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Relationships between Depression, Lifestyle and Quality of Life in the Community Dwelling Elderly: A Comparison between Gender and Age Groups

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Abstract This study aimed to comprehensively investigate the comprehensive relationships between depression and the characteristics of lifestyle and quality of life (QOL) of healthy, community dwelling elderly, and compare them according to gender and age groups. 1302 subjects (657 males and 645 females) were used for analysis. The investigators in this study were researchers working at universities in each prefecture. Data collection was conducted in a general delivery survey and interview setting or an education class setting. The geriatric depression scale (GDS) consisting of 15 items with a dichotomous scale was used to assess depression symptoms in the elderly. In addition, 16 items selected from the four factors of economic situation, physical health, social activity, and personal status were used to assess lifestyle. Furthermore, this study investigated life satisfaction, morale, and physical function with the LSI scale, PGC morale scale and the ADL scale of the Ministry of Education, Science and Culture, respectively. According to our results, depression characteristics of the elderly differ between gender and age groups. Depression increases in the old-old elderly rather than in the young-old elderly and is highest in old-old females. The factors significantly related to depression in community dwelling elderly were the number of friends and morale. In particular, an increase in the number of friends was related to a decrease in depression. Depression in the old-old elderly was more significantly related to many lifestyle items compared with the young-old elderly, and especially in the old-old elderly, the extent of social activities related to a decrease in depression. *J Physiol Anthropol 22 (3): 159–166, 2003* http://www.jstage.jst.go.jp/en/

Keywords: depression, QOL, lifestyle, GDS

Introduction

To maintain a high level of quality of life (QOL) in the elderly, physical and mental health management are considered to be important (Lawton et al., 1999). Depression is an important factor in the assessment of mental health in the elderly. Depression closely relates to QOL, subjective happiness and subjective lifestyle satisfaction (Moss et al., 1991), and relationships are very significant when determining measures to maintain a high QOL level.

Depression is considered to be influenced by the internal factors of physical function, psychological status and the external factors of socio-environmental factor and lifestyle (Jorm, 1995), and the elderly are especially affected by external factors when compared with younger age groups (Masuchi and Kishi, 2001). Thus, determining the relationship between depression and these external factors is important in an aging society.

Many studies investigating the effect of depression on the elderly have been reported in Japan and other countries according to a research review of Masuchi and Kishi (2001). Many of them, however, investigated the disabled elderly, and studies involving healthy, community dwelling elderly are considered to be few. Furthermore, the characteristics and effects of depression in community dwelling elderly have not been sufficiently examined with respect to age groups. Determining the effects of age on the relationship between depression and its results means considering not only the aging process but also the differences in the social background of each age group. An examination of age-related characteristics of depression in the elderly should compare two age groups of a young-old population consisting of 74 years or under and an old-old population consisting of 75 years or over (Neugarten, 1975). In 2025, the old-old population is expected to increase to about 13% of the total Japanese population. In Japan, it is expected that sustaining welfare and health services for the old-old elderly will become an important problem awaiting a solution. In addition to physical function and QOL characteristics, external factors relating to depression in the old-old population are considered to differ from those of the young-old population (Garifein and Herzog, 1995; Sugisawa and Sibata, 2000), and the differences in depression characteristics between these groups should be sufficiently investigated. Osada et al. (1995) reported that there is a

significant relationship between depression and activities of daily living (ADL) ability in the old-old population, but it is not known if this relationship is also found in the young-old population.

Many epidemiological studies used the longitudinal approach with a proportional hazard model to investigate the phenomenon of aging, but this approach can only achieve results in social research with a large data set. To provide significant information for the longitudinal studies, basic investigations based on cross-sectional studies comparing the characteristics between the young-old and the old-old populations are needed.

This study aimed to comprehensively investigate the relationships between depression and the characteristics of lifestyle and QOL of healthy, community dwelling elderly, and compare them across gender and age groups.

Methods

Subjects and data collection

Almost all subjects participated in health or culture education classes for the elderly offered by each municipality, such as healthy exercise programs, recreational sports and traditional culture programs of flower arrangement, calligraphy, "go" games and "haiku" poems. Thus, they were independent and relatively active community dwelling elderly aged 60 and over.

