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Resilience in Chronic Obstructive Pulmonary Disease and Chronic Heart Failure

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Abstract

Background: Chronic Obstructive Pulmonary Disease (COPD) and Chronic Heart Failure (CHF) place a significant burden on individuals and health care systems. Self-management has been shown to be effective in reducing the symptoms of these conditions and improving quality of life. Resilient behavior has been suggested as underpinning the ability to self-manage well. This review sought to assess the effectiveness of interventions designed to increase resilience in people with COPD and/or CHF.

Method: This literature review used MEDLINE, EMBASE, CINAHL, PsychArticles and PsychINFO databases to identify published studies. References listed were also appraised. Articles were eligible for inclusion if they met pre-set criteria. No studies were found so the secondary objective of a narrative review was implemented.

Results: Four studies were included in the narrative review. Three themes emerged; interventions that may increase resilience and self-management, resilience as a predictor of effective self-care and self-management in patients living with long term conditions including COPD and the role resilience plays in relation to the physical and psychological impact of living with CHF.

Conclusion: There are few published studies on resilience and COPD or CHF. This review suggests the evidence base for resilience enhancing interventions is limited as published studies lacked methodological quality for level II evidence. From this narrative review a link between psychological distress, resilience and the likelihood of positive engagement with self-management in patients with COPD and/or CHF appears evident. There is a need for further methodologically sound research to determine the relationship between resilience and COPD and CHF and to examine the effectiveness of interventions to improve resilience in patients with these conditions.

Keywords: COPD; Chronic heart failure; Resilience; Self-management

Introduction

Due to the increasing interest in resilience and its potential effect on health behavior and chronic disease self-management, this review sought to explore the evidence for an association between low levels of resilience and psychological morbidity and assess interventions designed to increase resilience in people with COPD and/or CHF [1].

Long term conditions place a significant burden on the affected individuals and have a direct impact on the health care system and society as a whole. Chronic Obstructive Pulmonary Disease (COPD) and Chronic Heart Failure (CHF) represent two of the most common chronic long term conditions and often co-exist. The World Health Organisation estimates that there are 64 million people with COPD [2] and 26 million with CHF worldwide [3]. COPD is the 12th most common cause of morbidity worldwide [4], CHF is the most common cause of death in Europe accounting for 1.8 million deaths a year [5]. In addition to physical impact of these long term conditions, significant psychological co-morbidity is well recognized [6-8].

The negative impact on the quality of life of patients living with COPD or CHF is well documented [9,10] and co-morbid depression and anxiety are common in this group of patients [11-13]. As a result, the clinical management of COPD and CHF has recently focused more on patient centered outcomes including Health Related Quality of Life (HRQOL) [14]. Depression and anxiety in patients with COPD or HF contributes to low HRQOL scores [14,15].

In the management of COPD and HF there is a move towards personalized self-management planning with some evidence that this contributes to improved wellness and quality of life for people with long term condition [16]. A component that may allow individuals to live more effectively with their disease is resilience. Resilience for the purpose of

this paper refers to an individual's ability to "bounce back" and adapt to or recover from an adverse event [17]. This has been explored as a potential mediator in a range of adverse or traumatic experiences including those experienced as a result of living with and managing long term physical and mental health conditions [18-24]. Resilience has been suggested as an underpinning reason that determines a person's ability to self-manage their disease [25] and so may play a significant role in shaping psychosocial support offered to patients with COPD and CHF in the future.

Methodology

The objective of this review was to explore the evidence for an association between resilience and psychological morbidity and evaluate the effectiveness of interventions designed to increase resilience in people who have COPD, CHF or both reported in the literature.

Search strategy study selection criteria and process

A review protocol was developed a priori with a detailed strategy to facilitate a systematic search and review of published literature associated with resilience promoting interventions for COPD and CHF patients. This protocol reflects the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidance [26]. The search strategy sought to identify relevant articles, and a search of peer-reviewed literature was conducted for publications on the following electronic databases: MEDLINE (Jan 1946-present), EMBASE (Jan 1946-present), CINAHL, PsychArticles and PsycINFO (1987 to present). The search parameters included publication date from 1946 to present; humans; not infants, children or young people; and published in the English language.

