Association between psychological resilience and subjective well-being in older adults living with chronic illness

Kristen M. Tecson, PhD^{a,b} , Lindsay R. Wilkinson, PhD^c, Bethany Smith, MA^c , and Jong Mi Ko, MA^d

^aBaylor Heart and Vascular Institute, Baylor Scott & White Research Institute, Dallas, Texas; ^bDepartment of Internal Medicine, Texas A&M College of Medicine Health Science Center, Dallas, Texas; ^cDepartment of Sociology, Baylor University, Waco, Texas; ^dDepartment of Internal Medicine, The University of Texas Southwestern Medical Center, Dallas, Texas

ABSTRACT

We aimed to determine the impact of resilience on well-being in chronically ill adults, hypothesizing that resilient participants would have higher quality of life, life satisfaction, and happiness and less psychological distress than those with low resilience. Patients who received treatment for a chronic illness at Baylor Scott & White Health and self-identified an informal caregiver (nonpaid friend/family member who provides regular care) were eligible. After the Center for Community Research and Development administered a phone survey from March to June 2017, we built linear and ordinal logistic regression models to assess the effect of resilience on well-being while adjusting for health, finances, marital status, and gender. Forty-one participants completed the study. The average age was 67 ± 10 years; the most common illness was heart failure (39%). Participants had high resilience (median 4 [quartile 1 = 3, quartile 3 = 5], scale: 1–5), low psychological distress (4 [2, 7], scale: 0–24), high quality of life (8 [5, 9], scale: 0–10) and life satisfaction (5 ± 2 , scale: 1–7), and 81% were pretty/very happy. The effect of resilience was significant in the expected directions in unadjusted analyses. After accounting for demographic, social, and clinical factors, resilience remained highly significant for psychological distress and happiness ($b = -1.91$, $P = 0.002$; odds ratio = 4.71, $P = 0.003$, respectively). Psychological resilience may be a resource to preserve well-being for chronically ill individuals.

KEYWORDS Chronic illness; distress; psychological resilience; quality of life; well-being

More than 117 million American adults suffer from chronic illness, that is, an illness lasting 3 or more months.¹ A staggering 40 million report limitations in daily activities due to chronic conditions, yet millions more are impacted because patients rely on unpaid family and friends for care.² In fact, an estimated 34 million adults provide unpaid care to one or more adults over the age of 50 annually.³ Due to obstacles associated with chronic illness, affected individuals are at high risk for psychiatric illness, which perpetuates the cycle of poor health and stress, introducing the potential for a reduced quality of life.⁴ Interestingly, however, many individuals afflicted with chronic illness remain happy and adapt to their new lifestyle by accommodating disease-associated limitations. Individuals who successfully cope, adapt, and/or thrive despite stress are said to be resilient.⁵ Simply, Smith

and colleagues describe resilience as one's ability to bounce back.⁶ Though there is a vast amount of literature regarding resilience in children exposed to stress,^{7–9} there is less information available about adults, particularly older adults living with chronic illness. Hence, the purpose of this study was to fill this knowledge gap by evaluating the association between resilience and psychological outcomes for older adults living with chronic illness.

METHODS

We generated a list of adult patients via *International Classification of Diseases* codes from Baylor Scott & White Health's electronic health record. Inclusion criteria for patients consisted of (1) having a confirmed diagnosis of one or more of the following conditions: chronic kidney disease,

Corresponding author: Kristen M. Tecson, PhD, Baylor Heart and Vascular Institute, 621 N. Hall Street, Suite H-030, Dallas, TX 75226 (e-mail: Kristen.Tecson@bswhhealth.org)

Received April 16, 2019; Revised May 23, 2019; Accepted May 28, 2019.

chronic obstructive pulmonary disease, diabetes mellitus, congestive heart failure, or inflammatory rheumatologic condition and (2) having a self-identified informal/unpaid caregiver, defined as a friend or family member who provides regular care (the latter criterion was chosen to ensure some degree of limitation experienced by the patient). If consent was given, the patient contact information was shared with the survey administration team at the Center for Community Research and Development (Baylor University, Waco, TX). The survey administration team included students in the sociology department, all of whom received training prior to administering the phone survey. This study received institutional review board approval from the Baylor Scott & White Research Institute (Dallas, TX) and Baylor University (Waco, TX); informed consent was obtained prior to survey administration.

