Depression Moderates the Frailty–Subjective Health Link among Chinese Near Centenarians and Centenarians

Bobo Hi-Po Lau, Ph.D., Joseph Shiu-Kwong Kwan, M.D., Karen Siu-Lan Cheung, Ph.D., Peter Martin, Ph.D.

Objective: *Very old adults may be physically frail, but they do not necessarily experience poor subjective health. The authors hypothesized that the relationship between frailty and subjective health is moderated by depression for very old people.* **Methods:** *In a cross-sectional study, a survey administered was by a face-to-face interview to 129 community-dwelling older adults aged 95–108. Measurements included the five-item FRAIL scale, the Geriatric Depression Scale Short-Form (GDS), and a subjective health rating. Hierarchical multiple regressions were conducted to test the moderation effects, adjusting for age, gender, living arrangement, perceived socioeconomic status, and cognition.* **Results:** *The interaction effect between frailty and depression was significant. Inspection of the simple slopes revealed that those who were more depressed had a more negative frailty–subjective health relationship. There was no significant moderation effect for a withdrawal-apathy-vigor dimension of the GDS.* **Conclusion:** *Our findings suggest a protective psychological mechanism may enable very old adults to maintain an optimistic view of their health despite their increasing physical and functional limitations.* (Am J Geriatr Psychiatry 2016; 24:753–761)

Key Words: centenarians, frailty, depression, subjective health, Chinese

INTRODUCTION

Subjective health (or self-rated health) refers to the global evaluation of health.[1–3] The construct is often efficiently evaluated by a single-item question on a four- or five-point scale, yet reliably predicts important health outcomes including health complaints, treatment prognosis, healthcare utilization, and mortality,[4–7] even among adults as old as nonagenarians and centenarians.[8–11] However, based on the sociocultural conception of health, individuals may include multiple criteria they consider to be relevant to their health and well-being when judging their overall health. These

Received August 14, 2015; revised April 19, 2016; accepted May 20, 2016. From the Faculty of Social Sciences (BH-PL); Department of Medicine (JS-KK); Department of Social Work and Social Administration & Sau Po Centre on Ageing (KS-LC), University of Hong Kong, Hong Kong; and Human Development and Family Studies, College of Human Sciences, Iowa State University (PM), Ames, IA. Send correspondence and reprint requests to Dr. Joseph Shiu-Kwong Kwan, Department of Medicine, University of Hong Kong, Pokfulam, Hong Kong. e-mail: jskkwan@hku.hk

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criteria, such as health behaviors, positive and negative emotions, fulfillment of social roles, or financial security, may not correspond directly to the conventional, biomedical definition of "health."[1,12,13] When evaluating the conditions of these criteria, individuals may compare their current conditions with those of other people (e.g., same-aged peers), with their own in the past (i.e., time), or with their expectation for the near future.[2,14] The inclusion of psychosocial variables and the adoption of various frames of references in the subjective evaluation of health may entail a marked discrepancy between subjective health and "objective" indicators of physical and functional health (i.e., objective health; e.g., diseases, disability, physical performance).[3,15,16] Based on the health congruence framework of Chipperfield,[15] people may experience congruence (i.e., realists) or incongruence in their health evaluations. Those experiencing incongruence could be regarded as health optimists (appraising subjective health as good despite poor objective health) or health pessimists (appraising subjective health as poor despite good objective health). Relative to realists with poor objective and subjective health, health optimists had been found to enjoy better psychological well-being and perceived healthcare management, to be more physically active, and to experience fewer hospitalizations. Conversely, compared with realists with good objective and subjective health, health pessimists demonstrated poorer physical and psychological health outcomes.[16,17] In other words, the discrepancy between subjective and objective health may provide important information about the well-being of older adults.

In addition to objective health indicators such as biomarkers, physical health complaints, and physical performance,[7,8,18,19] psychological well-being variables such as depression and positive attitude to life are integral to one's overall evaluation of health.[20,21] The nonagenarian and centenarian populations could be an especially relevant group to study the discrepancy between subjective and objective health.[22] On one hand, Baltes[23] described the "fourth age" (85+) as a time of inevitable declines in biologic resources and functional capacities coupled with inefficient compensation by psychological and social resources. According to this view, "fourth-age" individuals are characterized by disability and dependency.[23,24] On the other hand, studies have repeatedly documented similar levels of depression, subjective health, and subjective well-being across old, old-old, and oldest-old populations.[25–27] Termed as the "paradox of aging,"[10] studies have witnessed the diversion of the trajectory of decline of subjective and objective health with increasing age, with physical and functional health indicators (i.e., objective health) showing a much sharper decline than subjective health.[7,9,11,25,27,28] This can be partly explained by adaptive coping responses older people use to deal with their health decline.[10] In other words, at the zenith of longevity, although subjective health continues to be a strong predictor of health and well-being outcomes (e.g., mortality, successful aging), the explanatory power of objectively measured health dimensions (e.g., disease, disability) on subjective health wanes.

Physical Frailty

Physical frailty represents one of the key indicators of objective health in old age. The gradual loss of physiologic reserve in multiple systems, such as loss of muscle mass and strength, decreased balance and gait, and weakening of multiple bodily systems (e.g., immune system, brain, and endocrine system), precipitate individuals to greater susceptibility to various age-related diseases and speed up the aging process. The loss is accelerated among physically frail elderly, resulting in systematic and cumulative vulnerability to adverse outcomes (e.g., mortality, disability) even with minor stressor events, such as a fall or inflammation.[29,30] Because physical frailty is an important medical syndrome that is detectable with simple, rapid screening tests and reversible by comprehensive interventions (e.g., exercises, protein-calorie supplementation, vitamin D, and reducing polypharmacy), it has been suggested that all persons aged 70 years or with significant weight loss due to chronic disease should be screened for physical frailty.[30]

The prevalence of physical frailty tends to increase remarkably with age, especially among nonagenarians and centenarians. Depending on the frailty assessment, the prevalence of frailty ranges from 4.0% to 59.1% among community-dwelling individuals aged 65 or above and raises from 4% among individuals aged 65–69 years to 26% for elders aged above 85.[29] The syndrome tends to be very prevalent among the centenarian population. In the Oporto Centenarian Study, 60.0% of participants were frail, with another 36.0% being prefrail.[31] Using the world's largest sample