

Which educational interventions improve healthcare professionals' resilience?

A literature review

Short Title: Healthcare education and resilience: A review

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Abstract

Introduction: This literature review summarises the current evidence on educational interventions to develop healthcare worker resilience.

Methods: Electronic databases were systematically searched using the search terms: education OR training OR medical students AND resilience. The initial search was refined using criteria including population (healthcare students and professionals), interventions (educational), and outcome (resilience changes).

Results: Resilience has been defined and measured in various ways. The following educational interventions to develop resilience were identified: resilience workshops, small group problem solving, reflection, cognitive behavioural training, mindfulness and relaxation training, and mentoring.

Conclusions: The strongest evidence was for using resilience workshops, cognitive behavioural training or a combination of interventions. The literature is sometimes conflicting suggesting that developing resilience is a complex process, and our understanding is not fully developed.

Introduction

Resilience in the medical education literature has various definitions. It has been described as a dynamic capability which allows people to thrive on challenges (Howe, Smajdor, & Stöckl, 2012), others have proposed resilience as key to the prevention of distress (Dyrbye & Shanafelt, 2012). A broader view defines resilience as the capacity to endure ongoing hardship, as well as the ability to recover from difficult situations (Walker, Gleaves, & Grey, 2006). Resilience levels can be influenced by static components such as personality traits, and dynamic components such as the work environment or resilience training. Over time all healthcare workers could face hardship including stress, burnout and depression. Resilience training could lessen the impact of this and aid recovery. The benefits of such training could include better clinical outcomes for patients, improved practitioner wellbeing, and reducing student or graduate loss (Dyrbye & Shanafelt, 2012).

Previous reviews of resilience in health professionals and students proposed education as a solution, without presenting any primary evidence to support this (Howe et al., 2012; Jackson, Firtko, & Edenborough, 2007). Individual studies suggest that education can enhance resilience (Peng et al., 2014).

This review summarises the current evidence.

Methods

A systematic search was done using the electronic databases Medline, Embase, BNI, CINAHL, HMIC, PsycInfo, and PubMed, using search terms "Education" or "Training" or "Medical Students"

AND

"Resilience"

The resulting articles were then reviewed and included if they fulfilled the following criteria.

Population: Studies of health care students or health care professionals

These groups have above average rates of student drop out, suicide, relationship failure and burnout (Dyrbye & Shanafelt, 2012; Slavin, Schindler, & Chibnall, 2014).

Interventions: Interventions whose primary purpose was education

Qualitative research covering educational interventions and resilience was included.

Comparison: No comparison criteria

Allows inclusion of qualitative studies.

Outcome: Only validated resilience scores

Related outcomes such as burnout or depression were excluded as there is not a clear correlation between these and resilience (Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013; Sen et al., 2010).

Type of Study: Only primary research studies

Editorials, letters and reviews were read to help identify further studies

Results

The initial search found 1402 unique results. Their titles and abstracts were read and if they matched the criteria, the full paper was read and again compared to the criteria. The reference lists of the selected articles were searched to identify additional papers.

Figure 1

16 papers were identified (Table 1). Quantitative studies were scored using the Medical Education Research Study Quality Instrument (MERSQI). This score gives a reliable and objective measure of research quality. (Cook, Levinson, & Garside, 2011; Sawatsky et al., 2015)

Table 1

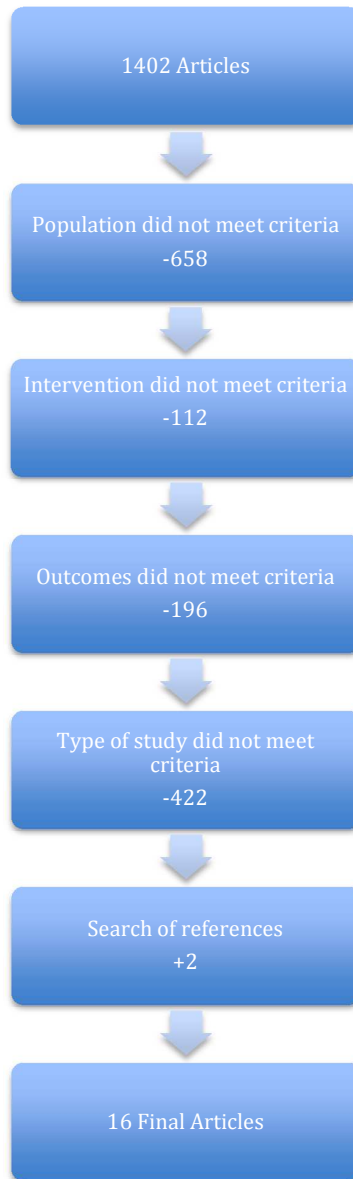


Figure 1. Flow diagram of review process.