Six domains were included in the survey: sociodemographics, psychological resilience, psychological distress, life satisfaction, happiness, and quality of life. To evaluate the primary independent variable of interest, psychological resilience, we used three items of the Brief Resilience Scale: "I tend to bounce back quickly after hard times"; "I have a hard time making it through stressful events" (reverse coded); and "It does not take me long to recover from a stressful event."^{6,10} Items were assessed on a 5-point agreement scale, from 1 (*strongly disagree*) to 5 (*strongly agree*), and responses were averaged into a single summary score, per the scoring algorithm. Higher values indicate higher resilience. We used the six-item Kessler Psychological Distress Scale to measure psychological distress over the past 30 days.¹¹ Each item was scored from 0 (*none of the time*) to 4 (*all of the time*) and summed. Hence, the summary score ranged from 0 (*low psychological distress*) to 24 (*high psychological distress*). Life satisfaction was assessed with the Satisfaction with Life Scale, which yields a summary score from averaging five items on a seven-point agreement scale: "In most ways my life is close to my ideal"; "The conditions of my life are excellent"; "I am satisfied with my life"; "So far I have gotten the important things I want in life"; and "If I could live my life over, I would change almost nothing."¹² The response categories ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Happiness was assessed with a single item: "In general, how happy are you with your life as a whole these days?" Responses included 1 (*not too happy*), 2 (*pretty happy*), and 3 (*very happy*). Quality of life was assessed with a single item: "How do you rate your quality of life in the past week from 0 to 10, where 0 is the worst and 10 is the best?"

Participants aged 50 years or older were considered for this analysis, with the primary aim being to evaluate the relationship between resilience and subjective well-being. We quantified the association between resilience and quality of life, life satisfaction, and psychological distress using linear regression. We examined the role of resilience in happiness using ordinal logistic regression. We subsequently used multivariable regression models to account for health status,

financial status, marital status, and gender. We utilized Cronbach's alpha to evaluate internal consistency.^{13,14} Continuous variables are presented as means $\pm$ standard deviations or median [quartile 1, quartile 3], if skewed. Categorical variables are presented as frequency (percentage). Analyses were performed in SAS 9.4 with a type I error rate of 5% and two-sided alternative hypotheses.

RESULTS

The average age of the 41 participants included in this analysis was 67 ± 10 years, and 25 (61%) were men (*Table 1*). The most common chronic illness in this study was congestive heart failure (39%) and the least common was chronic kidney disease (12%). Approximately half of the participants considered their health to be poor or fair (49%) and the median number of days patients cut back on activities due to physical or emotional health over the prior 30 days was 15 [0, 30]. The internal consistencies of the Brief Resilience Scale, six-item Kessler Psychological Distress Scale, and Satisfaction with Life Scale were all high ($\alpha = 0.81, 0.74, 0.86$, respectively).

In unadjusted analyses, resilience had a significant positive association with quality of life ($b = 1.10, P = 0.003$), life satisfaction ($b = 0.65, P = 0.01$), and happiness (odds ratio = 5.29, $P < 0.001$), as well as a significant inverse association with psychological distress ($b = -2.00, P < 0.001$). Results presented in *Table 2* are from linear regression models; the estimates may be interpreted as increases in the outcome's average score for every one-point increase in resilience. Alternatively, the odds ratios in *Table 3* are based on ordinal logistic regression models and may be interpreted as an increase in the odds of happiness level for every one-point increase in resilience. For example, in the unadjusted analysis, individuals with one-point higher resilience were 5.3 times more likely to be very happy than pretty happy or not too happy.

In the adjusted models, the effect of resilience lost significance for life satisfaction ($P = 0.19$), trended toward significance for quality of life ($P = 0.12$), and remained highly significant for the outcomes of psychological distress and happiness ($P = 0.002, 0.003$, respectively) (*Tables 2 and 3*).

DISCUSSION

In this pilot study of 41 older adults with chronic illness, resilience had a positive relationship with quality of life, life satisfaction, and happiness and was inversely related to psychological distress. After adjusting the models for health and sociodemographic factors, the effect of resilience lost significance for the model of life satisfaction, trended toward significance for quality of life, and remained highly significant for the models of psychological distress and happiness.

