Research report

Trajectory of depression symptoms and related factors in later life — A population based study

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ABSTRACT

Background: A number of studies of elderly depression have examined the association between depression and its related factors; however, they did not observe how the development of related factors influenced elderly depression over time. This study aims to understand the rising trajectory of depressive symptoms found in elderly male and female, and whether the causation of depression due to related factors would be heterogeneous between male and female over a decade from 1993 to 2003.

Method: This study uses the data from the "Survey of Health and Living Status of the Elderly in Taiwan". A total of 1017 elderly Taiwanese, aged 60 and over, completed four survey modules. The latent growth curve model and general growth mixture model were used to identify the trajectories of depression symptoms, and to assess their related factors in the elderly male and female in Taiwan during the 10 year survey study.

Result: The results showed that a rising trajectory of depressive symptoms came about for both Taiwan elderly male and female over ten years. We also found that in the trajectories of depressive symptoms between elderly male and female across four waves of data, the results were heterogeneous. The trajectory of depressive symptoms in males was affected by perceived health and disability; the trajectory of depressive symptoms in females was influenced by disability and social support.

Conclusion: These findings demonstrated that the final depressive symptoms of the elderly would differ from the elderly with developmentally different depressive related factors. The findings also highlighted the developmental trajectories of depressive symptom in terms of their related factors in the elderly.

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1. Introduction

Depression is the most common mental disorder in the elderly, and there is a higher prevalence of depression with increasing age (Stordal et al., 2003). The prevalence of depression in the elderly was reported to be between 11.2% and 13.3% in industrialized countries (Niti et al., 2007;

Steffens et al., 2009). In Taiwan, the prevalence of elderly depression was found to be between 17.7% and 21.3% (Chiu et al., 2005; Chong et al., 2001). Depression is often mistakenly accepted as a normal part of aging, and therefore overlooked as a mental disorder which needs to be treated. Symptoms of depression in the elderly are identifiable and may include sadness, insomnia, increase or decrease in appetite, weight loss, a sense of hopelessness and helplessness, unwillingness to speak, and withdrawal (Cohen, 2002; Unützer, 2007). Depression causes the elderly to have a lower quality of life accompanied by reduced physical activity and fewer emotional connections. More serious depressions often lead to suicidal tendencies (Turvey et al., 2002). Depression also increases the risk of death (Van der Weele et al., 2009).

Health issues are a major contributing factor to depression in the elderly (Niti et al., 2007). The elderly often experience increased physical disability due to illness and this can also cause depression; the more serious the disability, the more severe the depressive symptoms (Harris et al., 2003). It is worth mentioning that physical disability is a dynamic and progressive process, and is mainly a consequence of underlying co-morbidity with chronic medical conditions and psychosocial factors that are associated with aging (Armenian et al., 1998). Depression is also considered to affect wellbeing and ability to function (Wang et al., 2002). Research suggests that depression and poor physical function are mutually reinforcing, causing a progressive and spiraling decline in the physical and psychological health of older persons.

Furthermore, women have been reported to have a greater tendency to experience depression than men when faced with poor health and physical disability (Zunzunegui et al., 2007). The elderly are also affected by a sense of belonging received from others (Choenarom et al., 2005). Without support from society, depression can defeat the elderly (Li and Liang, 2007), which leads to a reduced sense of self worth. Financial considerations may be a major contributing factor leading to depression among the elderly. Most elderly people are retired and may have limited income. Also, their children usually have left home. It was found that the lower the income level, the more severe the depression (Mojtabai and Olfson, 2004). This is especially true among women (Sonnenberg et al., 2000).

A number of cross sectional studies of depression have examined the association between depression and its related factors (Kaneko et al., 2007; Tsai et al., 2005). These cross sectional studies classified depressive symptoms observed over the same time period. In Belgium, a longitudinal study was conducted to explore depressive trends with the latent variable growth curve model (LGM) (Wauterickx and Bracke, 2005); however, the study did not observe how the development of related factors influenced depression over time. In addition, other longitudinal studies of depression have focused on repetitive measurements over time (Anstey et al., 2007; Barry et al., 2009). However, they lacked growth parameter estimation in intercept and slope, with respect to the initial difference and longitudinal changes for each subgroup and individuals. In this study, we employed data from a longitudinal survey completed by the Taiwan Bureau of Health Promotion, Department of Health. In this program, one thousand and seventeen Taiwan seniors, who were aged 65 or above, were interviewed four times between 1993 and 2003. Our hypotheses are that a rising trajectory of depressive symptoms comes into existence for both Taiwan elderly male and female from 1993 to 2003 (identified with latent growth curve model; LGCM), and that the depression related factors (perceived health, disability, social support, and perceived economic status) would be heterogeneous over time between males and females (identified with growth mixture model; GMM).

2. Methods

2.1. Participants and procedures

In Taiwan, a survey of health and living status of the elderly began in 1989 with a nationally representative sample – including the institutionalized population – of 4049 persons aged 65 and older (response rate 92%). The sample excluded aboriginal areas of Taiwan (i.e., aboriginal areas included the 30 mountainous rural townships as designated by the Ministry of the Interior); due to the fact that people in these areas had different lifestyles and diseases (Cheng and Chen, 1995). The aborigines would probably have a different trajectory of depressive symptoms. The sample was drawn as a multi-stage probability sample. The first segment involves the selection of 56 administrative districts (primary sampling unit; PSU) from the total population of 331 administrative districts based on administrative level, educational level, and fertility rate of each township. Data for this segment was further classified into 27 strata. The second segment of the survey involves a randomized selection of blocks within the PSU. The third segment of the survey involves a systematic random selection of two elderly persons from neighborhood population registers within each block. Both PSUs and blocks were selected with probabilities proportional to the size of the population in the sampling unit. A total of 4049 interviews divided into five waves were conducted between 1989 and 2003. However, in this study, 1989 data was excluded because the response categories have been changed. We could not get consistent responses from the first to the next four waves. This study used variables that were consistent across four waves starting in 1993, and followed up in 1996, 1999, and 2003. There were 1017 respondents who were 65 years and above who completed the follow-up survey in 2003. Those respondents had to fill out all paperwork for the Center for Epidemiologic Studies Depression (CES-D) Scale in 1993, 1996, 1999, and 2003.

2.2. Study design

Initially, the LGCM was used to observe individual differences in initial levels and the rates of change from the beginning point of male and female trajectory. Depression scores of the elderly were taken over four years, namely in the years 1993, 1996, 1999, and 2003, and were formulated into two latent variables. The first latent variable measured the initial stage (1, 1, 1, 1) of depression in elderly men and women. The second latent variable measured the depression gradient, or the rate of change (0, 1, 2, 3), of the subjects. In addition, the GMM was used to examine the standing with dissimilar rate of change over time of depressive symptoms in