Sanderson, B. & Brewer, M. (2017). What do we know about student resilience in health professional education? A scoping review of the literature. Nurse Education Today.

ABSTRACT

Objectives: Resilience has been identified as a key capability to thrive in the complex changing work environment of the 21st century. Therefore, the aim of this scoping review was to investigate how resilience is understood in the context of pre-qualifying health education, if there is a need to build student resilience, and what approaches to enhancing student resilience are described in the literature.

Design and data sources: Arksey and O'Malley's (2005) literature scoping review design was adopted as it enables researchers to review, summarise and analyse the literature on a given topic. The databases searched were Cumulative Index of Nursing and Allied Health Literature, Scopus, Proquest, Medline, Science Direct, and Education Resources Information Centre.

Review method: Four research questions informed the literature review: (1) how is resilience conceptualised in the literature?, (2) what evidence exists for the need for resilience enhancement?, (3) what resilience factors should inform resilience enhancement?, and (4) what resilience enhancement programs are described in the literature?

Results: A total of 36 papers were reviewed in detail. Whilst the need for a focus on resilience across the health professions was evident an array of definitions and conceptualisations of resilience were described. A small number of approaches to enhancing resilience were identified.

Conclusion: Whilst widespread recognition of the importance of resilience in the health professions exists the area remains under theorised with limited conceptual models and robust interventions published to date.

HIGHLIGHTS

- Despite growing interest in resilience in the health professions, no commonly accepted definition, theory or model of resilience was evident in the papers reviewed
- A definition of resilience relevant to pre-qualification health professional education is proposed
- Resilience factors that students can draw on to achieve the desired outcome of surviving and thriving are identified

- Interventions to enhance resilience in health education students exist in many forms
- Most interventions focus on individuals, but organisation wide change is also required to embed resilience within health curricula

INTRODUCTION

Over 50 years of research has demonstrated the importance of resilience in relation to positive outcomes for children, adolescents, families and trauma survivors (Pines et al., 2012). Whilst early research focused on children and adolescents in the context of trauma or disaster, this was broadened to include resilience in adults and across a range of contexts such as Caruana's (2014) examination of resilience and global citizenship in higher education. Aligned with this shift in the focus of the resilience research has been a change in the way resilience is viewed. Early researchers typically viewed resilience as a fixed trait or personal attribute (Masten & Garmezy, 1985). Contemporary researchers tend to view resilience as either a dynamic process (Earvolino-Ramirez, 2007) that can be developed or enhanced (Stephens, 2013), or as an outcome (Britt et al., 2016). For over 50 years' resilience has been studied in relation to adversity (Prince-Embury, 2014). This diversity in perspectives arises from the array of lenses through which resilience has been viewed with reviews of the literature highlighting psychological, ethical, moral, ecological, socio-ecological, organisational and supply chain perspectives (Bhamra, Dani & Burnard, 2011; Howe, Smajdor & Stockl, 2012).

No matter which perspective is adopted, resilience is increasingly viewed as a critical graduate capability for the 21st century (Tomlinson, 2017). This is particularly true for healthcare which is a complex, stressful and emotionally challenging environment (Aburn, Gott & Hoare, 2016). Concern over the challenging health and social care work environment has led to interest in resilience across the health professions with key bodies including the Medical Research Council and the Economic and Social Research Council in the UK identifying resilience as an important factor in health and wellbeing (Windle, Bennett & Noyes, 2010). In their book *The Resilient Nurse* (McAllister & Lowe, 2011) claim resilience is an essential skill that enables

one to make sense of experience and manage the stress of the workplace. Many other researchers including McAllister and McKinnon (2009), Pines et al., (2012), Monteverde (2014), and McGowan and Murray (2016) have proposed that health professionals need resilience to survive (and thrive) in the workplace. Furthermore, Hodges, Troyan and Keeley's (2010) nursing career longevity study found resilience to be the most critical factor.