The internal consistency measures for the constructs of resilience, psychological distress, and life satisfaction were similar to those reported in a variety of settings.^{15–17} Although a relationship between resilience and well-being has been previously explored, our evaluation of resilience's

Table 1. Sample characteristics (n = 41)

Variable	Frequency (%); mean $\pm$ SD; or median [quartile 1, 3]
Psychological resilience	4 [3, 5]
Psychological distress	4 [2, 7]
Quality of life	8 [5, 9]
Happiness	
Not too happy	8 (20%)
Pretty happy	24 (59%)
Very happy	9 (22%)
Life satisfaction	5 $\pm$ 2
Gender (men)	25 (61%)
Age (years)	67 $\pm$ 10
White	22 (54%)
Married	26 (63%)
More than high school education	20 (49%)
Financial status	
Cannot make ends meet	8 (20%)
Have just enough, no more	9 (22%)
Have enough with a little extra sometimes	16 (39%)
Always have money left over	4 (10%)
Unknown	4 (10%)
Illness	
Chronic kidney disease	5 (12%)
Chronic obstructive pulmonary disease	8 (20%)
Diabetes mellitus	6 (15%)
Congestive heart failure	16 (39%)
Chronic inflammatory rheumatic conditions	6 (15%)
Hours of care received per week	20 [7, 30]
Number of days cut back on activities due to physical or emotional health problems (out of past 30 days)	15 [0, 30]
Self-rated health	
Poor	8 (20%)
Fair	12 (29%)
Good	11 (27%)
Very good	7 (17%)
Excellent	3 (7%)

impact on four measures of self-perceived well-being in a cohort of older adults with chronic illness is a notable addition to the field.¹⁸ Perhaps the greatest advantage of our decision to utilize four well-being measures is the ability to

examine positive and negative dimensions of mental health. Results revealed that resilience extends to both elements of mental health through happiness and psychological distress. In addition, the quality of life measure considered 1 week, the happiness measure considered a less stringent qualification of “these days,” the distress measure considered a 30-day time frame, and the life satisfaction measure had an undefined time frame. These differences in scales may allow for the discovery of an underlying cumulative temporal effect, which we may have observed when the effect of resilience lost significance in the fully adjusted model for life satisfaction but remained significant for psychological distress and happiness. More work is necessary to confirm these findings.

Resilience may affect well-being by allowing faster psychological and physiological responses. Resilience has been shown to buffer the effect of chronic illness on disability.¹⁹ This may be attributable to earlier acceptance and correspondingly faster self-care activities and activation.²⁰ Resilience has also been associated with faster cardiovascular recovery and stalling disease progression following negative events.^{21,22} Resilient individuals have physiologic protection against painful experiences by producing less cortisol and inflammation than nonresilient people.²³ Olympians are cited as identifying psychological resilience as a contributing factor to their repeated success.²⁴ Importantly, a meta-analysis revealed that individuals with chronic illness have lower levels of resilience, on average, than do healthy individuals.²⁵

There have been several trials to increase resilience. Work from Lyubomirsky and Della Porta suggests that processing negative life events via journaling may increase resilience.²⁶ Another group’s resilience intervention included 10 modules of “self-directed reflection activities” as well as modules in a group setting.²⁷ A recent study was conducted to increase resilience through a mindfulness training intervention.²⁸ The researchers randomized 616 participants to mindfulness training or usual care and found that the intervention reduced distress scores compared to the usual care group with a moderate effect size.²⁸ Further, the researchers determined that the number of participants needed to treat with mindfulness training to prevent one clinical level of distress was six.²⁸ Such results have promising implications for individuals with chronic illness because they may have lower-than-average resilience.²⁵

Because this was a cross-sectional study, we cannot rule out the possibility of reverse causation. This study also relied on self-reporting from a telephone-administered questionnaire, which may have introduced responder bias. These results are from subjects identified in a single health care system, possibly limiting generalizability. Finally, this work utilized a small sample of patients, which limited statistical power. As such, the effect of resilience in the adjusted models for quality of life did not achieve statistical significance; however, it may have in a larger study. Additionally, because we included several types of chronic diseases, certain limitations

Table 2. Effect of resilience on psychological outcomes (linear regression)

Outcome	Model ^a	R ²	Estimate	Standard error	P value
Quality of life	Unadjusted	0.21	1.10	0.34	0.003
	Health-adjusted	0.40	0.64	0.35	0.069
	Fully adjusted	0.49	0.63	0.39	0.117
Life satisfaction	Unadjusted	0.16	0.65	0.24	0.010
	Health-adjusted	0.31	0.35	0.25	0.170
	Fully adjusted	0.42	0.37	0.28	0.195
Psychological distress	Unadjusted	0.25	-2.00	0.56	<0.001
	Health-adjusted	0.38	-1.50	0.58	0.015
	Fully adjusted	0.55	-1.91	0.57	0.002

^aFully-adjusted models include health status, financial status, marital status, and gender.