Table 1: Literature Review Summary

<i>Author Year</i>	<i>Study Population</i> <i>MERSQI Score</i>	<i>Focus of Study</i>	<i>Resilience Intervention</i>	<i>Assessment Method</i>	<i>Relevant Outcomes</i>
<i>(Aiello et al., 2011)</i>	<i>Canada</i> <i>1250 Hospital staff</i> <i>MERSQI 9.5/18</i>	<i>A one-hour resilience teaching session covering 'flu pandemics and coping strategies</i>	<i>Resilience workshop</i>	<i>Mixed methods:</i> <i>Qualitative-post session feedback analysis</i> <i>Quantitative-post session evaluation scores</i>	<i>Staff valued resilience education</i> <i>76% of respondents felt better able to cope with a future 'flu pandemic</i>
<i>(Arvidsson et al., 2008)</i>	<i>Sweden</i> <i>18 Nursing graduates</i>	<i>Process-Oriented Group Supervision (PGS)</i>	<i>Small Group Discussions</i> <i>Reflection</i>	<i>Qualitative Interviews 1 year after completion of training</i>	<i>Participants felt PGS enhanced resilience</i> <i>Reflection and sharing were the key learning actions</i>
<i>(Cotta et al., 2012)</i>	<i>Brazil</i> <i>59 Medical students</i> <i>MERSQI 11/18</i>	<i>The impact of the use of student created group portfolios as tools for learning and assessment</i>	<i>Small Group Discussions</i>	<i>Mixed methods:</i> <i>Qualitative analysis of the portfolios and focus group discussions</i> <i>End of semester surveys</i>	<i>Students felt use of the portfolios led to the improvement of personal skills such as resilience</i>
<i>(Dossett et al., 2011)</i>	<i>USA</i> <i>129 Medical graduates</i> <i>MERSQI 8/18</i>	<i>Factors associated with resilience: results of the HEART 4th year elective alumni survey</i>	<i>Reflection</i>	<i>An online survey of heart alumni 2002-2009 cohorts, assessing impact of the elective and including a validated score of resilience</i>	<i>Regular reflection correlates with higher resilience scores</i>
<i>(Fortney et al., 2013)</i>	<i>USA</i> <i>30 Primary Care clinicians</i> <i>MERSQI 13/18</i>	<i>The effects of an abbreviated mindfulness intervention on Primary Care clinicians</i>	<i>Mindfulness training</i>	<i>A before and after pilot study comparing the resilience scores before and after the intervention</i>	<i>Improved mindfulness scores but no improvement in resilience scores.</i>
<i>(Harrowing & Mill, 2010)</i>	<i>Uganda</i> <i>24 Nursing Graduates (>15 years' experience)</i>	<i>The impact of a 6-month HIV counselling course on a cohort of nurses at risk of "moral distress"</i>	<i>Small Group Discussions</i> <i>Reflection</i>	<i>A 2-year qualitative post course study using interviews, observation and focus group discussions</i>	<i>Sharing post-course experiences in a group setting helped develop a "collective resilience"</i>
<i>(Hodges et al., 2008)</i>	<i>USA</i> <i>11 Baccalaureate (BSN) Acute Care Nurses</i>	<i>To illuminate the evidence of developing professional resilience in new BSN nurses</i>	<i>Group Problem Solving</i> <i>Mentors</i> <i>Reflection</i>	<i>A 9-month qualitative study using focus groups, individual interviews, and critical incident questions</i>	<i>The following educational strategies were identified as relevant:</i> <i>Group problem solving, mentors, critical reflection</i>
<i>(Kenny & Allenby, 2013)</i>	<i>Australia</i> <i>22 Nursing Graduates</i>	<i>Exploring the consequences of a 6-month group clinical supervision programme to support rural nurses</i>	<i>Small Group Discussions</i>	<i>A qualitative study analysing group sessions which evaluated the programme</i>	<i>The anticipated improvement in resilience was not reported</i>