Health professional education is perceived by many students to be a stressful experience (Taylor & Reyes, 2012; Wilks & Spivey, 2010) with students studying health related courses reporting increased levels of anxiety, fatigue, burnout and lack of motivation (Richards, Sweet & Billett, 2013). Reeve et al.'s (2013) examination of nursing students revealed rates of anxiety, worry and depression that the authors described as indicative of a high burden of stress. This finding is supported by many including Gibbons (2010) and Priesack and Alock (2015). The situation is similar for medical education where fatigue, stress and other mental health problems are major concerns (Wood, 2015). Dyrbye and Shanafelt's (2016) review of the literature on burnout in medical students revealed a high proportion of students across the globe experience severe work-related stress and burnout with between 45% and 56% displaying symptoms suggestive of burnout, and just under half reporting high levels of emotional exhaustion. Similarly, Cecil, McHale, Hart and Laidlaw (2014) cite burnout rates of around 49% in medical students in the USA and 28% to 61% in Australia.

In light of these student health and wellbeing issues it is perhaps not surprising that attrition rates for students in some health professions is a growing concern. Crombie, Brindley, Harris, Marks-Maran & Thompson (2013) report that in some areas of the UK up to 30% of nursing students leave their course due to individual, institutional and political/professional issues. Similarly, Harris, Rosenberg and O'Rourke (2013) state the average attrition rates for nursing students vary from 47% for associate degrees to 50% for baccalaureate degree programs. A more global study of first year health sciences students conducted in an Australian university in 2011 found an attrition rate of 49% with only 11% completing their undergraduate course (Hoyne & McNaught, 2016). Related to these student health, wellbeing and attrition concerns is the call for resilience training in health professional education (Eley & Stallman, 2014; Pines et al., 2012; Monteverde, 2014; Tempski, Martins & Paro, 2012; Waddell et al., 2015).

A critical review of the literature on resilience in the health professions was published by McAllister and McKinnon (2009). This led to three key recommendations. First, all health professional programs should include a focus on resiliency. Second, within practice contexts

practitioners should be provided with opportunities to reflect on and learn from the practice of others. Third, professional cultural generativity (demonstrated through altruism, positive role modelling, mentoring and coaching) be engendered. Given the concept of resilience has evolved over recent years as new knowledge has been created (Aburn et al., 2016) it is timely to undertake a review to ascertain current understanding and progress in relation to resilience in pre-qualifying health professional education for the 21st century. The key practical and research implications of these findings are outlined. This research will help inform resilience enhancement programs in health professional education.

METHODS

A scoping review was undertaken to map the existing literature on resilience in relation to the four research questions below. Scoping reviews are a form of knowledge synthesis, designed to summarise and synthesise the evidence, rather than assess the quality of studies (Arksey & O'Malley, 2005). More specifically a literature mapping study was undertaken. Rumrill, Fitzgerald & Merchant (2010) describe the objectives of this type of scoping review as identifying the location and magnitude of literature on the topic. The process for review is outlined in Figure 1.

[Insert Figure 1 here]

Arksey & O'Malley's (2005) methodological framework for scoping reviews was adopted to enable replication and strengthen the rigor of the research. This framework is organised into four steps which are outlined below.

Step 1. The research questions

Prior to conducting the search, four specific questions were established in the context of pre-qualifying health professional education: (1) how is resilience conceptualised in the literature?, (2) what evidence exists for the need for resilience enhancement?, (3) what resilience factors should inform resilience enhancement?, and (4) what resilience enhancement programs are described in the literature?

Step 2. Identify the relevant studies

To ensure breadth of the review, several common health databases were utilised: CINAHL, Scopus, Proquest, Medline, Science Direct and ERIC. The search terms were narrowed to: 'resilien*' AND 'health' AND 'student'. In line with the focus on education for the 21st

century, the review was narrowed to peer reviewed papers published in English between 2000 and 2016.