Table 3. Effect of resilience on happiness (ordinal logistic regression)

Model	Odds ratio (95% CI)	P value	AUC
Unadjusted	5.29 (2.18, 12.84)	<0.001	0.82
Health-adjusted	4.78 (1.89, 12.05)	<0.001	0.84
Fully adjusted ^a	4.71 (1.72, 12.91)	0.003	0.86

^aFully-adjusted model includes health status, financial status, marital status, and gender.

AUC indicates area under the receiver operating characteristic curve.

may not be universally experienced. We included patients who had an informal caregiver in order to ensure some degree of limitation; however, the assistance provided from caregivers included any of the following: care plan adherence, medication management, transportation, personal care, running errands, food preparation, housekeeping, and/or emotional support.

Resilience may be a resource to reduce psychological distress and increase happiness, quality of life, and life satisfaction among those living with chronic illness. This is the first study, to our knowledge, to simultaneously examine the relationships between resilience and these four psychological outcomes. Developing programs for the promotion of resilience in individuals living with chronic illness may be warranted.

ACKNOWLEDGMENTS

The authors greatly appreciate the participants of this study, the physicians who provided referrals, the research assistants who obtained consent, and the Center for Community Research and Development at Baylor University. Specifically, we thank Dr. Youcef Sennour, Mary Hart, and Courtney Kinsey for their exceptional efforts in subject recruitment.

FUNDING

This work was funded by the Collaborative Faculty Research Investment Program of Baylor Scott & White Health and Baylor University.

ORCID

Kristen M. Tecson <http://orcid.org/0000-0002-6732-8698>

Bethany Smith <http://orcid.org/0000-0002-3187-2675>

1. Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis*. 2014;11:E62.
2. Adams PF, Kirzinger WK, Martinez ME. Summary health statistics for the US population: National Health Interview Survey, 2012. *Vital Health Stat*. 2013;10:1–95.
3. National Alliance for Caregiving, AARP. Caregiving in the US. <https://www.aarp.org/content/dam/aarp/ppi/2015/caregiving-in-the-united-states-2015-report-revised.pdf>.
4. Gadalla T. Association of comorbid mood disorders and chronic illness with disability and quality of life in Ontario, Canada. *Chronic Dis Can*. 2008;28:148–154.
5. Foster JR. Successful coping, adaptation and resilience in the elderly: an interpretation of epidemiologic data. *Psychiatr Q*. 1997;68:189–219.
6. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The Brief Resilience Scale: assessing the ability to bounce back. *Int J Behav Med*. 2008;15:194–200. doi:10.1080/10705500802222972.
7. Harding R, Wei G, Gwyther L, Miti E. Improving psychological outcomes for orphans living with HIV in Tanzania through a novel intervention to improve resilience: findings from a pilot RCT. *AIDS Care*. 2018;17:1–9.
8. Caughter S, Crofts V. Nurturing a resilient mindset in school-aged children who stutter. *Am J Speech Lang Pathol*. 2018;27(Suppl):1111–1123. doi:10.1044/2018_AJSLP-ODC11-17-0189.
9. Iacopetti C, Londi I, Patussi V, Sirigatti S, Cosci F. Life events, coping styles, and psychological well-being in children living with parents who harmfully consume alcohol. *Clin Psychol Psychother*. 2019;26:157–166. doi:10.1002/cpp.2338.
10. Naughton MJ, Brunner RL, Hogan PE, et al. Global quality of life among WHI women aged 80 years and older. *Gerona*. 2016;71(Suppl 1):S72–S78. doi:10.1093/gerona/glv056.
11. Kessler RC, Barker PR, Colpe LJ, et al. Screening for serious mental illness in the general population. *Arch Gen Psychiatry*. 2003;60:184–189.
12. Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction with Life Scale. *J Pers Assess*. 1985;49:71–75. doi:10.1207/s15327752jpa4901_13.
13. Cronbach L. Coefficient alpha and the internal structure of tests. *Psychometrika*. 1951;16:297–334. doi:10.1007/BF02310555.
14. Tavakol M, Dennick R. Making sense of Cronbach's alpha. *Int J Med Educ*. 2011;2:53–55. doi:10.5116/ijme.4dfb.8dfd.
15. Tansey TN, Kaya C, Moser E, Eagle D, Dutta A, Chan F. Psychometric validation of the Brief Resilience Scale in a sample of vocational rehabilitation consumers. *Rehabil Couns Bull*. 2016;59:108–111. doi:10.1177/0034355215573539.
16. Mitchell CM, Beals J. The utility of the Kessler Screening Scale for Psychological Distress (K6) in two American Indian communities. *Psychol Assess*. 2011;23:752–761. doi:10.1037/a0023288.
17. Maroufizadeh S, Ghaheri A, Samani RO, Ezabadi Z. Psychometric properties of the Satisfaction with Life Scale (SWLS) in Iranian infertile women. *Int J Reprod Biomed (Yazd)*. 2016;14:57–62. doi:10.29252/ijrm.14.1.57.
18. Ryff CD. Psychological well-being revisited: advances in the science and practice of eudaimonia. *Psychother Psychosom*. 2014;83:10–28. doi:10.1159/000353263.

