age M = 23.5, SD = 4.1). Participants completed the MBI-HSS prior to the first and after the last training session. Data could be analysed only for 18 students who were present during all training sessions. The MBI-HSS was analysed separately for the three subcomponents of burnout: emotional exhaustion (EE), depersonalisation (DP), and diminished sense of personal accomplishment (PA). All three subcomponents' reliability was tested (Cronbach's α EE = .85, Cronbach's αDP = .62, Cronbach's α PA = .50). A repeated measures ANOVA showed that the trainings did significantly affect participants' MBI-HSS scale scores (pre vs. post) ($F(2;34) = 163.53$, $p < .01$, $\eta^2 = .90$) with a large effect. A post-hoc comparison of this interaction revealed that the pre to post difference for EE (M = 1.52, SD = 3.13) and PA (pre-post difference M = 1.28, SD = 2.02) were significant, while the difference for DP was not significant (pre-post difference M = .06, SD = 1.70).

4 A primer on resilience training in medical school – an important first step, but many questions remain unanswered

We conducted a manual-based resiliency training among medical students (Kiesewetter & Dimke, 2018) and investigated whether the training would have an impact on their burnout scores. Indeed, we found that two of the three burnout subscales did decrease after the training: emotional exhaustion and diminished sense of personal accomplishment. In other words, students felt less emotionally exhausted and experienced a higher sense of personal accomplishment after the training. The depersonalisation subscale was barely affected by the training. This might be due to the short timeframe of the intervention. As students at various stages of their medical education participated in the training, participants might not have felt especially depersonalised prior to the training, as empathy declines over the course of medical school (Neumann et al., 2011). Further, the reliability of the depersonalisation and diminished sense of personal accomplishment subscales was rather low, which might be due to the small overall sample size. Nonetheless, the divergent results for the three subscales indicate that our approach of assessing burnout in a highly differentiated manner paid off. However, in future studies we will also assess medical students' resiliency in a more direct manner with the Connor-Davidson Resilience Scale (Sarubin et al., 2015; Kiesewetter & Huber, in print).

Medicine does entail negative feelings by both physicians and patients (Ofri, 2013), and being able to deal with failure is one of the core components of a resilient healthcare workforce (Wears & Wu, 2002). More research is needed to investigate students' coping mechanisms in order to generate evidence for the external validity of the trainings' effects. Perhaps a qualitative study could shed light on the coping mechanisms students already use in order to design more customised training interventions.

Medical educators should strive towards a more uniform, standardised implementation of resilience trainings in their medical schools – rather than waiting for students or physicians to develop resiliency as a result of negative experiences. Targeted resiliency education, like the training we investigated, might help to build resiliency in continuing medical education (Tempski, Martins, & Paro, 2012).

Subsequent studies may choose to incorporate resilience training into more formalised educational structures or transfer it to an online course or flipped classroom format. The present study recruited participants on a voluntary basis and rewarded them with course credit upon completion of the training. Without incentives such as a formal grade or a full semester's worth of classes, it is possible that participants were not as deeply engaged in the content as desired. We experienced a substantial level of dropout from participants who attended the first session (N = 32) to the final data set,

which only considered participants attending all sessions (N = 18). Incentivising participation with a formal grade or extending the training to a full semester may help to curb this dropout rate and encourage course attendance. Upon asking students why they did not attend class more regularly, they unanimously reported that they had other required courses during the same time window and they wished they could have attended.

More research is needed to assess the coping mechanisms we trained and the long-term effects of the training we provided. It would also be interesting to adapt and provide the training in continuing medical education or to other human services professionals such as teachers, social workers, childcare workers etc. The training itself has proven to be a feasible method of promoting resiliency in medical schools and we invite other medical schools to utilise the training. We invite medical schools or other higher education programmes to contact us if they plan to apply the training and will gladly provide them with our assessment instrument to further validate the training.

As a result of the growing need and possibilities for training medical students' resiliency, there is also a growing need to provide educators with tools for facilitating resiliency trainings. We know little about higher education staff's resilience levels education (Gold, 1984) and even less about their ability to teach courses whose content is derived from cognitive behavioural group therapy. Since some of the course content might trigger emotional responses, it should be ensured that instructors can deal with these responses and know whether and when to offer further support and guidance or where to seek help. Our resilience trainings were facilitated by experienced trainers with a psychotherapy background. The necessary knowledge could be provided to other (medical) educators in train-the-trainer workshops.

There is a growing need to conduct resilience trainings not only in medical education, but also in other fields within higher education. Many parts of the training evaluated here can easily be adopted or adapted to other professions. In particularly, teachers, social workers, nursery school teachers or other human services professionals known to be prone to burnout (Burke & Greenglass, 1988; Chang, 2009) could benefit from the training.

4.1 Limitations of our study

We are aware of the small sample analysed with regard to our training programme. However, the effects for two of the subscales were significant and the two of the measurements were sufficiently reliable. Nonetheless, the differentiated evaluation showed us what our training does and does not train. Obviously, a much larger sample is needed with more trainings and trainers and other measurements like the

Connor-Davidson Resilience Scale (Sarubin et al., 2015) in order to replicate and potentially generalise the effects.