Step 3. Study selection

The inclusion criteria were developed by the research team through an iterative process involving two key phases. Firstly, the inclusion criteria were developed to include relevant studies whilst balancing the need for comprehensiveness with cost and time implications. The initial research yielded 652 papers. Following exclusion of duplicate records and papers that did not meet the inclusion criteria in this initial phase, 56 papers were identified. The second phase of the selection process arose when, in charting the studies (see step 4 below), multiple papers were identified related to non-health related courses, that focused on faculty rather than students, or described the validation of a measurement tools. As a result, two additional inclusion criteria were added (see Table 1). Following exclusion of an additional 20 papers, 36 papers were included in the final analysis.

[Insert table 1 here]

Step 4. Charting the studies

An analytic frame was developed by two members of the project team and entered into a template excel spreadsheet. The analytic frame included:

1. Biographical details
2. Brief summary of the paper
3. Context and professions involved
4. Conceptualisation of resilience
5. Resilience factors
6. Resilience enhancement initiatives

The research assistant and first author used this frame to independently interrogate all of the papers included. The second author then interrogated approximately half (n = 26) of the papers, with a further two project members interrogating 10 studies each. This process ensured each paper was reviewed by three members of the research team. The research team met on two occasions to compare findings and ensure reliability between the reviewers.

RESULTS

Our results align with escalating interest in resilience in the broader higher education context with the majority of papers (86%) published between 2011 and 2016 (see Figure 2), thus subsequent to McAllister and McKinnon's (2009) review.

[Insert Figure 2 here]

The vast majority of publications were empirical papers (78%), with the remaining being conceptual, program descriptions or opinion pieces. Most papers were from North America (50%) and Europe (30%) with the others from Australasia and South America. The most common professions represented were medicine (13), nursing (12), psychology (4), and general health sciences (3). Dentistry, pharmacy, physiotherapy, radiotherapy, social work, midwifery, paramedicine, and exercise science were also represented in one paper each. The majority of the papers discussed resilience in the context of the university with only eleven papers (30%) making reference to resilience in the practice context. Having established the context of the papers, the results will be examined in light of the four research questions.

Conceptualisations of resilience

Definitions

Aligned with the broader resilience literature, an array of definitions was found. Resilience was most commonly defined as an ability, capacity or capability (28%), followed by a focus on adaptation or adjustment (14%). Akin to the broader resilience literature none of the papers reviewed described resilience as an outcome per sa. Traditional conceptualisations of resilience focused on trauma were evident, such as Gayton & Lovell's (2012, p.59) definition of resilience as "a dynamic process wherein individuals display positive adaptation despite experiences of adversity or trauma". In contrast, Stallman (2011, p. 121) proposes a more encompassing definition of resilience as "the capacity of students to adapt and grow in response to adverse events that may occur either at university, during their career or in life in general".

Generally, definitions captured three phases: (1) an adverse or traumatic event, (2) a process of learning or problem solving, and (3) the individual's return to their previous state or to an altered state. For example, Rahimi et al. (2014, p. 6) focused on return to a previous state in his definition of resilience as "the ability to rebound from a stressful experience". In contrast, Tempski et al.'s (2015, p. 175) definition of resilience focuses on change: "resilience is a capacity to face and overcome adversities, with personal transformation and growth", and

Wood's (2016, p. 22) on the notion of thriving: "resilience is an ability to learn from and thrive in the face of adversity".

Theories and models

The review highlighted a general lack of theorisation of resilience with only eight papers (22%) making references to a theory(s). Some theories related directly to resilience. For example, Reyes, Andrusyszyn, Iwasiw and Babenkomould's (2015) examination of nursing students understanding of resilience led to their grounded theory of "pushing through" to explain this process. Gayton and Lovell (2012) discuss paramedics' resilience in relation to stress inoculation theory and the theory of accumulated fatigue. A small number of papers made reference to theories not directly related to resilience. For example, Shi et al., (2015) discuss the theory of social determinants of health to inform community-based resilience building. Thompson, McBride, Hosford and Halaas (2016) discuss the use of the theory of planned behaviour to plan interventions to improve medical students' care-seeking and care-taking behaviours.

