The association of daily physical symptoms with future health

Kate A. Leger [a,*], Susan T. Charles [a], John Z. Ayanian [b], David M. Almeida [c]

[a] Department of Psychology and Social Behavior, University of California, Irvine, 4201 Social and Behavioral Sciences Gateway, Irvine, CA 92697-7085, United States
[b] Institute for Healthcare Policy and Innovation, Division of General Medicine, Medical School, Department of Health Management and Policy, School of Public Health, Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, MI, United States
[c] Department of Human Development and Human Studies, The Pennsylvania State University, 403 BBH Building, University Park, PA 16802, United States

ABSTRACT

Rationale: Daily physical symptoms play a critical role in health and illness experiences. Despite their daily prevalence, the ability of these symptoms to predict future health status is debated.
Objective: The current study examined whether physical symptom reports predict future health outcomes independent of trait measures of emotion.
Methods: Participants ($N = 1189$) who completed both Midlife in the United States (MIDUS) Surveys I and II as well as the National Study of Daily Experiences (NSDE) reported their daily physical symptoms at baseline and number of reported chronic conditions and functional disability nearly 10 years later.
Results: Physical symptoms at baseline significantly predicted the occurrence of chronic conditions and functional impairment at long-term follow-up, even after adjusting for self-reported affect, self-reported health, and previous health status.
Conclusion: Findings suggest that daily physical symptoms are unique indicators of future health status.

© 2015 Elsevier Ltd. All rights reserved.

Physical health symptoms such as headaches and indigestion shape our health behaviors, interfere with our daily routines, and contribute greatly to our perceived sense of health and well-being (Charles and Almeida, 2006). Despite their importance for the quality of daily life, it is unclear how such symptoms predict future physical health status. Some researchers claim that symptom reports and health complaints are not reliable indicators of physical health because they are largely manifestations of affective states. This view states that because positive and negative emotions are related to future health processes (see reviews by Friedman and Booth-Kewley, 1987 and Pressman and Cohen, 2005), physical symptom reports simply reflect these relationships and have no predictive merit on their own. In contrast, other researchers believe that non-specific daily symptoms predict physical future health outcomes (Creed et al., 2012). The view that people's own health assessments reliably predict later health is bolstered by findings showing self-reported health predicts survival better than medical record information (see review by Idler and Benyamini, 1997). The current study examines how well daily physical symptoms uniquely predict three different health-related outcomes among adults nearly 10 years later: self-reported chronic conditions, basic activities of daily living, and instrumental activities of daily living, after adjusting for affect and baseline self-reported health.

1. The importance of physical symptoms

The physical symptoms described in this paper refer to sensations such as back pain, fatigue, headache, and other discomforts that are often perceived by people as worrisome or a change from normal health (Kroenke, 2003; Zijlema et al., 2013). Classic studies note their importance and impact on daily life (e.g., Aneshensel et al., 1984; Verbrugge, 1985). They are the leading reason people seek medical care (Kroenke, 2001), interfere with work and daily routines, and can be detrimental to an individual's ability to function (Matalon et al., 2011). A question receiving less attention is whether such symptoms relate to future physical health and illness.

2. The relationship between symptoms and affect

Despite the prevalence and importance of daily symptoms,

* Corresponding author. Department of Psychology and Social Behavior, 4326 Social & Behavioral Sciences Gateway, University of California, Irvine, CA 92697-7085, United States.
E-mail addresses: kleger@uci.edu (K.A. Leger), scharles@uci.edu (S.T. Charles), ayanian@med.umich.edu (J.Z. Ayanian), dalmeidapsu@gmail.com (D.M. Almeida).

researchers disagree as to whether they actually reflect physical health status. The Symptom Perception Hypothesis (Watson and Pennebaker, 1989) argues that rather than being signs of physical health problems, non-specific symptoms reflect high levels of negative affect. According to this view, people with high levels of negative affect are more likely to engage in somatosensory amplification, defined as being highly attuned to bodily sensations that are reported as physical symptoms. People with high levels of negative affect also have a tendency to interpret benign bodily sensations as physical symptoms demanding attention (Brown et al., 2012; Hansell and Mechanic, 1985; McAndrew et al., 2014). Consistent with this view, studies have found that trait negative affect, a disposition associated with higher levels of experiencing anger, contempt, and disgust, is associated with a greater degree of physical symptom reporting (Van Diest et al., 2005).