The database searches focused on resilience and interventions for COPD and CHF patient populations using combinations of keywords and their abbreviations (Table 1). The search was restricted to the keywords "resilience" and its abbreviation "resilien*". Other terms related to resilience such a coping were not included in the search for the following reasons: Recent concept mapping work [17,27] has shown resilience to be a complex, multifactorial amalgam of internal individual attributes including temperament, aptitude, self-efficacy, determination, the availability or access to external resources such as social support and consequences such as effective coping behavior, that combine to comprise resilience [17,27]. There is no evidence that these concepts or behaviors associated with resilience and resilience concept mapping [17,27] e.g. coping styles, self-efficacy, mastery and access to positive social support, on their own are comparable to resilience which is more complex and multifactorial. Therefore extension of the search terms to include a wider number of different resilience related components would dilute the objective of the review, which was to examine resilience as a whole concept, rather than its component parts, as has been the case in other studies.

Table 1: Search keywords.

Resilience and Chronic Obstructive and Resilience	COPD" OR "chronic obstructive pulmonary disease" OR "lung disease" OR "pulmonary disease" OR emphysema*" OR "chronic bronchitis" OR " "pulmonary fibrosis" AND "Resilien*" AND "interven*"
Heart Disease / Failure and Resilience	"pulmonary hypertension" OR Pulmonary Pressure" OR "heart failure" or "heart disease" OR "valvula heart failure" AND "Resilien*" AND "intervene*"

For this review, research designs of studies were restricted to systematic reviews and meta-analyses, randomized control trials (RCTs) and the patient population under study were adults with either COPD or CHF. Exclusion criteria included non-randomized studies such as cohort, case-control, descriptive and qualitative studies.

Resilience interventions were not pre-defined and were included if they met two inclusion criteria: It was stated that resilience was the focus of the intervention and the resilience intervention was administered as part of a study where there was a reported comparison group.

The primary outcome of interest in relation to resilience interventions was evidence of improvement in self-management by the patient that resulted in decreased emergency department visits and improved health reported through valid disease specific measurements.

Study selection and data extraction

The predetermined protocol outlined the process for title and abstract identification and agreed search criteria. The parameters of interest to be studied included resilience definition and measures used, study methods, participant details and demographics, diagnostic criteria for COPD and CHF, outcomes of study and in particular any correlation between assessed levels of resilience and ability to self-manage impact of LTC and the results.

After the initial search, duplicates would be removed (Figure 1). All extracted titles and abstracts would be independently screened by the reviewers (LE and SMS) to identify studies that met the eligibility criteria.

Disagreements on the studies to be included or excluded would be resolved by discussion between the reviewers (LE and SMS) and a third arbiter (DB) was available if agreement could not be reached.

Full text articles would be obtained and independently reviewed in detail by the two reviewers (LE and SMS) and disagreements regarding inclusion of studies to be settled through discussion with consensus being reached. All included articles to be re-read with data collected and coded using a data collection form.

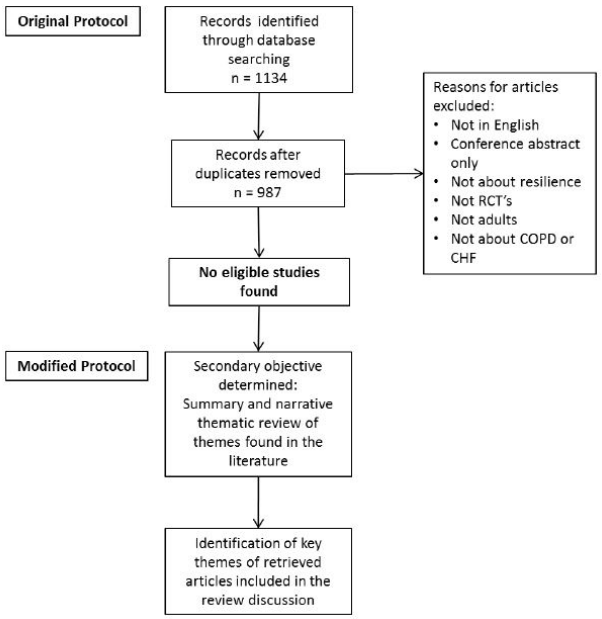

Figure 1: PRISMA flow diagram of the reviewing process including protocol modification.