While several papers proposed conceptual models of resilience the majority of these were not models of resilience per se but contained resilience as an element. For example, Dunn, Iglewicz & Moutier (2008) proposed a simple model of coping (coping reservoir model) in relation to medical student wellbeing. This model includes positive (reservoir filling) and negative (reservoir draining) inputs which lead either to resilience and enhanced mental health or to burnout and cynicism. Olsen and Kemper (2014) propose an explanatory model of compassionate care which includes mindfulness and self-compassion which interact with resilience to achieve an outcome of compassionate care for the patient and good mental health and growth for the clinician. Rather than provide a conceptualisation of resilience using a model a small number of papers attempted to describe the concept. For example, Hartley (2011, p. 596) describes resilience as "the complex interplay between an individual and his/her environment, in which the individual can influence a successful outcome by using internal and external protective factors, defined as the personal qualities or contexts that predict positive outcomes under high-risk conditions". Jameson (2014) provides one of the few accounts of resilience from a system perspective based on Roy's (2009) adaptation model. Jameson (2014) describes people as holistic adaptive systems in an ongoing process of interaction with a changing environment. As a result of these interactions the person adapts in accordance with the demands of the situation.

The need for resilience enhancement

Twenty six of the papers (72%) supported the need for enhancing resilience in health professional education based on their empirical research. This need was established across multiple professions including medicine, physiotherapy, radiotherapy, nursing, midwifery, paramedicine and psychology. Whilst not assessed for their quality (in keeping with scoping reviews) many of these studies included substantial student numbers. For example, Hartley's (2011) study of 427 students across the arts and sciences found a strong correlation between resilience and mental health. Bahadir-Yilmaz and Oz's (2015) study of 342 first year medical, dentistry, pharmacy and health science students found low levels of resilience. Rahimi et al. (2014) study of 155 medical students revealed higher levels of perceived stress, negative coping and lower resilience in comparison to their peers. Crombie et al.'s (2013) study highlighted resilience as one of the key factors impacting on retention of second year nursing students. Gayton and Lovell (2012) recommend an increase of resilience interventions to support wellbeing in paramedicine. Further, Tempski et al. (2015) suggests resilience should be a core competency for admission into medical school.

Factors to inform resilience enhancement

To inform resilience enhancement approaches, Mansfield et al.'s (2016) model of pre-service teacher resilience was utilised. This model conceptualises resilience through personal resources, contextual resources, strategies and outcomes. Pertinent factors of resilience identified in the health education literature were coded into the same four categories as shown in Table 2.

[Insert Table 2 here]

A total of 22 personal factors were identified including traits (e.g. extroversion, agreeableness, conscientiousness), and values (e.g. courage, integrity, commitment). Several factors related to insight (e.g. self-awareness, emotional intelligence), whilst others related more to mental state (e.g. self-esteem, sense of belonging, growth mindset). A range of contextual factors related to resilience were identified which fell into four categories: (1) activities including leisure, social and physical activity, (2) support including social, peer, family, financial, faculty support and being in a stable relationship, (3) organisational factors such as organisational structure, organisational culture and the team environment, and (4) life experiences including being a parent, being a mature aged student, experience in the professional context, and juggling competing priorities. Interestingly, the similarities in the resilience strategies across the papers

was high with only seven strategies identified: balance, coping, meaning making, problem solving, reflection, self-care (e.g. mindfulness, stress management) and taking action (e.g. conflict management, taking ownership of problems). The desired outcomes related to health professional education resilience distilled into five areas: wellbeing, connectedness, satisfaction, retention and employability.

