



Leisure-time activities and psychological distress in a suburban community in Japan

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ABSTRACT

Objective. There is a wide range of leisure-time activities and previous research indicates that some of these are associated with lower psychological distress. The aim of this study was to assess whether leisure-time activities were associated with psychological distress.

Methods. A population-based questionnaire survey was conducted in 2009 in a suburban area of northern Japan using complete enumeration. Of 16,996 residents aged 30–79 years who received the questionnaire, 14,261 (83.9%) responded and 9908 (58.3%) responses were eligible for analysis. The relationship between psychological distress and physical, artistic, outdoor, and volunteer leisure-time activities was assessed separately and simultaneously by sex.

Results. The percentage of reported psychological distress was 2.8% for men and 3.9% for women. Each category of leisure-time activity was related to psychological distress separately. The simultaneous analyses revealed that engaging in regular outdoor leisure activity was associated with less psychological distress in both men (odds ratio [OR] = 0.38; 95% confidence intervals [CI]: 0.23, 0.63, $p < 0.001$) and women (OR = 0.39; 95% CI: 0.25, 0.59, $p < 0.001$). Engaging in regular physical activity was associated with less psychological distress in women (OR = 0.09; 95% CI: 0.01, 0.68, $p = 0.019$). Volunteer work and art activities were not associated with psychological distress in either men or women.

Conclusion. Greater engagement in outdoor leisure activity and physical activity was significantly associated with a lower likelihood of psychological distress. The results from the present study indicate that engaging in leisure-time activities, especially in outdoor leisure and physical activities, may be an effective means of promoting public health.

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1. Introduction

How people spend their leisure time is an important factor in maintaining psychological health. Leisure-time physical activity is associated with decreased mortality from many physical disorders and decreased risk of mental disorders (Jonsson et al., 2010; Lahti et al., 2014; Rovio et al., 2005; Schnohr et al., 2006; Teychenne et al., 2008) and associated with an increase in life expectancy (Janssen et al., 2013; Moore et al., 2012). Psychological distress, however, may decrease the likelihood of engaging in leisure-time physical activities (Gigantesco et al., 2015).

A number of studies have examined the association between leisure-time activity and psychological health, and several have suggested that physical activity is associated with lower psychological distress (Goldfield et al., 2011; Hamer et al., 2009; Hurwitz et al., 2005; Velten et al., 2014; Wada et al., 2006). Some studies also suggest that lack of

participation in community activity is associated with psychological distress (Honda et al., 2010; Kuriyama et al., 2009). Most of these studies focus on the association of psychological health with physical activity and community involvement. However, an individual's choice of leisure-time activity may depend on personal interests and preferences or the environment. Nevertheless, few studies have examined type of leisure-time activity performed by individuals in a community in addition to physical activity and community involvement, or assessed which types of leisure activity might be strongly associated with psychological health.

The objective of the present study was to examine types of leisure-time activity performed by a community population, and to assess whether such activities were associated with psychological distress.

2. Methods

2.1. Participants

A population-based questionnaire survey using complete enumeration was conducted between June and August 2009 in a municipality in

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Akita Prefecture, which is located in a suburban area close to fields and mountains in northern Japan. The average income level in Akita Prefecture, including the study area, was lower than the national average and the overall unemployment rate (for those aged ≥ 15 years) in Akita as of 2009 (5.4%) was slightly higher than the national rate (5.1%) (Statistics Bureau, 2010). The total areas of Akita Prefecture and the survey area were 11,638 and 318 km², respectively. About half of the land in the survey area was covered by forest. The survey area, which had 10 parks and 21 sports facilities as of 2009, was relatively well suited to physical activities. The population of the survey area as of 2004 was 27,209. The target population, aged 30–79 years old, was 16,996 residents, and excluded inpatients and institutional residents, such as individuals in nursing homes or welfare facilities. Community volunteers or municipal employees delivered questionnaires, received informed consent from each household, and later collected the questionnaires.