Across a large number of studies and a variety of measures, higher levels of negative affect are consistently associated with increased physical symptom reporting (Brown and Moskowitz, 1997; Feldman et al., 1999; Mora et al., 2002; Verbrugge, 1985; Williams and Wiebe, 2000). In addition, higher levels of neuroticism, a personality trait related to experiencing negative, distressing emotions, are associated a wide range of physical symptoms and conditions (Costa and McCrae, 1987; McNiel and Fleeson, 2006; Ramirez-Maestre et al., 2004), even those unrelated to objective health status (Costa and McCrae, 1980). These associations are often bidirectional, with studies documenting that high negative mood and affect leads to increases in symptom reporting, and that a greater number of symptoms lead to higher negative affect (e.g., Charles and Almeida, 2006; Aneshensel et al., 1984).

Symptom reporting is not only associated with higher levels of negative affect and neuroticism, but also with lower levels of positive affect. Early studies found little association between positive affect and symptom reporting in healthy populations (Watson and Pennebaker, 1989), but more recent studies find that in patient samples, individuals with high levels of positive affect report fewer and less severe symptoms even after adjusting for objective measures of disease (Cohen et al., 2003). In non-patient samples, both state and trait positive affect have been associated with fewer symptom reports (Røysamb et al., 2003; Benyamini et al., 2000).

3. Symptoms as predictors of future health

The research reviewed above finds strong associations between emotional experience and symptom reports. Yet, other research shows that, nonetheless, people's perceptions of their health status hold some predictive value for their overall health (e.g., Idler and Benyamini, 1997). Self-reported physical symptoms rely on people's appraisals of their health status, and self-reported appraisals of health can reliably predict physical health outcomes. For example, general health appraisals ascertained by asking adults to rate their overall health on a scale from 1 to 5 predicts objective health measures such as chronic conditions, functional status and longevity often better than self-reported lists of medical conditions (Borawski et al., 1996; Linn and Linn, 1980; Kaplan and Kotler, 1985; Idler and Benyamini, 1997; Mossey and Shapiro, 1982). Few prospective studies, however, have examined more proximal reports of health status, such as actual health symptoms and their association with later health-related outcomes.

Among patient samples, self-reported symptoms predict various health-related outcomes (Kaplan and Kotler, 1985; Sha et al., 2005; Creed, 2011; Jackson et al., 2006; Creed et al., 2013). For example, daily disease-specific symptoms (e.g. chest pain) predict mortality among people with ischemic heart disease (Kaplan and Kotler, 1985). In another study, non-specific daily symptoms (such as headache and backache) predict functional

impairment in daily activities (Creed, 2011) and health-related quality of life in patients attending neurology, gastroenterology, and cardiology clinics 6 months later (Jackson et al., 2006). Finally, a recent study by Creed et al. (2013) found that the presence of multiple physical symptoms was associated with impaired health status a year later in patients with chronic pain, chronic fatigue, and irritable bowel syndrome.

The research above supports a model where symptom reports are predictors of future health outcomes even after adjusting for the influences of affective states and personality traits. This research suggests that daily symptoms among patient populations may therefore be unique predictors of future health outcomes. Yet, questions remain regarding whether these findings generalize to broader community-based populations. It is possible that symptom reporting in patient populations signals disease-specific change, but that symptoms among community-based populations are unrelated to health-related processes.

4. Present study

The current study examined whether daily symptoms predict future health among a non-patient, community-based sample of men and women. To our knowledge, only one study has addressed this question. In that study, participants reported the physical symptoms they had experienced across the prior six months, as well as their overall health status and symptoms of anxiety and depression (Creed et al., 2012). Higher levels of self-reported physical symptoms predicted overall health status one year later after adjusting for depression and anxiety symptoms. The current study expands upon prior research in several ways. First, we used a daily questionnaire to capture whether symptoms were reported each day as opposed to a retrospective report over a longer time frame. By using a more proximal measure, our goal was to capture daily symptoms the day they were experienced as opposed to general appraisals of health that rely on memory over a longer period of time. We further included self-reported health as a covariate in efforts to distinguish between overall self-reported health appraisals and those specific to self-detected physical symptoms. We did so to minimize any concerns that general self-reports were inflating associations between symptoms and the health-related outcomes. Finally, given concerns that symptoms may just be a proxy for trait characteristics related to affect, we included both trait positive and negative affect in our statistical models.

In the current study, we examined how well daily physical symptoms predict three different health-related outcomes across almost 10 years among a community-based sample: self-reported chronic conditions, basic activities of daily living, and instrumental activities of daily living. By using data from the Midlife in the United States Surveys (MIDUS I and II), we examined this process among a group of men and women who ranged from 25 to 74 years old at the beginning of the study (Midlife in the United States, 2014). We hypothesized that daily symptoms would be related to later health-related outcomes even after adjusting for initial health status, and adjusting for the influences of affect and self-reported health.

5. Methods

5.1. Sample and design

The Midlife in the United States Study (MIDUS I) includes data from telephone interviews and mailed surveys from a national sample of 7108 people, aged 24–74. Original data were collected in 1995–1996. A longitudinal follow-up of the original sample was