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Longitudinal association between neighborhood cohesion and depressive mood in old age: A Japanese prospective study

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ABSTRACT

Despite increasing evidence of the relationship between neighborhood cohesion and depressive mood, little is known about this longitudinal association in old age. This study examined the association between perceived neighborhood cohesion and depressive mood and the stress-buffering effect of perceived neighborhood cohesion on depressive mood among older Japanese people using the 2010 (baseline) and 2012 (follow-up) Hatoyama Cohort Study datasets. We analyzed 655 participants aged 65–84 at baseline. Although perceived neighborhood cohesion at baseline was not associated with depressive mood at follow-up, high neighborhood cohesion partially offset the deleterious effect of anticipated daily stressors on depressive mood. This effect was stronger for long-term residents of the neighborhood. Interventions to strengthen neighborhood cohesion may help reduce the deleterious effect of stressors on older residents' depressive mood.

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1. Introduction

Previous research on the global burden of disease in 2010 identified depressive disorders as a leading cause of this burden (Ferrari et al., 2013; Whiteford et al., 2013). The cost of depression is as high as that of other major illnesses, such as cardiovascular diseases or AIDS (Greenberg et al., 1993). The prevention of depression is an important public health issue, particularly in old age. People often experience changes in factors such as social functions, social relations, and physical condition at this stage of life (Müller-Spahn and Hock, 1994; Rowe and Kahn, 1997), and these changes are often related to depression in old age (Emmerson et al., 1989). In fact, the rate of depression increases with age (Davey et al., 2004; Luppá et al., 2012; Stordal et al., 2001). Moreover, depression is a risk factor for functional decline in later life (Stuck et al., 1999).

Many individual-level factors increase the risk of depression. However, neighborhood environments can also affect depression. A number of theories have been proposed to explain the association between neighborhood characteristics and mental health. Features of neighborhoods may constrain or enhance health-related behaviors, may function as stressors, and may act as a buffer

against stress (Cattell, 2001; Diez Roux and Mair, 2010; Murayama et al., 2012a). Mair et al. (2008) reviewed the literature on neighborhood characteristics and depressive mood and classified neighborhood characteristics into two dimensions: structural features (e.g., socioeconomic and racial composition, stability) and social processes (e.g., social cohesion, ties among neighbors). They found that social processes were associated more consistently with depressive mood than with structural features. However, there has been little research on the association between social processes, particularly social cohesion, and depressive mood in later life.

Neighborhood cohesion refers to the extent of connectedness and solidarity in a neighborhood and represents resources that individuals can access via membership (Kawachi and Berkman, 2000); it can be distinguished from social network interaction, social support, and social exchange in that it assesses norms and expectations for behavior rather than actual ties or direct interaction (Kawachi et al., 2008). Because older people are more likely to spend time in their neighborhood of residence and have stronger social networks in the community than younger generations (Cabinet Office, 2007), neighborhood cohesion may play an important role in their mental health. Therefore, a study on the association between neighborhood cohesion and depression in old age is warranted.

Neighborhood cohesion can also act as a buffer against sources

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of stress related to mental health and psychological outcomes (Cattell, 2001; Diez Roux and Mair, 2010). For example, high perceived neighborhood cohesion buffers the effects of stressors on daily negative affect (Robinette et al., 2013) and the effect of area income deprivation on mental health (Fone et al., 2007). Takagi et al. (2013) used cross-sectional data to reveal that higher area-level trust among neighbors and higher social participation buffered the adverse effect of social distance (derived by taking averaged differences in sociodemographic characteristics between individuals and their neighbors) on depressive risk among older Japanese people. Findings on this stress-buffering effect can help to identify the mechanism by which neighborhood cohesion affects people's mental health. However, evidence on this effect in old age is sparse.

In addition to the shortcomings noted above, several important gaps in research remain to be addressed. First, most studies on neighborhood cohesion and depression have been conducted in Western countries. In Japan, which has a relatively collectivist society with intense group ties, people feel comfortable living in a community with systems of mutual assurance and monitoring among residents (Nakane, 1970; Yamagishi et al., 1998; Yamagishi and Yamagishi, 1994). Because of the difference in the cultural and historical backgrounds of Japan and Western countries, it is important to explore the association between neighborhood cohesion and depressive mood in Japan. Data from non-Western societies highlights many conditions not observable in Western countries and could offer useful insights about the mechanisms underlying these factors. Second, most previous work on neighborhood cohesion and depressive mood has used cross-sectional designs that failed to identify causality. Longitudinal designs are needed to determine the direction of causality.