<i>(Longenecker et al., 2012)</i>	USA 50 Rural Medical Education Conference attendees	A report and analysis of a day-long workshop on "Teaching and Learning Resilience"	Small Group Discussion Mentoring Reflection	Qualitative analysis of a daylong curriculum development workshop	The following teaching methods were identified as relevant: small group discussions, mentoring and reflection
<i>(McDonald et al., 2012)</i>	Australia 14 Nursing graduates	The effects of a work based self-care educational intervention conducted over 6 months	Resilience workshop Mentoring Relaxation techniques	Qualitative analysis of a collective case study using semi-structured interviews pre, post and 6-month post-intervention, and participant evaluations collected at the end of each workshop	Participants believed adopting the self-care principles they had learned in the workshops strengthened their personal resilience
<i>(Peng et al., 2014)</i>	China 312 Medical students MERSQI 14.5/18	The effects of applying the Pennsylvania Resilience Program (PRP) amongst Chinese medical students	Resilience Workshop Cognitive Behavioural Techniques Relaxation techniques	A Non-randomised control trial with comparison of Connor Davidson Resilience Scores before and after the intervention	The PRP statistically improved student resilience scores for both high and low resilience students
<i>(Pidgeon et al., 2014)</i>	Australia 44 Human service professionals MERSQI 14.5/18	The effects of a brief retreat-based Mindfulness with Metta Training Program	Mindfulness training	A Randomised control trial with comparison of the Wagnild and Young Resilience Score before and after the intervention	The resilience scores show an improvement after 4 months
<i>(Sharma et al., 2012)</i>	USA 38 Medical centre staff MERSQI 11/18	The effects of self-directed training using only written material from the SMART programme	Cognitive Behavioural Techniques	The Connor Davidson Resilience Score was measured at the baseline and again at week 12	Statistically significant improvements in resilience scores were observed at 12 weeks compared to the baseline
<i>(Sood et al., 2011)</i>	USA 40 Medical Physicians MERSQI 14.5/18	The effects of a single 90 min one to one teaching session following the SMART programme	Cognitive Behavioural Techniques	The Connor Davidson Resilience Score was measured at the baseline and again at week 8	Statistically significant improvements in resilience scores were observed at 8 weeks compared to the baseline
<i>(Steinhardt & Dolbier, 2008)</i>	USA 57 University students MERSQI 15/18	The effects of a resilience programme for students involving cognitive behavioural techniques, social support and psycho-education	Resilience workshop Reflection Cognitive Behavioural Techniques	Randomised controlled group study using two validated resilience scores before and after the intervention	Statistically significant increases in resilience scores for the intervention group
<i>(Wallbank, 2013)</i>	UK 174 Health visitors MERSQI 11/18	The effect of a six-session restorative group supervision intervention on maintaining professional resilience	Small Group Discussions	A before and after survey using the Stamm Professional Quality of Life scale	Restorative supervision reduced stress and burnout scores

Discussion

The main interventions identified were: resilience workshops, small group problem solving and sharing, reflection, cognitive behavioural interventions, mindfulness and relaxation techniques, and mentoring. Medical education programmes often combine a variety of educational interventions. This review discusses each approach separately to allow a deeper analysis of the evidence.

Resilience workshops

The impact of resilience workshops was described in 4 papers. Two studies followed a multi-week format, participants were exposed to a variety of techniques, counsellors and educators in a workshop format (Peng et al., 2014; Steinhardt & Dolbier, 2008). Both were high quality papers and utilised a randomised control trial (RCT) format to show significant improvements in resilience scores. An Australian paper (McDonald, Jackson, Wilkes, & Vickers, 2012) reported qualitatively on resilience workshops conducted over six months. Data from interviews and written evaluation found participants' perceived a strengthening of their resilience. The positive results in the three trials suggest workshops could improve resilience. However these workshops were time and resource intensive. This could preclude their use in resource poor settings.

The fourth paper used mixed methods to study a one-hour workshop covering influenza, stress and coping (Aiello et al., 2011). Qualitative Results were positive but the quantitative research used non-validated outcomes so the evidence to support brief workshops is weaker.

Small group problem solving and sharing

Seven papers studied small group work as a strategy to improve individual resilience. Four qualitative papers found small group problem solving, and reflection were key processes in building resilience. This finding is strengthened as the trials used different methodologies and were in varied settings: Sweden (Arvidsson, Skärsäter, Öjervall, & Fridlund, 2008), Uganda (Harrowing & Mill, 2010) and USA (Hodges, Keeley, & Troyan, 2008; Longenecker, Zink, & Florence, 2012).

Two mixed method studies (Cotta et al., 2012; Wallbank, 2013) investigated the impact of group work on individual resilience. Both reported a positive impact although their MERSQI scores were below average with the quantitative findings weakened by non-resilience outcome measures.

A qualitative Australian paper on rural nurses did not report an improvement in resilience after 6 months of group clinical supervision (Kenny & Allenby, 2013). While a single negative trial should not outweigh several positive

results, the authors of this particular study suggest that “there are no magic bullets”, and success may need a combination of strategies.

Individual and Group Reflection

Reflection was part of the small group work in four of the previous papers (Arvidsson et al., 2008; Harrowing & Mill, 2010; Hodges et al., 2008; Longenecker et al., 2012). Two studies on resilience workshops (Peng et al., 2014; Steinhardt & Dolbier, 2008) also identified group and individual reflection as key processes.

An American study (Dossett et al., 2011) identified an association between regular reflection (at least weekly), and increased resilience in early career physicians. This study had a lower MERSQI score. Reflection alone has a weak evidence base.