Quality assessment

The quality of the selected published studies would be assessed for risk of bias using the Critical Appraisal Skills Programme checklists for randomized controlled trials and systematic reviews [28].

These tools enabled risk of bias assessment in random sequence generation; allocation concealment; blinding of participants and personnel, blinding of outcome and selective reporting. For the assessment of methodological quality of systematic reviews, the Assessing for Methodological Quality of Systematic Reviews (AMSTAR) checklist was used [29].

Differences between protocol and review

Due to a lack of published systematic reviews and randomized controlled trials the implementation of the a priori protocol was not possible. Both reviewers (LE and SMS) independently concluded that no articles had met the criteria for inclusion in the second stage of this review.

As no eligible published literature was identified, our primary objectives could not be achieved and a secondary objective was determined. This objective focused on a narrative thematic review of data reported within published studies on the association between resilience and psychological morbidity in people living with COPD/CHF.

To support the secondary objective, all full text retrieved articles that utilized any study design and met the criteria of being resilience focused in adults with COPD, CHF or both were included (Table 2).

Table 2: Studies meeting review secondary objective and included in narrative thematic review.

First author and year	Location	Study type, parameter studied and objectives	Setting	COPD / CHF	Interventions used in study	Summary of Findings
Edward 2013	-	Purposive literature sampling to begin dialogue on use of nursing interventions to optimise patients self-righting and self-management capabilities.	-	Chronic Conditions inc COPD	Nursing interventions proposed by study Psycho-social assessment on admission to inpatients Tailored education to patient and family carers Referral to peer support groups	Patients self-righting and self-management capabilities are considered integral to reducing negative impact of long term conditions and resilience factors can be assessed and accessed by nurses.
Hagglund 2008	Sweden	Cross-sectional study to explore relationships between fatigue and physical, mental, social and demographic factors in older patients with CHF	Community / Primary care	CHF	No interventions used	Fatigue more closely related to restrictions in role functioning for physical reasons than to reduced physical functioning per se or to mental and social factors.
Liu 2015	Taiwan	Cross-sectional study to examine relationships among depressive symptoms, resilience and physical and psychological health and determine whether resilience plays a mediating or moderating role in the relationship between depression and physical and psychological health status	Community / Outpatients	CHF	No interventions used	There is an association between physical and psychological status and depression in CHF patients and resilience is a mediator of psychological distress. SO enhancing resilience may facilitate improving psychological health status in depressed patients with CHF

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Alomari 2011	California USA	Descriptive cross sectional design to evaluate the influence of different variables on the ability of patients with heart failure to self-care and self manage.	Community / Outpatients	CHF	No interventions used	Resilience was a moderate predictor of effective self-care and self-management. Age, physical health status and access to autonomous health care professional support were strong predictors.

Results

Using the a priori protocol the electronic search of databases, hand searching of journal article references and secondary sources identified 1,134 studies for further screening. After duplicate records were removed, 987 remained for further assessment. Abstracts were reviewed and 950 articles were excluded as they did not meet the inclusion criteria. Thirty-seven full text publications (19 COPD and 18 CHF) were obtained and assessed using the pre-determined criteria. After assessment none of the 37 studies met the inclusion criteria for review. An overview of the manuscript selection, review process and reasons for excluding studies from this review is detailed in Figure 1. Yaffe et al. [30] describe this outcome as an empty review which demonstrates limited research has been undertaken on the topic.

In accordance with the modified protocol and our secondary objective both COPD and CHF data from 4 of the retrieved full text articles were included for synthesis and narrative thematic analysis. Three themes emerged from these 4 papers: interventions that may increase resilience and self-management [31], resilience as a predictor of effective self-care and self-management in patients living with long term conditions including COPD [1] and the role resilience plays in relation to the physical and psychological impact of living with CHF [32,33]. Additionally one paper referenced cultural factors as having an impact on how resilience may manifest and be understood in communities with different sociocultural norms and understanding [33].

Discussion

There are very few published studies on resilience and COPD and CHF found through our literature review and none met our original objectives inclusion criteria. The following is a summary of the three emerging themes from the four studies included in the secondary objective narrative thematic analysis.