The questionnaire survey was delivered to a total of 1900 subjects in local areas of Hokkaido, Akita, Ibaraki, Ishikawa, Fukui, Aichi and Gifu prefectures (the sample size for each prefecture was 100 to 300). A total of 1763 questionnaires were collected, and finally, after screening the data for gender, age and disease history, 1302 (657 males and 645 females, response rate 74%) were used for analysis. The investigators in this study were researchers working at universities in each prefecture. They gathered data in a general delivery survey and interview setting or education class setting. Prior to the survey, investigators explained to subjects that they could refuse to participate in the survey, and that they would not be disadvantaged in any way.

Questionnaire

The geriatric depression scale (GDS) was developed by Gerety (1982) to assess depression symptoms in the elderly. Although other depression scales, such as the self-rating depression scale (SDS, Zung, 1965) and the center for epidemiologic studies depression scale (CES-D, Hamiltom, 1960), have been developed and widely used, they use more than twenty items and polychotomous rating scales. The GDS consists of 15 items with a dichotomous scale. Due to its simplicity, this study used the GDS scale to assess depression symptoms in the elderly.

Hamashima (1994) indicated the following seven factors influence the subjective QOL characteristics of the Japanese elderly based on reviews; age, marriage, occupation, economic situation, physical health, social activity and whether they inhabit a home for the aged. The present study combined age, occupation and marriage in the factor of personal status, and excluded the factor of whether they inhabit home for the aged because the subjects in this study were community dwelling elderly living at home. Therefore, this study used four factors of economic situation, physical health, social activity, and personal status. The following 16 items, taken from previous studies (Hamashima, 1994; Glass et al., 1997), were used to assess the lifestyle of the community dwelling elderly.

1) Family structure: 1. alone, 2. with spouse, 3. with spouse and child(ren), 4. with child(ren)
2) Occupation: 1.office work, 2. part-time work, 3. self-employed, 4. farm, 5. housework, 6. none
3) Satisfaction with economic situation: 1. fully satisfied, 2. a little satisfied, 3. neither satisfied nor dissatisfied, 4. a little dissatisfied, 5. dissatisfied
4) Attending a hospital: 1. yes, 2. no
5) Subjective evaluation of physical fitness: 1. poor, 2. below average, 3. average, 4. above average, 5. good
6) Subjective evaluation of health status: 1. very poor, 2. poor, 3. not too bad, 4. well
7) Sleeping status: 1. very well, 2. well, 3. poor, 4. very poor
8) Regularity of food habits: 1. regular, 2. almost regular, 3. a little irregular, 4. irregular
9) Smoking habit: 1. a great deal, 2. a little above average, 3. average, 4. a little below average, 5. do not smoke
10) Drinking habits: 1. almost every day, 2. sometimes, 3. very little, 4. do not drink
11) Frequency of going out: 1.almost every day, 2. 3 to 4 days a week, 3. one to two days a week, 4. rarely
12) Frequency of exercise: 1. almost every day, 2. 2 to 3 times a week, 3. 1 to 2 times a month, 4. a few times a year, 5. none
13) Duration of continuing exercise: 1. under half a year, 2. from a half to one year, 3. from 1 to 3 years, 4. from 3 to 5 years, 5. over 5 years
14) Participation in volunteer activity: 1. almost every day, 2. 2 to 3 times a week, 3. 1 to 2 times a month, 4. a few times a year, 5. none
15) Prospects of life plan and goals in the future; 1. 5 years from now, 2. 3 years from now, 3. a year from now, 4. 6 months from now, 5. a month from now,
16) Number of friends: 1. plenty, 2. several, 3. more than 1 person, 4. none

Furthermore, this study investigated life satisfaction, morale, and physical function with the LSI scale, PGC morale scale and the ADL scale of the Ministry of Education, Science and Culture, respectively (Demura et al., 2000).

Statistical analyses

Descriptive statistical values of the GDS score were calculated for each gender and age group, and differences

Table 1 The frequency of high-depression elderly assessed by GDS

	Males		Females		Total
	The young-old	The old-old	The young-old	The old-old	
Normal	462	133	423	139	1157
High-depression	38	24	38	45	145
Total	500	157	461	184	1302

When GDS score was 10 or over, the subject was assessed as having high-depression.