2.2. Questionnaire

The variables measured were age, sex, living arrangements (living alone vs. not alone), marital status, employment status, educational background, psychological distress, and leisure-time activities. Employment status was defined as employee, self-employed, or unemployed (unemployed persons among those eligible for the labor force or persons not in the labor force). Educational background was classified into four levels: compulsory education (9 years of schooling), high school education (12 years), junior college graduate (14 years), and university graduate or higher (16 years and over). Severity of psychological distress was assessed using a Japanese version of the Kessler Psychological Distress Scale (K6) (Furukawa et al., 2003). Cronbach's alpha coefficient for each item on the Japanese K6 was 0.849 and its equivalence to the original English version was confirmed (Furukawa et al., 2008). K6 is a six-item survey for assessing psychological distress. Using a five-point scale (0 = "None of the time" to 4 = "All of the time"), respondents were asked questions such as how often they experienced symptoms of non-specific psychological distress (nervousness, hopelessness, restlessness or fidgetiness; so depressed that nothing can cheer you up; feeling that everything is an effort; and feelings of worthlessness)

during the past 30 days. Total scores ranged from 0 to 24, with higher scores representing a higher level of psychological distress. We defined psychological distress as a K6 score of 13 points or higher (Kessler et al., 2002).

Ten questionnaire items assessed leisure-time activities in relation to four categories: volunteer activity (assessed by volunteer group attendance), physical activity (attending sports events), outdoor leisure activity (gardening/horticulture, collecting edible wild plants, fishing/hunting, and forest walking), and art activity (creating art work, writing, playing music, dancing, and acting). Participants were asked "Do you carry out the following activities in your daily life?" Participants rated the frequency with which they engaged in each activity (habitually, sometimes, never) by choosing one of three responses: "I habitually carry out the activity," "I sometimes carry out the activity," or "I do not carry out the activity."

2.3. Statistical analysis

The present study analyzed data of residents who provided complete responses.

For each leisure-time activity category, participants were classified into three groups: those who habitually carried out some of the activities in that category, those who sometimes carried out some of the activities, and those who carried out none of the activities.

We first calculated variable distributions, stratifying by sex, and tested for differences between men and women using the chi-square test. We then used unadjusted and multivariable-adjusted logistic regression models to obtain odds ratios and 95% confidence intervals of the association between leisure-time activities and psychological distress, stratifying by sex. All four leisure-time activity variables were included in the multivariable models simultaneously, and we adjusted for age, living arrangements, marital status, employment status, and educational background. We also used multiple regression analysis to test for linear trends across categories in the frequency of leisure-time activities by assigning dummy variables to the three-level frequency of leisure-time activity (Altman, 1991). All analyses were computed using PASW Statistics 18 (SPSS Inc., Chicago, IL, USA).

Table 1
Characteristics of participants of one surveyed town in Akita Prefecture, Japan.

Variables	Men (n = 4720) n (%)	Women (n = 5188) n (%)	p Value ^a
Age (years)			0.027
30–39	692 (14.7)	771 (14.9)	
40–49	821 (17.4)	990 (19.1)	
50–59	1282 (27.2)	1412 (27.2)	
60–69	1092 (23.1)	1074 (20.7)	
70–79	833 (17.6)	941 (18.1)	
Living alone			0.046
Yes	200 (4.2)	264 (5.1)	
No	4520 (95.8)	4924 (94.9)	
Marital status			<0.001
Single	597 (12.6)	249 (4.8)	
Married	3765 (79.8)	3970 (76.5)	
Marital separation/bereaved/divorced	358 (7.6)	969 (18.7)	
Employment status			<0.001
Employee	2358 (50.0)	2227 (42.9)	
Self-employed business	1462 (31.0)	756 (14.6)	
Unemployed	900 (19.1)	2205 (42.5)	
Educational background (years)			<0.001
Compulsory education (9)	1358 (28.8)	1614 (31.1)	
High school education (12)	2714 (57.5)	3062 (59.0)	
Junior college graduate (14)	149 (3.2)	293 (5.6)	
University graduate and higher (>16)	499 (10.6)	219 (4.2)	
Psychological distress			0.001
Low (K6 ^b < 13)	4590 (97.2)	4985 (96.1)	
High (K6 > 13)	130 (2.8)	203 (3.9)	

^a For values of chi-square.

^b The Japanese version of the Kessler Psychological Distress Scale.

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