Interventions to support resilience

Based on a purposive sampling of previous literature Edwards [31] proposes that resilience in patients living with long term conditions including chronic respiratory diseases can be assessed by nurses and other health care professionals and then optimized by targeted interventions. This paper suggests that identifying deficits like co-morbid illnesses and mental health problems as part of a nursing assessment and enhancing resilience using interventions such as motivational interviewing and referral to peer support groups, benefit self-righting and self-management behavior in patients with long term conditions including those with cardiovascular and respiratory disease and co-morbid mental health problems.

Resilience as a predictor of effective self-care and self-management

A study by Alomari [1] of 395 CHF patients found that age, physical health status and access to autonomous health care professional support were strong predictors of effective self-care whereas resilience was only a moderate predictor. Gender and ethnicity were not found to be predictors at all. The author recommends that these predictors are used to assess and personalize self-care programs to support targeted interventions that will maximize benefit for CHF patients.

The role of resilience in relation to the physical and psychological impact of living with CHF

Hagglund et al. [32] in their study of the relationship between fatigue in older patients with heart failure and multiple variables, including resilience, found that patients with CHF experience of fatigue had little to do with levels of resilience. The predominant factor in this study was the patient's level of physical functioning while the other factors including resilience, psychological comorbidity, social status and demographics were not found to be significant. In contrast a study of resilience and psychological health in CHF patients from Taiwan [33] found an association between physical and psychological status and depression in CHF patients and that resilience, as measured by the Chinese version of the Resilience Scale [34], mediated, or explained, the association. Interestingly the same study found no mediating association between depression and physical health status in patients. In the same paper Lui et al. [33] reflect on the impact of culture and religion on the manifestation of resilience in certain groups and how these may shape and influence responses to adversity.

The selected studies in our narrative thematic analysis described above show mixed findings. Some show correlations between resilience, reported psychological comorbidity and effective self-management [1,33], whilst others report factors other than resilience may have stronger correlations [32]. We suggest these findings indicate future research is needed to assess the impact of resilience, the inter-relationships between psychological and physical health, human behavior and the dynamics of self-management in patients with COPD and/or CHF.

The most simple and often used definition of resilience is the ability to bounce back or recover from adversity or trauma [35]. Defining resilience is a complex task with varying foundations in numerous disciplines engaging many perspectives including developmental psychology, biological and genetic studies, demographic and cultural perspectives and economic and social [35]. Some commonalities do exist between the various definitions relating to resilience in the literature as outlined by Windle [17] and Garcia-Dia et al. [27], both describe in their concept mapping models the presence or absence of essential components of resilience such as the availability of internal or external assets or resources to individuals. Components of resilience can be manifest as risk or protective factors [17] and as Rutter [36] observed these may be acquired throughout life or be present at a single point in time. Garcia-Dia suggests these components may be external, for example socioeconomic status and access to financial resources, strength of family, social and community support in times of adversity, or they may be internal and unique to the individual such as personality traits, effective self-help skills or neuroplasticity of the brain in response to life events [27] that are thought to support resilience. Determination, self-efficacy, mastery and positive coping styles along with effective use of available assets and or protective factors are also commonly cited as essential attributes of resilience [17,27]. The relative importance, contribution and interaction between these components are extensively examined in resilience related research [35-38]. The expression and interpretation of resilience and its mechanisms may also be linked with cultural practices, beliefs and social norms which may need to be taken into consideration in any future study [25,33,39,40].

A methodological review of 19 resilience measurement scales concluded that all had conceptual or theoretical problems and that further development and validation work was required on all [41]. Of the 19 studied 4 achieved better psychometric ratings than the others, these were the Connor-Davidson Resilience Scale [42], the Resilience Scale for Adults [43] and the Brief Resilience Scale [44].

This review of the available literature suggests some associations between resilience and reduced levels of psychological comorbidity in patients with COPD and/or CHF [33]. Moreover there is emerging evidence that resilience is a predictor of an increased ability to self-management [1] which in turn can support improvements in some indicators of physical and mental wellbeing of people with LTC's if supported through personalized care planning [16]. With regard to the application of resilience based interventions, health care professionals using a person centered approach may be ideally placed to assess and provide interventions to enhance resilience in those adults who have a chronic disease and a reduced level of resilience [31] through strategies such as motivational interviewing. Motivational interviewing has been shown to enhance self-management abilities of people with COPD [45].