19. Manning LK, Carr DC, Kail BL. Do higher levels of resilience buffer the deleterious impact of chronic illness on disability in later life? *Gerontologist*. 2016;56:514–524. doi:[10.1093/geront/gnu068](https://doi.org/10.1093/geront/gnu068).
20. Greene J, Hibbard JH, Sacks R, Overton V, Parrotta CD. When patient activation levels change, health outcomes and costs change, too. *Health Aff (Millwood)*. 2015;34:431–437. doi:[10.1377/hlthaff.2014.0452](https://doi.org/10.1377/hlthaff.2014.0452).
21. Tugade MM, Fredrickson BL, Barrett LF. Psychological resilience and positive emotional granularity: examining the benefits of positive emotions on coping and health. *J Pers*. 2004;72:1161–1190. doi:[10.1111/j.1467-6494.2004.00294.x](https://doi.org/10.1111/j.1467-6494.2004.00294.x).
22. Cal SF, Glustak LR, Santiago MB. Resilience in chronic diseases: a systematic review. *Cogent Psychol*. 2015;2:1024928.
23. Sturgeon JA, Zautra AJ. Resilience: a new paradigm for adaptation to chronic pain. *Curr Pain Headache Rep*. 2010;14:105–112. doi:[10.1007/s11916-010-0095-9](https://doi.org/10.1007/s11916-010-0095-9).
24. Sarkar M, Fletcher D. Psychological resilience in sport performers: a review of stressors and protective factors. *J Sports Sci*. 2014;32:1419–1434. doi:[10.1080/02640414.2014.901551](https://doi.org/10.1080/02640414.2014.901551).
25. Gheshlagh GR, Sayehmiri K, Ebadi A, Dalvand S, Tabrizi NK. Resilience of patients with chronic physical diseases: a systematic review and meta-analysis. *Iran Red Crescent Med J*. 2016;18:e38562.
26. Lyubomirsky S, Della Porta M. Boosting happiness, buttressing resilience: results from cognitive and behavioral interventions. In: Reich JW, Zautra AJ, Hall J, eds. *Handbook of Adult Resilience: Concepts, Methods, and Applications*. New York, NY: Guilford Press; 2010.
27. Stuntzner S, Hartley M. Resiliency, coping, and disability: the development of a resiliency intervention. *VISTAS Online*. https://www.counseling.org/docs/default-source/vistas/article_44.pdf?sfvrsn=8.
28. Galante J, Dufour G, Vainre M, et al. A mindfulness-based intervention to increase resilience to stress in university students (the Mindful Student Study): a pragmatic randomized controlled trial. *Lancet Public Health*. 2018;3:e72–e81. doi:[10.1016/S2468-2667\(17\)30231-1](https://doi.org/10.1016/S2468-2667(17)30231-1).

Avocations

“Autumn at Central Park.” Copyright © Rolando M. Solis, MD. Dr. Solis (rmsolis@mac.com) is co-medical director of the Cardiopulmonary Rehabilitation Program at Baylor Scott & White Heart Hospital Plano, Plano, Texas.