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Review

Depression among older adults with multimorbidity: A scope review on the prevalence and intervention

Fan Zhang[§], Zhongxuan Huang[§], Chenqi Jiang, Ying Xie, Qian Tao (✉)

Department of Public health and preventive medicine, School of Medicine, Jinan University, Guangzhou 510632, China
[§]These authors contributed equally to this work.

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ABSTRACT

As rapid population aging has become a global challenge, the high prevalence of multimorbidity among older adults has also emerged as a pressing issue. Multimorbidity, characterized by the coexistence of multiple chronic conditions, can lead to a decline in older adults' physical functioning and quality of life. Consequently, the challenges in long-term management of chronic diseases and related burdens may further exacerbate the vulnerability of older adults to depression. The objective of this study is to address the prevalence and impact of depression among older adults with multimorbidity and provide an updated summary of the intervention research on depression in this population. The findings would provide critical insights to inform healthcare professionals and government on developing tailored interventions to help older adults better manage multiple chronic conditions and enhance their well-being.

KEYWORDS

multimorbidity, geriatric depression, intervention, older adults

1 Introduction

According to China's seventh national census, individuals aged 60 and above constitute approximately 18.70% of the total population, while those aged 65 and above account for 13.50% [1]. Among the various challenges in an aging society, the burden of chronic diseases has become one of the most significant obstacles in achieving the goals of "Healthy China 2030" [2]. Characterized by the prolonged duration and slow progression, the World Health Organization (WHO) has listed chronic diseases as a leading causes of mortality globally [3]. Statistics indicated that among the individuals over the age of 45 in China, 57%–74% were found to have more than one chronic condition, referred as multimorbidity [4]. With a continuous annual increase [5, 6], the prevalence has exceeded two-thirds among individuals aged 65 and above [7]. Multimorbidity has become a normalized characteristic among older adults. This concept of multimorbidity includes not only common physical diseases such as hypertension, diabetes, and heart disease, but also mental disorders such as depression, dementia, and anxiety. Depression was found to be one of the mental disorder that is most closely associated with chronic diseases [8, 9]. Compared to older adults with a single chronic condition or no chronic disease, older adults with multimorbidity often exhibit poorer health status and daily functioning [10], display more complex health needs and face heavier treatment burden [11], more likely to suffered from depression. To better understand the relationship between depression and multimorbidity, the current work focused on the prevalence of depression and intervention research progress among older adults with multimorbidity.

2 The concept and predictors of geriatric depression

Broadly speaking, geriatric depressions refer to depression occurring in later life (≥ 60 years), which are primarily classified into recurrent geriatric depression (RGD), late-onset depression (LOD), and secondary geriatric depression (SGD). RGD refers to a group of depressive syndromes diagnosed before the age of 60 and recur after the age of 60, excluding depression caused by physical diseases. LOD is characterized by a group of depressive syndromes with the first episode occurring after the age of 60, also excluding depression caused by physical diseases. SGD is defined according to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria as depression secondary to physical

✉ Address correspondence to Qian Tao, taoqian16@jnu.edu.cn

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diseases, such as depression among patients with cardiovascular disease [12]. In a common sense, geriatric depression refers to major depression with the first onset at age of 60 and above [13]. The main manifestations of geriatric depression are physical diseases and complaints, including sleep disorders, early waking, poor appetite, slowed thinking activity, lack of concentration, memory loss or bias, low mood, and a lack of interest in life and previous hobbies [14, 15]. Geriatric depression would inevitably jeopardize older adults' quality of life and health.

Recent reviews have found that the prevalence of depression is 35% among the older people [16, 17]. Previous research has indicated that depression levels among rural older adults in China are higher compared to those living in urban area. However, when considering socio-economic status (SES) at the individual, household, and community levels simultaneously, the significant differences between rural and urban older adults diminish [18]. Living alone is a major risk factor for depression in older adults. Older adults at risk of social isolation are 2.6 times more likely to develop depression than those who live with others [19]. Additionally, factors such as declined cognitive functioning, physical inactivity, and anxiety, can compound the depression risk among older adults living in isolation [20]. Moreover, loneliness, unemployment, or grief is all common risk factors for depression among older adults. The studies show that the risk of geriatric depression is a pressing issue that cannot be neglected when promoting older adults' health and well-being, timely intervention to prevent depression would predict a better quality of life for the older generation.

3 Multimorbidity and geriatric depression

Another closely related factor with depression is the chronic conditions of the older adults. Evidence found that the number of chronic diseases was associated with increased depression risk, and more severe depressive symptoms were found among those with more chronic diseases increases [21]. A study conducted among older adults with routine health check-ups at health examination centers revealed a significant upward trend in the prevalence of depression with the number of chronic diseases. The prevalence rates of depression among older adults without chronic diseases, with one, two, and three or more chronic diseases were 5.4%, 14.5%, 22.1%, and 41.4%, respectively [22].