A link between resilience levels and improvements in the physical health of adults with COPD or CHF was not found as part of this review as there are only a small number of published studies on this topic. However, a study by Chan et al. [25] of patients in Hong Kong living with coronary heart disease (CHD) who had coronary angioplasty rather than CHF or COPD, found adults with high personal resilience levels responded better to rehabilitation with improved physical health outcomes [25]. They [25] also found that high personal resilience in this group was a predictor of post-traumatic growth as defined by Heffron et al. [46] as a positive change occurring as a result of trauma or adversity.

The mediating role explaining the association between resilience and depression and psychological health status in patients with CHF [33] also presented an interesting line of enquiry into the impact of high or low resilience levels on health outcomes of patients with COPD and / or CHF. This mediating role is particularly important given the link between psychological comorbidity and mortality and hospitalization found in the wider body of literature on this topic [47-50].

Research into resilience interventions outside COPD and / or CHF has shown some level of effectiveness. Macedo et al. [51] and Leppin et al. [52] have completed systematic reviews to determine the efficacy and effectiveness of resilience promoting programmes for adults. These reviews involved studies from a wide range of settings including the workplace and health related studies of mothers of children recently diagnosed with cancer, breast cancer survivors, irritable bowel syndrome, diabetes, mild depression and people with post-traumatic stress syndrome. The interventions included positive psychology techniques, CBT, transformational coping, acceptance and commitment therapy, mindfulness, interpersonal therapy, attention and interpretation therapy, relaxation and diaphragmatic breathing [51] and self-directed and electronic interventions; individual coaching or training sessions and group courses and sessions [52]. The reviews' authors acknowledge a positive trend toward the benefits of resilience and recommended further research as long as definitions [52], interventions and methodological concerns [51] are resolved.

Conclusion

This systematic review sought to examine the effectiveness of interventions designed to increase resilience in people who have COPD and /or CHF. With no eligible published studies being identified a thematic narrative synthesis was completed. The themes emerging from the literature were focused around interventions that may increase resilience and self-management, resilience as a predictor of effective self-care and self-management in patients living with LTC's including COPD and the role resilience plays in relation to the physical and psychological impact of living with CHF.

To date evidence for resilience-enhancing interventions on symptoms and physical health status remains unclear. Given the growing interest in resilience and the suggested benefit to patients in terms of self-management and their overall health, the absence of published literature indicates a need for

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research to determine the evidence for the relationship between resilience, self-management and COPD and HF.

Author Contributions

Liz Evans (LE) conceived the study, all authors contributed to defining and refining the review question and scope of review, LE, SMS (Sheree Smith) reviewed selected published manuscripts. Derek Bell (DB) was the arbiter for disagreements regarding study inclusion or exclusion for this review. All authors reviewed the findings and contributed to the content, writing, drafting and revision of the manuscript, and agreed to the final version. LE is guarantor of the manuscript.

Competing Interests

None declared.