Resilience enhancement approaches

Despite the prevalence of papers establishing a need for enhancing resilience, the review revealed only nine studies that describe either strategies or interventions designed to enhance resilience. As detailed in Table 3, these papers were from a limited range of health professions, mostly nursing and medicine. The time frames varied. For example, Stallman (2011) presents a 90-minute strengths based seminar focused on resilience literacy in students. Jameson (2014) presents a five-week hardiness intervention aimed at decreasing perceived stress in nursing students. van der Riet et al.'s (2015) seven-week program also focuses on stress management but includes mindfulness. Slavin, Schindler & Chibnall's (2014) approach went beyond the individual student to include curricular changes for medical students.

DISCUSSION

Recognition of the need to develop resilience in health professionals has gained momentum over the past two decades, particularly in nursing (McGowan & Murray, 2016) and medicine (Tempski et al., 2015). This was supported by the review with two thirds of the papers proving empirical evidence of the need for resilience enhancement for students studying health professional courses. This aligns with McAllister and McKinnon's (2009) call for teaching resilience in the health professions.

Despite growing interest in resilience in the health professions, no commonly accepted definition of resilience within the 36 papers reviewed was evident. This supports other reviews of the health literature such as Aburn and colleagues' (2016) integrative review which revealed not only a lack of universal definition, but also definitions across 15 different themes. It is worth noting that the majority of definitions related to resilience as a process often using terms ability, capacity or capability. This suggests many researchers adopted a more contemporary view rather than the historic view of resilience as a fixed trait (Earvolino-Ramirez 2007; Stephens, 2013). Adopting a socio-ecological perspective (Ungar, Ghazinour & Richter, 2013), we draw on current conceptualisations of resilience to propose a process based definition.

Looking beyond the traditional relationship between resilience and trauma, this definition focuses on the context of pre-qualifying health professional education; a context of growth and transformation. *Resilience is the dynamic capacity to overcome adversity, drawing on personal, social and organisational resources, to achieve personal growth and transformation.* This definition is adapted from Tempski et al. (2015) and Wood (2016) as outlined earlier. The adoption of such a shared definition would assist in differentiating resilience from other terms which appeared in the literature review including mental toughness (Gerber et al., 2013) and coping (Wald, Haramati, & Urkin, 2016).

As with the lack of a shared definition, no common theory or model of resilience emerged from the literature. This is perhaps not surprising given less than a quarter of the papers made any reference to a theory, and many of these theories and models described were only tangentially related to resilience. Davydov et al. (2010) observe these conceptual discrepancies are not only making it difficult to develop quality measures of resilience but are also limiting the evaluation and comparison of resilience research findings. Resolution of this definitional and conceptual debate is needed to provide the theoretical clarity required to determine the direction and accuracy of future research and resilience enhancement approaches.

A large number of resources were described across the literature (20 personal factors, 16 contextual factors and 7 strategies) which students can draw on to achieve the desired outcome of surviving, and hopefully thriving, during their training. Whilst the adoption of Mansfield et al.'s (2016) framework of resilience proved useful in the context of this review, caution needs to be taken with such compartmentalised models of resilience. As seen in the proposed definition outlined above resilience should be viewed as a dynamic process where the individual is in a constant state of interaction with their context.

Our review of the resilience enhancement programs and strategies revealed some progress towards McAllister and McKinnon's (2009) recommendation for health students to be engaged in identity building work, capacity and strengths development, and learning leadership for change. Several programs described innovative approaches to facilitating resilience and demonstrated a shift to proactive promotion of resilience. Most studies described the evaluation of pilot workshops, with limited information regarding outcomes or sustainability. Furthermore, little innovation was evident in the delivery modes of these interventions with most being staff facilitated workshops presented face-to-face within the classroom, thus limiting scalability. Disappointingly only one paper described a whole of curriculum approach

(Slavin et al., 2014). Together these findings suggest a lack of alignment with Stallman's (2011) call of a population approach to mental health and resilience within higher education.