4.2 Conclusions

Gaining increased insight and promoting resiliency makes medical students and healthcare professionals alike better equipped to begin and expand resilience practice (Howe, Smajdor, & Stöckl, 2012). In turn, greater resilience and functional coping strategies could lead to better diagnostic accuracy, fewer unnecessary medical assessments and laboratory procedures, and fewer cases of physician burnout. In short, building resiliency practices in more medical schools would be beneficial not only for practitioners, but also for patients.

Acknowledgements

We would like to thank all participants who took part in our training.

References

Burke, R. J., & Greenglass, E. R. (1988). Career orientations and psychological burnout in teachers. *Psychological reports, 63*(1), 107–116.

Buser, K., Schneller, T., & Wildgrube, K. (2007). *Medizinische Psychologie, medizinische Soziologie: Kurzlehrbuch zum Gegenstandskatalog* (6th ed.). Munich/Jena: Elsevier, Urban&FischerVerlag.

Chang, M.-L. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational psychology review, 21*(3), 193–218.

Cherniss, C. (2016). *Beyond burnout: Helping teachers, nurses, therapists and lawyers recover from stress and disillusionment*. London/New York: Routledge.

Coulter, T. J., Mallett, C. J., & Gucciardi, D. F. (2010). Understanding mental toughness in Australian soccer: Perceptions of players, parents, and coaches. *Journal of Sports Sciences, 28*(7), 699–716.

Cyrulnik, B. (2009). *Resilience: How to Gain Strength from Childhood Adversity*. London: Penguin.

Dunn, L. B., Iglewicz, A., & Moutier, C. (2008). A conceptual model of medical student well-being: promoting resilience and preventing burnout. *Academic Psychiatry, 32*(1), 44–53.

Eysenck, M. W. (1985). Anxiety and cognitive-task performance. *Personality and Individual Differences, 6*(5), 579–586.

Fares, J., Al Tabosh, H., Saadeddin, Z., El Mouhayyar, C., & Aridi, H. (2016). Stress, burnout and coping strategies in preclinical medical students. *North American journal of medical sciences, 8*(2), 75.

Gold, Y. (1984). Burnout: A major problem for the teaching profession. *Education, 104*(3), 271–274.

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of psychosomatic research, 57*(1), 35–43.

Hege, I., Dietl, A., Kiesewetter, J., Schelling, J., & Kiesewetter, I. (2018). How to tell a patient's story? Influence of the case narrative design on the clinical reasoning process in virtual patients. *Medical teacher, 40*(7), 736–742.

Howe, A., Smajdor, A., & Stöckl, A. (2012). Towards an understanding of resilience and its relevance to medical training. *Medical education, 46*(4), 349–356.

Jackson, D., Firtko, A., & Edenborough, M. (2007). Personal resilience as a strategy for surviving and thriving in the face of workplace adversity: a literature review. *Journal of advanced nursing, 60*(1), 1–9.

Kiesewetter, J., & Dimke, B. (2018). *Resilience training for health care professionals and medical students: An instructional manual*. Independently published.

Kiesewetter, J., & Dimke, B. (2020). Emotional speed-dating as a part of medical students' resilience training. *Medical Education, 54*(4), 473–474. doi:10.1111/medu.14094

Kieswetter, J., & Huber, J. (in print). A primer of an in-depth resilience status for German medical graduates. Results of a cross-sectional survey on the status quo of resilience among graduates of human medicine in Bavaria, Germany – a necessary step in building an emotionally equipped healthcare workforce. *BMC Medical Education.*

Koehl-Hackert, N., Schultz, J.-H., Nikendei, C., Möltner, A., Gedrose, B., van den Bussche, H., & Jünger, J. (2012). Belastet in den Beruf – Empathie und Burnout bei Medizinstudierenden am Ende des Praktischen Jahres. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen, 106*(2), 116–124.

Loehr, J., Loehr, J. E., & Schwartz, T. (2005). *The power of full engagement: Managing energy, not time, is the key to high performance and personal renewal*. New York: Simon and Schuster.

Maiden, J., Georges, J. M., & Connelly, C. D. (2011). Moral distress, compassion fatigue, and perceptions about medication errors in certified critical care nurses. *Dimensions of Critical Care Nursing, 30*(6), 339–345.

Maslach, C., Jackson, S. E., Leiter, M. P., Schaufeli, W. B., & Schwab, R. L. (1986). Maslach burnout inventory manual. Palo Alto, CA: Consulting psychologists press.

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual review of psychology, 52*(1), 397–422.

Möller, H.-J., Laux, G., Deister, A., & Schulte-Körne, G. (2013). Psychiatrie, Psychosomatik und Psychotherapie. Stuttgart: Thieme.

Neumann, M., Edelhäuser, F., Tauschel, D., Fischer, M.R., Wirtz, M., Woopen, C., … Scheffer, C. (2011). Empathy decline and its reasons: a systematic review of studies with medical students and residents. *Academic medicine, 86*(8), 996–1009.

Ofri, D. (2013). What doctors feel: how emotions affect the practice of medicine. Boston: Beacon Press.