To address these gaps in this study, we analyzed data from a cohort study of community-dwelling older Japanese people. Our purpose was to examine the longitudinal association between perceived neighborhood cohesion and depressive mood and to test whether perceived neighborhood cohesion buffers the effect of anticipated daily stressors on depressive mood among older Japanese people. We hypothesized that higher perceived neighborhood cohesion is associated with less likelihood of depressive mood (H_1) and that perceived neighborhood cohesion partially offsets the deleterious effect of anticipated daily stressors on depressive mood (H_2). Additionally, as neighborhood cohesion represents resources individuals can access via membership in the neighborhood, the amount of time people have spent there (i.e., age or years of residence in the neighborhood) could influence the linkage of neighborhood cohesion with depressive mood and its stress-buffering effect. However, there is little evidence concerning this. Therefore, we also explored whether the direct and stress-buffering effects of perceived neighborhood cohesion on depressive mood varied by age or years of residence in the neighborhood. We hypothesized that these effects are stronger in those who are older or have lived longer in the neighborhood compared with those who are younger or have lived for a shorter time in the neighborhood (H_3).

2. Methods

2.1. Study population

The Hatoyama Cohort Study consisted of community-dwelling individuals aged 65 years or older, living in the town of Hatoyama in Saitama, Japan. Hatoyama is a suburban area located 50 km northwest of central Tokyo. In June 2010, it had a population of 15,424, and the proportion of people aged 65 years or older was 26.1% (vs. 23.1% nationally). To recruit the study participants, we

used stratified sampling of four groups classified by age (65–74 and 75–84 years) and residential area of the town (the traditional area and the newly developed area). People with long-term care certification (levels 1–5) and those admitted to hospitals or residing in nursing homes were excluded. For the group of residents aged 65–74 living in the newly developed area, we used a random sampling strategy because the number of target residents was larger than in the other three groups. For the other three groups, we used a complete census (i.e., we approached all residents aged 65–84 in the traditional area and aged 75–84 in the newly developed area). The participation rates in these four stratified groups were 23.1% (aged 65–74 in the traditional area), 18.3% (aged 75–84 in the traditional area), 35.0% (aged 65–74 in the newly developed area), and 27.1% (aged 75–84 in the newly developed area). In addition to the sampling recruitment, we recruited study participants using the Hatoyama town bulletin, which was distributed to all households in the town, to permit broader recruitment. Further information on sampling and the participants is included in a previous paper (Murayama et al., 2012b).

A total of 742 people participated in the baseline survey in 2010 (722 obtained by the random sampling recruitment, and 20 by the bulletin recruitment). Among the study participants ($n=742$), 57.7% were male, the mean age was 71.9 ± 5.2 years, and 65.1% lived in the newly developed area. Conversely, among individuals in the general population of the town aged 65–84 (i.e., the target population), 51.2% were male, the mean age was 71.9 ± 5.4 years, and 63.5% lived in the newly developed area. In 2012, a follow-up survey of the participants in the baseline survey was conducted. Of 742 participants, eight had died between the baseline and follow-up surveys, 27 had declined further inclusion in this cohort study, and 26 could not participate in the 2012 follow-up survey for various reasons (e.g., health-related, schedule conflict). As a result, 681 (91.8%) participants completed both baseline and follow-up surveys. In this study, we analyzed the data of those participants from this sample of 681 who answered the question about depressive mood in both baseline and follow-up surveys ($n=655$; 638 obtained by the random sampling recruitment, and 17 by the bulletin recruitment). The Ethics Committee of the Tokyo Metropolitan Institute of Gerontology, Japan, reviewed and approved the study protocol. All subjects provided written consent to participate in this study.

2.2. Measurements

Face-to-face interviews were used to collect data for both baseline and follow-up surveys.

2.2.1. Neighborhood cohesion

We asked three items about neighborhood cohesion at the baseline survey: “Do people in your neighborhood have close relationships with each other?” “Can people in your neighborhood be trusted?” and “Do people in your neighborhood usually help each other?” Respondents answered these items using a four-point Likert scale (“agree,” “slightly agree,” “slightly disagree,” or “disagree”). These three questions were aggregated into one neighborhood cohesion scale by the following steps. First, we dichotomized the responses (1=“agree” or “slightly agree” and 0=“slightly disagree” and “disagree”) because these items were highly skewed; second, we summed these dichotomized items (range of scores: 0–3); and third, after reviewing the distribution of this scale, we classified responses into three categories: low (0–1), moderate (2), and high (3). This means that those with high neighborhood cohesion (a score of 3) had positive responses (“agree” or “slightly agree”) to all three items, whereas those with low neighborhood cohesion (a score of 0–1) had positive responses to one item at most.

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