Progress towards McAllister and Mc Kinnon's (2009) other two recommendations varied. Very few papers referred to workplace learning or the professional practice context, only one of which (Collins, 2015) was considered directly relevant to their second recommendation. In contrast, several papers reviewed adopted approaches to enabling professional cultural generativity to foster student resilience including Hodges, Keeley & Grier's (2005) use of mentoring, leading and coaching through student-faculty dyads, and Beckham's (2015) mentorship program which involved final year students sharing experiences with students in earlier years. This strategy allowed for the provision of clinical survival tips to facilitate critical reflection and constructive thinking. The use of storytelling tools to support the development of medical student resiliency (Longenecker, Zink & Florence, 2012) provided further evidence of the use of generativity.

Based on the findings of this review we make a number of recommendations for researchers and academics. A systematic review of the literature across the health professions is needed. A shared understanding of resilience in health professional education needs to be established informed by further research within this context. When undertaking this work, researchers must provide a clear definition and/or concept of resilience and outline the theories that inform their work.

Higher education institutions wishing to enhance student resilience may wish to consider the adoption of transformative education to facilitate curricular change. Transformative education aims to effect a change in perspective (Mezirow, 1996), achieved through teaching and learning that facilitates understanding of self, a shift in consciousness that alters students' way of being and a shift in thought, feeling and actions (O'Sullivan, Morrell and O'Connor, 2002). This way of teaching considers how graduates are prepared for the workforce, including "soft skills" such as resilience.

This scoping review had a number of limitations. The review was based on only 36 studies sourced from six databases thus narrowing the focus of the literature. In keeping with the process of scoping reviews the studies weren't assessed for their methodological rigour. These limitations are not detrimental to the findings of this study but the conclusions and recommendations made need to be interpreted in light of these.

CONCLUSIONS

Given concern over retention rates and the preparedness of graduates for the demands of the 21st century work environment, interest in enhancing student resilience continues to grow. Despite this interest, the literature on resilience enhancement is limited. The results of this review illuminate a lack of clarity over how resilience is conceptualised. This lack of shared understanding will hamper attempts to design, implement and evaluative effective resilience enhancement interventions within health curricula.

FUNDING

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Figure 1. Flow diagram of study selection

Bibliographic database created using CINAHL, Scopus, Proquest, Medline, Science Direct & ERIC, published in English peer reviewed journals or dissertations between January 2000 & June 2016

Search yielded 652 records after duplicates removed

Abstracts screened by the research assistant (RA) to ensure relevance to the research questions

652 records screened

596 records excluded

56 full text articles assessed for eligibility

Template developed for recording analysis (see step 4)

Lead author & RA read 56 papers & entered data into template. All papers were cross-read & analysed by another member of project team. Interpretations were discussed until research team reached consensus on papers to be included in final qualitative analysis