Disclaimer

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References

1. Alomari KM (2011) A model predicting self-care among patients with heart failure. Azusa Pacific University 134: 3459284.
2. Organization WH (2010) Global burden of disease. Secondary Global burden of disease.
3. Ambrosy AP, Fonarow GC, Butler J, Chioncel O, Greene SJ, et al. (2014) The global health and economic burden of hospitalizations for heart failure: lessons learned from hospitalized heart failure registries. J Am Coll Cardiol 63: 1123-1133.
4. World Health Organization (1998) The World Health Report 1998: Life in the 21st century a vision for all.
5. Cardiology EHNaESo (2012) European Cardiovascular disease statistics. European Heart Network and European Society of Cardiology.
6. Freedland KE, Carney RM, Rich MW (2011) Effect of depression on prognosis in heart failure. Heart Fail Clin 7: 11-21.
7. Kuhl K, Schurmann W, Rief W (2008) Mental disorders and quality of life in COPD patients and their spouses. Int J Chron Obstruct Pulmon Dis 3: 727-736.
8. Marinho PE, Castro CM, Raposo MC, Guerra RO, de Andrade AD (2012) Depressive symptoms, inflammatory markers and body composition in elderly with and without chronic obstructive pulmonary disease (COPD). Arch Gerontol Geriatr 54: 453-458.
9. Zamzam MA, Azab NY, El Wahsh RA, Ragab AZ, Allam EM (2012) Quality of life in COPD patients. Egyptian Journal of Chest Diseases and Tuberculosis 61: 281-289.
10. Höfer S, Saleem A, Stone J, Thomas R, Tulloch H, et al. (2012) The MacNew Heart Disease Health-Related Quality of Life Questionnaire in Patients with Angina and Patients with Ischemic Heart Failure. Value Health 15: 143-150.
11. Konstam V, Moser DK, De Jong MJ (2005) Depression and anxiety in heart failure. J Card Fail 11: 455-463.
12. Panagioti M, Scott C, Blakemore A, Coventry PA (2014) Overview of the prevalence, impact, and management of depression and anxiety in chronic obstructive pulmonary disease. Int J Chron Obstruct Pulmon Dis 9: 1289-1306.
13. Rutledge T, Reis VA, Linke SE, Greenberg BH, Mills PJ (2006) Depression in heart failure: a meta-analytic review of prevalence, intervention effects, and associations with clinical outcomes. J Am Coll Cardiol 48: 1527-1537.
14. Blakemore A, Bower P, Kontopantelis E, Dickens C, Guthrie E, et al. (2014) Does panic predict health-related quality of life (HRQoL) in COPD? A longitudinal cohort study. European Respiratory Journal 44: 1983.
15. Faller H, Störk S, Schuler M, Schowalter M, Steinbüchel T, et al. (2009) Depression and disease severity as predictors of health-related quality of life in patients with chronic heart failure-a structural equation modeling approach. J Card Fail 15: 286-292.
16. Coulter A, Entwistle VA, Eccles A, Ryan S, Shepperd S, et al. (2015) Personalised care planning for adults with chronic or long-term health conditions. Cochrane Database Syst Rev 3: CD010523.
17. Windle G (2011) What is resilience? A review and concept analysis. Reviews in Clinical Gerontology 21: 152-169.
18. Asbring P (2001) Chronic illness–a disruption in life: identity-transformation among women with chronic fatigue syndrome and fibromyalgia. J Adv Nurs 34: 312-319.
19. Davydov DM, Stewart R, Ritchie K, Chaudieu I (2010) Resilience and mental health. Clin Psychol Rev 30: 479-495.
20. Farber EW, Schwartz JA, Schaper PE, Moonen DJ, McDaniel JS (2000) Resilience factors associated with adaptation to HIV disease. Psychosomatics 41: 140-146.
21. Motzer SA, Hertig V, Jarrett M, Heitkemper MM (2003) Sense of coherence and quality of life in women with and without irritable bowel syndrome. Nurs Res 52: 329-337.
22. Rutter M (1985) Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. The British Journal of Psychiatry 147: 598-611.
23. Schaefer KM (1995) Struggling to maintain balance: a study of women living with fibromyalgia. J Adv Nurs 21: 95-102.
24. Taylor J, Jacoby A, Baker GA, Marson AG, Ring A, et al. (2011) Factors predictive of resilience and vulnerability in new-onset epilepsy. Epilepsia 52: 610-618.
25. Chan IWS, Lai JCL, Wong KWN (2006) Resilience is associated with better recovery in Chinese people diagnosed with coronary heart disease. Psychol Health 21: 335-349.
26. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, et al. (2009) The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. J Clin Epidemiol 62: e1-34.
27. Garcia-Dia MJ, DiNapoli JM, Garcia-Ona L, Jakubowski R, O'Flaherty D (2013) Concept analysis: resilience. Arch Psychiatr Nurs 27: 264-270.

28. Kingdom CASPU (2013) Critical Skills Appraisal Programme: Making Sense of Evidence.

29. Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, et al. (2007) Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol 7: 10.

30. Yaffe J, Montgomery P, Hopewell S, Shepard LD (2012) Empty reviews: a description and consideration of Cochrane systematic reviews with no included studies. PLoS one 7: e36626.