Parker, P.A., & Kulik, J.A. (1995). Burnout, self- and supervisor-rated job performance, and absenteeism among nurses. *Journal of Behavioral Medicine, 18*(6), 581–599.

Rotenstein, L.S., Torre, M., Ramos, M.A., Rosales, R.C., Guille, C., Sen, S., & Mata, D.A. (2018). Prevalence of burnout among physicians: a systematic review. *JAMA, 320*(11), 1131–1150.

Sarubin, N., Gutt, D., Giegling, I., Bühner, M., Hilbert, S., Krähenmann, O., … Rujescu, D. (2015). Erste Analyse der psychometrischen Eigenschaften und Struktur der deutschsprachigen 10- und 25-Item Version der Connor-Davidson Resilience Scale (CD-RISC). *Zeitschrift für Gesundheitspsychologie 23*(3), 112–122.

Schüler, J., & Dietz, F. (2004). Kurzlehrbuch Medizinische Psychologie und Soziologie. Stuttgart: Georg Thieme Verlag.

Shanafelt, T.D., Hasan, O., Dyrbye, L.N., Sinsky, C., Satele, D., Sloan, J., & West, C.P. (2015). Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. Paper presented at the Mayo Clinic Proceedings.

Tempski, P., Martins, M.A., & Paro, H.B. (2012). Teaching and learning resilience: a new agenda in medical education. *Medical Education, 46*(4), 345–346.

Vanheule, S., Rosseel, Y., & Vlerick, P. (2007). The factorial validity and measurement invariance of the Maslach Burnout Inventory for human services. *Stress and Health: Journal of the International Society for the Investigation of Stress, 23*(2), 87–91.

Wears, R.L., & Wu, A.W. (2002). Dealing with failure: the aftermath of errors and adverse events. *Annals of emergency medicine, 39*(3), 344–346.

Zautra, A.J., Hall, J.S., & Murray, K.E. (2010). A new definition of health for people and communities. In J.R. Reich, A.J. Zautra, & J.S. Hall (Eds.), *Handbook of Adult Resilience* (pp. 3–30). New York: Guilford.

Manuscript received: 10.09.2019
Manuscript accepted: 02.09.2020

Supplemental Material:

Overview of the resilience training for health care professionals and medical students

The training manual targets an audience of 10–15 medical students and healthcare professionals. The manual's content is designed to be taught over a span of 5 to 10 sessions if time allows. Sessions generally last about two hours and include suggested take-home tasks. In addition, learning goals for each module are provided.

Module 1: Time and energy management.

To start the training, Model 1 focuses on time and energy management.

- Introduces the highly tangible and relevant topic of time and energy management; can be discussed openly and easily by participants new to the topic
- Module 1 includes practices and suggestions for energy management. These are vital to create meaning, maintain longevity, and improve performance both in and out of the workplace

Module 2: Beginning a mindfulness practice

Module 2 aims to incorporate a mindfulness practice into participants' lives and develop this skill set as a means of dealing with life's more stressful times.

- Introduces key pillars of resilience: adaptability, self-control, self-sufficiency, persistence, and optimism
- General and individual mindfulness practices and suggestions are included

Module 3: Understanding achievement emotions

Module 3 places emphasis on so-called achievement emotions and sources of self-concept.

- Introduces sources of self-concept: judgements against a standard, social comparisons, past experiences, and reflected appraisals from significant others along with their implications
- Practices and suggestions for dealing with achievement emotions and approach vs. avoidance mindsets are discussed

Module 4: Managing strong emotions

Module 4 focuses on participants' abilities to identify, manage, and release any frustration linked to dealing with strong emotions and setbacks.

- Developing and practising effective coping strategies to enable participants to move forward more easily following potential setbacks
- Three different techniques to be used when a strong emotion arises: one short-term, one medium-term, and one long-term

Module 5: Harmonising work and life roles

The fifth training module centers on finding and creating harmony between one's obligations as a professional and life outside the clinic/university

- Reflect on their purpose and mission as healthcare professionals.
- Work-life harmonisation strategies are first introduced on a broad meta level and are subsequently scaled down to one's daily activities
- Outlook to practising leadership in medicine

Information about the authors:

PD Dr. Jan Kiesewetter
Bria Dimke
Johanna Huber
Institute for Medical Education
Pettenkoferstr. 8a
80336 Munich, Germany
Email: jan.kiesewetter@med.lmu.de
bria.dimke@gmail.com
johanna.huber@med.uni-muenchen.de

Priv. Doz. Dr. Jan Kiesewetter is associate professor at the Institute for Medical Education and cognitive behavioural psychotherapist. Clinically he works in his practice in Munich. His research interest is in the training of resilience and collaboration in under- and postgraduate medical education.

Bria Dimke, MSc, is a learning scientist and did her master's thesis on resilience at the Institute for Medical Education at LMU Munich. She works as a trainer and curricular developer at AllianzU. Her research interest is on resilience in medicine.

Johanna Huber is research group leader at the Institute for Medical Education at LMU Munich. She is in charge of the evaluation of the medical faculty of LMU Munich. Her research interest is in career development of medical students and early career physicians.