Compared with those free from multimorbidity, a systematic review indicated that individuals with multimorbidity face a greater risk of depression [23]. In particular, the risk of depression is 2.13 times higher for people with multimorbidity than for those with one chronic condition, and is 2.97 times higher compared to individuals with no chronic conditions. The presence of multiple chronic conditions can lead to increased disease burden [24], including higher risk of disability and mortality, decreased quality of life, more pain, etc., which all contribute to the development of depression. Moreover, multimorbidity often involved more complex medical needs, and impaired functioning in multiple domains (e.g., social and physical), which exert greater difficulties for timely assessment and treatment of depression once it occurred. Therefore, a bidirectional relationship was suggested between multimorbidity and depression [25, 26], and when providing healthcare for older patients with multimorbidity, both mental and physical symptoms should be considered [23]. Unfortunately, so far limited research on health care and intervention has taken into account the interplay between chronic physical and mental conditions.

3.1 Types of chronic diseases and depression

As abovementioned, depression risk increases along with the number of chronic conditions, although different types of chronic disease may interact with depression in different manners. According to the National Center for Health Statistics, the most common types of chronic conditions among older adults are arthritis, current asthma, cancer, cardiovascular disease, chronic obstructive pulmonary disease, and diabetes [27]. In this review, we addressed how multimorbidity was related with depression.

For arthritis, a bidirectional association between rheumatoid arthritis (RA) and depression was found, particularly in the elderly, which also led to an increased risk of mortality [24]. Among the patients with cancer, the depression risk was 3–4 times higher than that in the general population [28]. With network analysis on the physical and mental symptoms among older adults with advanced cancer in China, up to 80% suffered from mental disorders such as depression or anxiety [29]. For patients with endocrine and metabolic disease, such as hypertension, diabetes mellitus, fatty liver, etc., an increased prevalence of depression was also found [30,31]. For example, a cohort study has found that depression risk among those suffered with diabetes was 1.36 times higher than that in healthy adults [32]. When suffering from various chronic conditions, the long-term pharmacological treatment, prolonged course of comorbidities, decreased physical functioning, and increased financial burden would probably increase the depression risk in this population.

Depression is also a comorbidity with other mental disorders among older adults [33], such as schizophrenia, anxiety, and Alzheimer's disease (AD), etc. Approximately 7%–75% of people with schizophrenia will also experience symptoms of depression [34] which are often accompanied by anxiety. As the most co-existing symptoms of depression, anxiety has a comorbidity rate of 60% across different age groups [35]. On the behavioral level, the most common bridge symptom between depression and anxiety is feeling down. On the neurological level, changes in the prefrontal-limbic system pathway that regulate emotional processes were found in both anxiety and depressive disorders [36]. Among people aged above 65, 1 out of 9 suffers with AD, and the rate increases to 1-out-of-5 among those aged above 80 [37]. For geriatric depression, the antidepressant treatment may reduce the risk of developing dementia by promoting neurogenesis and inhibiting the aggregation mediated by Aβ oligomers, and it may also be a promising strategy for alleviating tau pathology[38].

3.2 The demographic and psychosocial factors of older people with depression and multimorbidity

Studies have found that the prevalence of depression was higher among female older adults with multimorbidity. This is

potentially due to hormone disruptions during perimenopause, which makes women more susceptible to emotional fluctuations and stress [39]. The majority of studies confirmed that advanced age is a risk factor for the development of depression with multiple chronic diseases. Older adults aged above 80 are more likely to experience weakened physical and immune functions, and the accumulation of risk factors throughout the lifespan increases the risk multimorbidity and depression [40]. Compared with married older adults, widowed older adults are more likely to suffer from multimorbidity [41], which not only causes psychological stress but also worsens the physical health of older adults. In terms of lifestyle-related health behavior, smoking, unbalanced diet, and lacking physical activities remain a serious risk factor [42]. Multimorbidity and tobacco-related illnesses are intertwined in a complex network of risk factors. Smoking aggravates primary illnesses and causes respiratory illnesses, which in turn affects the quality of life of the patient and leads to an increased prevalence of depression [43]. China, as one of the countries with the highest smoking rate [44], tends to have an increased number of patients suffering from smoking-related chronic conditions and depression. In addition, as the economic development accelerates, Chinese people nowadays consume more refined grains, saturated fatty acids, and red meat [45], which increases the risk of developing endocrine and metabolic disorders such as diabetes and cardiovascular diseases. Furthermore, low level of physical activity, particularly moderate–vigorous physical activity, was found to be associated with an increased risk of multimorbidity, and this association was more pronounced among women [46]. Physical activities can also affect one's sleeping quality, which could cast an indirect effect on multimorbidity [15]. Compared with people in western countries, the Chinese elderly tend to have lower level of physical activities [47], which could also contribute to the increased risk of multimorbidity. In summary, various psychosocial and lifestyle factors can affect the development of multimorbidity and depression, which should be considered when developing a predictive model for older adults.