Cognitive Behavioural Strategies

Two American papers investigated cognitive behavioural training to improve resilience (Sharma, Bauer, Prasad, Sood, & Schroeder, 2012; Sood, Prasad, Schroeder, & Varkey, 2011). Both adopted the Stress Management and Resiliency Training (SMART) program. Sood et al. utilised a high quality RCT format and showed a significant improvement in resilience scores. Sharma et al. utilised a single cohort study based on only the written material from the SMART program, and showed a similar outcome although the MERSQI score

was lower. The positive result from both interventions is encouraging but the one to one nature of the full SMART programme has resource implications.

Mindfulness and Relaxation Training

An American (Fortney et al., 2013) and an Australian (Pidgeon, Ford, & Klaassen, 2014) paper assessed the resilience consequences of mindfulness training. The Australians used a high quality RCT format and found an improvement in resilience after four months. The Americans used a single sample pre post survey design and showed no improvement in resilience scores. Two of the successful workshop programmes included teaching on relaxation techniques (McDonald et al., 2012; Peng et al., 2014).

While the evidence for Mindfulness alone is conflicting, it suggests there may be a place for relaxation training in combination with other strategies.

Mentoring

Three papers suggested that mentoring could help develop resilience in the early stages of a career. All three adopted a qualitative approach (Hodges et al., 2008; Longenecker et al., 2012; McDonald et al., 2012). Two papers suggested a triad of small group work, mentoring and reflection, while the third suggested a combination of resilience workshops, relaxation techniques and mentoring. These findings are optimistic but limited by the lack of quantitative evidence. Research into mentoring in non health care settings gives conflicting evidence and more work needs to be done on defining what is meant by mentoring (Rhodes & Lowe, 2008).

In summary resilience enhancing workshops and cognitive behavioural interventions had mostly positive evidence but significant resource implications. The evidence for developing resilience through small group problem solving is moderate. Reflection, Mentoring, Mindfulness and relaxation techniques had some evidence, although mostly in combination with other interventions. A combination of interventions might represent the best chance of success.

Strengths and Limitations

This review includes studies from a broad variety of settings, the body of evidence on resilience is growing and there is increasing recognition of its importance in medical education. Each intervention was supported by more than one paper and often by varying research methods. This allows “triangulation” which helps validate the findings (Schifferdecker & Reed, 2009). Literature reviews can be limited by “publication bias”, this review includes several studies where outcomes were not significant or not anticipated.

A limitation identified in the current literature is the variability in the timing and tools used to measure resilience. A recent methodological review (Windle, Bennett, & Noyes, 2011) concluded most current resilience scales were at best of moderate quality, with the Connor Davidson 25-Item resilience scale (CD-RISC) scoring highest. The CD RISC was used in 4 of the 7 quantitative papers covered by this review (Peng et al., 2014; Sharma et al., 2012; Sood et al., 2011; Steinhardt & Dolbier, 2008).

Pre-existing level of resilience may influence the effectiveness of interventions. The Peng study found that low resilience students in the intervention group showed a significant improvement in resilience, but not high resilience students. This factor was not addressed by other studies, and is a potential limitation.

Follow up intervals in the current literature varied. Peng reported strong positive outcomes straight after the intervention, but acknowledged the lack of follow up to see if the benefit was sustained. Pidgeon reported improvement in resilience only after 4 months. Future studies should ideally include early review periods (less than 6 weeks) to suggest efficacy, and long term follow up (more than 6 months) to indicate sustainability.

A potential limitation of current studies is not addressing whether resilience levels are context specific. Some of the current studies have trained resilience in an educational context, and then measured the follow up when the participant is back in a working context. Whilst the most effective form of resilience is likely to be one that is sustainable and transferrable this issue does need to be addressed.

Conclusions

This review endorses the notion that education can improve health care workers resilience. Reasonable evidence was found for resilience enhancing effects of workshops and cognitive behavioural interventions. Some evidence was found for small group problem solving. The evidence for the effects of reflection, mentoring, mindfulness and relaxation techniques was mixed. A combination of interventions might represent the best chance of success. Resilience is a complex field and our understanding is still developing. Further work is needed to establish consensus on how resilience is defined, measured, and sustained. Short-term resilience gains will not deliver the quality or quantity of healthcare professionals needed to face the challenges of our changing world.

Practice Points

Education may help improve health professional resilience.

Useful strategies include resilience workshops, cognitive behavioural interventions and small group problem solving and sharing. These can be combined with reflection, mentoring, mindfulness and relaxation techniques.

A combination of interventions may offer a better chance of success.

Monitoring the outcome of educational interventions to improve resilience is important; more work is needed to establish when, where and how this should be done.

Notes on Contributors

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Declaration of Interests

The author declares he has no financial or personal relationships that may have inappropriately influenced him in writing this review.

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