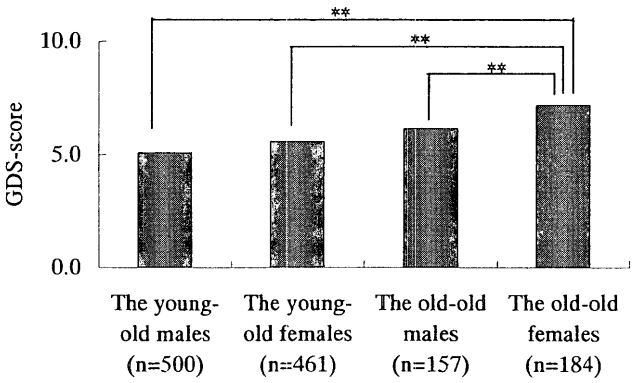

Fig. 1 The mean GDS score of each elderly group and the results of multiple comparisons. The mean GDS score was significantly higher in the old-old females. **: $p<0.01$

were determined by two-way ANOVA. GDS can screen for the symptoms of depression (Gerety, 1982), and subjects with 10 or more points in GDS were classified as highly depressed. The frequency of elderly with high-depression in each elderly group was shown in Table 1. This study classified the depression symptoms of the subjects based on this screening basis, and the odds ratio for each effect factor was calculated by using dichotomous logistic regression analysis. Logistic regression analysis using gender and age as independent variables was applied to the total sample, because the number of the subjects judged as having high-depression differed between the gender and age-stage groups, and the sample size may have produced a bias.

Quantification Theory I analysis, using GDS total score as a dependent variable and effect factors as independent variables, was administered to determine the relationships between depression and effect factors. The categories of items with extremely low frequencies were combined after considering their content. Thus, the relationship between depression and the other factors were examined from the viewpoint of selecting elderly with high-depression and determining the degree of the relationship of general depression with the other factors. Missing data was analyzed by pairwise regression. Statistical significant level was set at $p<0.01$.

Results

Figure 1 shows the descriptive statistic values of the GDS total score and the results of two-way ANOVA for gender and age groups. A main effect was found in both of gender and age factors. In the results of multiple comparisons, the GDS score of the old-old female group was significantly higher than that of the young-old female group and the two male groups.

Table 2 shows the results of logistic regression analysis using the depression symptom, expressed by dichotomous data, as a dependent variable and the effect factors as independent variables. Significance was found in two variables; "number of friends" and "morale scale score". Their odds ratios were 2.123 and 0.656, respectively.

Table 3 shows the results of applying Quantification Theory I analysis to four age groups using GDS total score as a dependent variable and the effects factors as independent

Table 2 The results of logistic regression analysis by dichotomous data

	p	Odds ratio	CI of odds ratio	
			Lower limit	Upper limit
Occupation	0.496	0.822	0.468	1.444
Smoking habit	0.344	0.563	0.172	1.850
Volunteer activity	0.461	0.777	0.397	1.520
Economic situation	0.200	0.720	0.436	1.190
Sleeping status	0.429	1.349	0.642	2.834
Food habit	0.151	1.739	0.817	3.702
Famiry structure	0.743	1.068	0.721	1.581
Attending a hospital	0.776	1.187	0.366	3.845
Subjective evaluation of physical fitness	0.771	0.904	0.460	1.780
Subjective evaluation of health status	0.155	0.586	0.280	1.225
Drinking habit	0.619	0.883	0.541	1.442
Frecuency of going out	0.296	1.265	0.814	1.964
Frequency of exersice	0.664	0.928	0.663	1.300
Prospects of life plan and goal	0.338	1.173	0.847	1.623
Number of friends	0.005	2.123	1.251	3.605
ADL total score	0.405	0.954	0.855	1.065
PGC total score	0.000	0.656	0.561	0.767
LSI total score	0.217	0.910	0.784	1.057
Gender	0.197	2.051	0.688	6.118
Age	0.509	0.054	1.006	1.179
Constant value	0.534	0.064		

CI: Confidence interval, PGC: PGC moral scale, LSI: life satisfaction index

variables. The coefficient of determination (R^2) in the young-old male group was 0.323, and significant partial correlations (r_p) were found in the four variables of family structure ($r_p=0.237$), occupation ($r_p=0.166$), self evaluation of physical fitness ($r_p=0.261$), and the number of friends ($r_p=0.237$). The R^2 in the old-old male group was 0.671, and significant partial correlations were found in seven variables of family structure ($r_p=0.464$), attending a hospital ($r_p=0.421$), ADL