36 studies included in final analysis

20 records excluded

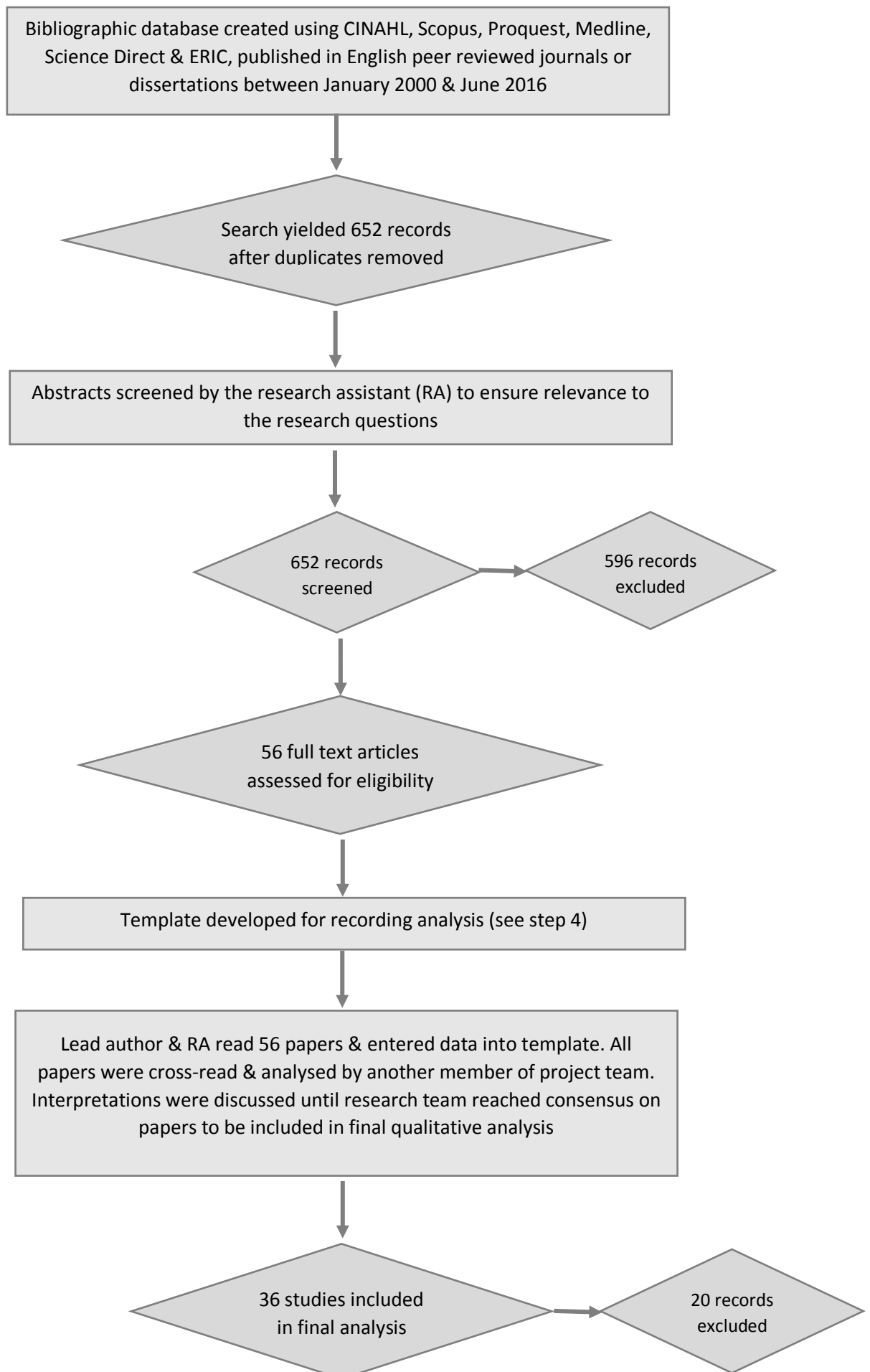**Table 1.** Inclusion and exclusion criteria