31. Edward K (2013) Chronic illness and wellbeing: Using nursing practice to foster resilience as resistance. Br J Nurs 22: 741-746.

32. Hagglund L, Boman K, Stenlund H, Lundman B, Brulin C (2008) Factors related to fatigue among older patients with heart failure in primary health care. Int J Older People Nurs 3: 96-103.

33. Liu JC, Chang LY, Wu SY, Tsai PS (2015) Resilience mediates the relationship between depression and psychological health status in patients with heart failure: a cross-sectional study. Int J Nurs Stud 52: 1846-1853.

34. Lei M, Li C, Xiao X, Qiu J, Dai Y, et al. (2012) Evaluation of the psychometric properties of the Chinese version of the Resilience Scale in Wenchuan earthquake survivors. Compr Psychiatry 53: 616-622.

35. Castleden M, McKee M, Murray V, Leonardi G (2011) Resilience thinking in health protection. J Public Health (Oxf) 33: 369-377.

36. Rutter M (2012) Resilience as a dynamic concept. Dev Psychopathol 24: 335-344.

37. Masten AS (1994) Resilience in individual development: Successful adaptation despite risk and adversity. Lawrence Erlbaum. pp: 3-25.

38. Masten AS, Hubbard JJ, Gest SD, Tellegen A, Garmezy N, et al. (1999) Competence in the context of adversity: Pathways to resilience and maladaptation from childhood to late adolescence. Dev Psychopathol 11: 143-169.

39. Yee-Melichar D, Boyle AR, Wanek LJ, Pawlowsky SB (2014) Geriatric Rehabilitation and Resilience from a cultural perspective. Geriatr Nurs 35: 451-454.

40. Ni H, Li C, Zhao J (2014) Cultural consideration of resilience for chinese immigrant children and adolescents. N A J Med Sci 7: 112-117.

41. Windle G, Bennett KM, Noyes J (2011) A methodological review of resilience measurement scales. Health Qual Life Outcomes 9: 8.

42. Connor KM, Davidson JR (2003) Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). Depress Anxiety 18: 76-82.

43. Friborg O, Hjemdal O, Rosenvinge JH, Martinussen M (2003) A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? Int J Methods Psychiatr Res 12: 65-76.

44. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P (2008) The brief resilience scale: assessing the ability to bounce back. Int J Behav Med 15: 194-200.

45. Walters J, Cameron-Tucker H, Wills K, Schüz N, Scott J, et al. (2013) Effects of telephone health mentoring in community-recruited chronic obstructive pulmonary disease on self-management capacity, quality of life and psychological morbidity: A randomised controlled trial. BMJ Open 3: e003097.

46. Hefferon K, Grealy M, Mutrie N (2009) Post-traumatic growth and life threatening physical illness: A systematic review of the qualitative literature. Br J Health Psychol 14: 343-378.

47. de Voogd JN, Wempe JB, Postema K, van Sonderen E, Ranchor AV, et al. (2009) More evidence that depressive symptoms predict mortality in COPD patients: is type D personality an alternative explanation? Ann Behav Med 38: 86-93.

48. Lou P, Zhu Y, Chen P, Zhang P, Yu J, et al. (2014) Interaction of depressive and anxiety symptoms on the mortality of patients with COPD: a preliminary study. COPD 11: 444-450.

49. Sherwood A, Blumenthal JA, Trivedi R, Johnson KS, O'Connor CM, et al. (2007) Relationship of depression to death or hospitalization in patients with heart failure. Arch Intern Med 167: 367-373.

50. Testa G, Cacciatore F, Galizia G, Della-Morte D, Mazzella F, et al. (2011) Depressive symptoms predict mortality in elderly subjects with chronic heart failure. Eur J Clin Invest 41: 1310-1317.

51. Macedo T, Wilheim L, Gonçalves R, Coutinho ESF, Vilete L, et al. (2014) Building resilience for future adversity: a systematic review of interventions in non-clinical samples of adults. BMC psychiatry 14: 227.

52. Leppin AL, Bora PR, Tilburt JC, Gionfriddo MR, Zeballos-Palacios C, et al. (2014) The efficacy of resiliency training programs: A systematic review and meta-analysis of randomized trials. PLoS One 9: e111420.

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