Table 3 The results of quantification theory I analysis to four age and gender groups using GDI score as dependent variables and effect factors as independent variables

effect factors	The young-old males (n=280)					The old-old males (n=64)				The young-old females (n=211)				The old-old females (n=64)			
	IC	CS	r_p	t-value	p	CS	r_p	t-value	p	CS	r_p	t-value	p	CS	r_p	t-value	p
Family structure	1	−2.436	0.237	4.046	0.000**	0.905	0.464	3.985	0.000**	0.029	0.096	1.350	0.179	2.114	0.492	3.876	0.000**
	2	−0.265				−1.140				0.256				−1.011			
	3	0.035				0.138				−0.298				−0.131			
	4	1.904				0.979				0.041				0.149			
	5	−0.272				1.387				0.075				−1.652			
Occupation	1	−0.205	0.166	2.783	0.006**	−1.393	0.328	2.648	0.010**	−0.861	0.148	2.083	0.039	0.156	0.434	3.303	0.002**
	2	0.496				−0.023				0.277				−0.642			
	3	−0.333				0.410				−0.085				0.701			
	4	−0.261				−1.588				−0.007				−1.318			
Economic situation	1	−0.258	0.149	2.506	0.013	−0.150	0.088	0.676	0.502	−0.582	0.170	2.406	0.017	−1.494	0.569	4.746	0.000 **
	2	−0.239				0.151				0.193				0.635			
	3	0.359				−0.173				−0.203				1.140			
	4	0.550				−0.274				0.745				−0.635			
Attending a hospital	1	0.200	0.108	1.807	0.072	0.520	0.421	3.532	0.001**	−0.039	0.024	0.335	0.738	−0.340	0.354	2.596	0.013
	2	−0.300				−1.252				0.078				1.214			
Subjective evaluation of Physical fitness	1	0.919	0.261	4.484	0.000**	−1.043	0.316	2.535	0.014	−0.564	0.091	1.277	0.203	2.858	0.579	4.868	0.000**
	2	1.792				0.303				0.213				−0.284			
	3	−0.109				0.251				0.059				−0.497			
	4	−0.516				−0.828				−0.455				1.133			
	5	−0.525				0.698				−0.233				−2.216			
Subjective evaluation of health status	1	−0.040	0.145	2.438	0.015	−0.089	0.165	1.274	0.208	1.452	0.198	2.823	0.005**	−3.542	0.599	5.126	0.000**
	2	0.480				0.560				0.765				−0.183			
	3	0.057				−0.145				−0.258				0.585			
	4	−0.934				−0.086				−0.106				−4.182			
ADL score	1	0.235	0.026	0.428	0.669	1.220	0.398	3.306	0.002**	1.010	0.181	2.566	0.011	0.046	0.034	0.235	0.815
	2	−0.015				−0.474				−0.200				−0.088			
Frequency of exersice	1	0.193	0.077	1.288	0.199	0.122	0.113	0.867	0.389	0.163	0.066	0.918	0.360	−2.441	0.687	6.482	0.000 **
	2	−0.165				0.254				−0.237							
	3	−0.141				0.275				−0.080				1.136			
Drinking habit	1	0.206	0.112	1.864	0.063	−0.048	0.375	3.078	0.003**	−0.151	0.124	1.749	0.082	−3.093	0.345	2.522	0.015
	2	−0.273				1.197				0.123				−0.371			
	3	0.195				0.312				−0.715				−1.470			
	4	−0.286				−0.629				0.109				0.234			