| Criterion	Inclusion	Exclusion
Phase 1		
Time period	January 2000 – June 2016	Any study outside these dates
Language	English	Non-English
Accessibility	Accessible through university's databases	Not accessible through university's databases
Phase 2		
Population	Students	Faculty/staff
Study focus	Tertiary level health professional education	Professions other than health Measurement scale development
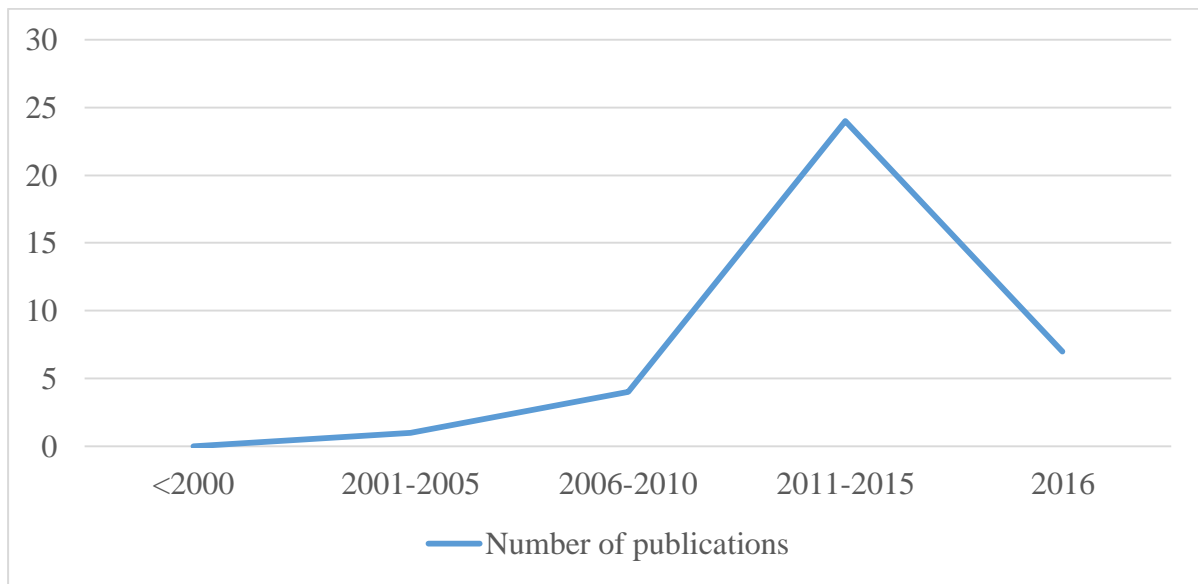
Figure 2. Publication year for 36 papers reviewed

Table 2. Overview of resilience factors (adapted from Mansfield et al., 2016)

Personal resources (*22 factors*)	Contextual resources (*16 factors*)	Strategies (*7 factors*)	Outcomes (*5 factors*)
Adaptability/flexibility	Leisure activity	Balance (work/life)	Connectedness
Agreeableness	Social activity	Coping	Employability
Commitment	Physical activity	Meaning making	Retention (in course and
Conscientiousness	Life experience	Problem Solving	profession)
Courage	Mentorship	Reflection	Satisfaction
Emotional intelligence	Organisational structure	Self-care	Wellbeing
Extraversion	Organisational culture	Taking action	
Hardiness	Team environment		
Mental stability	Social support		
Mindset (growth/open)	Family support		
Motivation	Peer support		
Personal confidence	Academic support		
Personal integrity	Financial support		
Proactive	Psychological support		
Robust/strong	Faculty support		
Self-awareness	Stable relationship		
Self-efficacy			
Self-esteem			
Sense of belonging			
Sense of control			
Spirituality			
Tenacity/persistence/grit			

Table 3. Resilience enhancement approaches

Reference	Profession	Program	Mode of delivery	Frequency	Context
Hamilton et al. (2015)	Nursing	Wellness Recovery Action Plan	Not described	Unknown	Classroom
Jameson (2014)	Nursing	Hardiness intervention	Not described	1 hour/week, 5 weeks	Not described
Pines et al. (2014)	Nursing	Simulated training exercises	Didactic & simulated training (4 modules)	3 hours twice weekly over 2 semesters	Classroom
Salvatore et al. (2009)	Psychology	Hardiness training	Face to face	2 lectures plus small discussion groups per week	Classroom
Seoane et al. (2016)	Medicine	Virtues course	Face to face	5x 3 hour sessions plus wrap-up at end of 8 weeks	Classroom & fieldwork
Slavin et al. (2014)	Medicine	Curricular changes, multiple interventions e.g. resilience & mindfulness program	Face to face	6 hours over 1 semester	Classroom
Stallman (2011)	Psychology	Staying on Track	Face to face	90 minutes	Classroom
van der Riet et al. (2015)	Nursing & midwifery	Stress management & mindfulness program	Face to face	7x 1 hour sessions	Classroom
Wald et al. (2016)	Medicine, nursing & basic science	Faculty Burnout & Resilience	Face to face	2 hours	Classroom