4 Interventions for depression among older adults with multimorbidity

Currently, interventions for depression among older adults with multimorbidity usually focused on multimorbidity or depression. When focused on multimorbidity, interventions usually involve self-management support, precision medicine, patient education, and pharmacological treatments. But as for depression, interventions will include digital interventions, exercise interventions, cognitive-behavioral therapy (CBT), motivational enhancement therapy, and behavioral activation. Considering the progress of psychobehavioral interventions, a recent study discusses three interventions: integrated care interventions, online mental health interventions, and self-management interventions [48].

4.1 Integrated care interventions

Integrated care interventions have become a widely-used strategy in the management of chronic diseases, leveraging multidisciplinary collaboration under the guidance of healthcare professionals to assist patients and their families in dealing with health problems and improving self-care. Research on integrated care intervention among patients with depression and cancer found that, although no significant effect was found in reducing pain, patients were more likely to report fewer depressive symptoms and reduce healthcare cost in the intervention group [49].

4.2 Online mental health intervention

With the advantages of convenient delivery, real-time monitoring, and timely treatment, mobile health applications (mHealth APPs) were found to be an effective tool for helping older adults better cope with chronic disease and reduce the burden of treatment [50]. In a meta-analysis of mHealth APPs-based interventions for patients with cancer, it was found that these interventions had a significant effect on improving their life quality, particularly in symptomatic domains among patients with cancer [28]. The WeChat platform, as an emerging model, has been applied in the field of chronic disease management and has made great progress in reducing patients' burden. Through WeChat, healthcare information is regularly released to teach patients disease-related knowledge. The healthcare professional team also uses the "Group Chat" function in WeChat to deliver guidance on diet, medication, and exercise, and provide timely feedback on questions raised by the patients, which greatly improves their physical and mental health [51, 52]. The intervention of the Internet has brought healthcare professionals and patients closer, which not only improves the effectiveness of the intervention, but also increases patient compliance and reduces burdens, ultimately enhancing the sense of well-being.

4.3 Self-management interventions

Self-management refers to the transition of the patient's role from a passive recipient of medical services to an active manager of their condition. It engages patients in actively coping with the burdens imposed by chronic disease symptoms and diligently adhering to medical recommendations from healthcare professionals [53]. Self-management interventions are not only central to improving patient outcomes, but also reduce the financial costs related with disease management [54]. Earlier studies on self-management interventions among patients with chronic diseases found that a patient's mental status, such as depression, can interfere with self-management interventions for chronic diseases [55]. It is probably because older adults with multimorbidity and depression, when asked to engage in various self-management tasks, are more likely to encounter the situation where they need to prioritize tasks that require less energy, time, and money. Their declined attention and motivation can also undermine their ability to engage in self-management effectively, thus end up with less ideal outcomes [56, 57].

Therefore, when developing interventions for older adults with multimorbidity and depression, it is important to consider both physical and mental conditions. In addition, different interventions, such as integrated care, mHealth interventions, and self-management services, should all be considered to develop the optimal intervention model for this population.

5 Conclusions

By synthesizing the literature on the prevalence of depression and multimorbidity, as well as the updated interventions, the current review proposes the following directions for future research and practice. First, given the significant increase of depression risk along with the number of chronic conditions, more attention should be paid to the factors related with the co-occurrence of depression with multimorbidity, not only risk factors, but also protective factors, to develop effective prevention programs. Second, large-scale longitudinal studies should be conducted to address the disease trajectory of chronic mental and physical conditions among older adults. Third, considering the complex bidirectional relationship between multimorbidity and depression, both physical and mental health should be considered when developing interventions for this population. In particular, mental status, such as depression, should be considered when providing healthcare services to enhance the well-being of older adults with chronic conditions.

Author Contributions

F.Z. has developed the concept, synthesized the literature, drafted and finalized the manuscript. Z.X.H. collected and synthesized the literature, drafted the manuscript. C.Q.J. and Y.X. have synthesized the literature. Q.T. developed the concept and finalized the manuscript.

Conflict of Interests

The authors declare that there is no conflict of interest.

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