Table 3 Continued

effect factors		The young-old males (n=280)				The old-old males (n=64)				The young-old females (n=211)				The old-old females (n=64)			
	IC	CS	r_p	t-value	p	CS	r_p	t-value	p	CS	r_p	t-value	p	CS	r_p	t-value	p
Smoking habit	1	0.132	0.046	0.765	0.445	0.278	0.068	0.518	0.607	2.565	0.209	2.986	0.003**	−3.942	0.324	2.350	0.023
	2	−0.076				−0.058				−0.088				0.063			
Sleeping status	1	−0.053	0.077	1.279	0.202	−0.097	0.194	1.508	0.137	−0.390	0.126	1.780	0.077	0.368	0.1622	1.127	0.265
	2	−0.097				0.184				−0.130				−0.217			
	3	0.308				−0.755				0.461				0.132			
Regularity of food habit	1	0.169	0.076	1.259	0.209	−0.370	0.399	3.309	0.002**	−0.058	0.026	0.358	0.720	0.298	0.226	1.591	0.118
	2	−0.146				0.054				0.043				−0.374			
	3	0.209				2.969				0.138				0.843			
Frequency of going out	1	−0.173	0.090	1.504	0.134	−0.286	0.290	2.305	0.025	−0.085	0.1256	1.768	0.079	0.387	0.627	5.516	0.000**
	2	0.272				−0.070				−0.089				1.857			
	3	−0.035				0.716				−0.020				−1.646			
	4	0.395				−0.871				1.197				0.013			
Number of friends	1	−0.747	0.237	4.042	0.000**	−0.441	0.180	1.397	0.168	−0.409	0.213	3.046	0.003**	−2.162	0.733	7.394	0.000**
	2	0.316				0.191				0.365				0.934			
	3	−0.783				0.426				−0.598				1.842			
	4	0.650				−0.242				−2.042				1.867			
Frequency of volunteer activity	1	−0.080	0.073	1.218	0.224	−1.345	0.483	4.198	0.000**	−0.022	0.143	2.022	0.045	0.910	0.328	2.376	0.022
	2	−0.119				−0.370				−0.393				−0.710			
	3	0.248				1.222				0.339				0.285			
Prospects of life plan and goal in the future	1	−0.012	0.140	2.351	0.019	−0.340	0.427	3.598	0.001**	−0.256	0.182	2.579	0.011	1.925	0.531	4.293	0.000**
	2	0.419				−0.477				−0.003				0.270			
	3	−0.065				0.288				0.114				−0.131			
	4	−0.810				2.582				−0.283				−1.594			
	5	−0.046				0.340				1.449				−1.857			
Constant value		4.685				5.853				0.292				6.828			
Multiple correlation (R)		0.568				0.819				0.588				0.889			
R^2		0.323				0.671				0.346				0.791			

IC: Item category, CS: Category score, r_p: Partial correlation, **: $p<0.01$

score (r_p=0.398), drinking habits (r_p=0.391), regularity of food habits (r_p=0.399), participation in volunteer activity (r_p= 0.483) and the prospects and goals in future life (r_p=0.427). In the young-old female group, R^2 was 0.346, and a significant r_p was found in three variables of self evaluation of health (r_p= 0.198), smoking habit (r_p=0.209) and number of friends (r_p=0.213). In the old-old female group, the R^2 was 0.791, and a significant rp was found in nine variables of family structure (r_p=0.492), occupation (r_p=0.434), economic condition (r_p=0.569), self evaluation of physical fitness (r_p=0.579), self-evaluation of health status (r_p=0.599), frequency of exercise (r_p=0.687), frequency of going out (r_p=0.627), number of friends (r_p=0.733) and the prospects and goals in the future life (r_p=0.531).

Discussion

It is considered that the morbidity of depression is very high in the female elderly, and they are at risk for depression (Zung et al., 1993). Since many of the old-old elderly experienced a psychological and sociological loss and an atrophic and morbid change with aging in physical and mental health (Osada et al., 1995), it will be indicative that the period of old-old age is a turning point when determining the characteristics of the elderly (The Ministry Health and Welfare, 2000).

The mean values of the GDS score for gender and age groups were greater in female groups than male groups, and they were greater in the old-old groups than in the young-old groups. Therefore, the determination of the effect factors on depression in the old-old female elderly is considered to be important. The Japan Ministry of Health and Welfare indicated, in a white paper on health and welfare in 2000, that the community policy for the elderly should involve constructing a care and welfare system, equipping medical institutions, and gathering talented people to consider the future prospects of the elderly population. Promoting these administrative measures would contribute to reducing depression symptoms and improve the QOL levels in the old-old population

In logistics regression analysis for the effect factors categorized by a screening of GDS, significance was found in only two items, "number of friends" and "morale", and their odds ratios were 2.123 and 0.656, respectively. This means that if the score for "number of friends" increases one point (regarding the rating scale in this study see Method), the high-depression symptom increases 2.123 times. In other words, increasing the number of friends suggests a decrease the high-depression symptom. A social network is an important factor in the QOL level of the elderly (Masuchi and Kishi, 2001). Similarly in depression, a social network, especially in the form of friends, is considered to be an important factor. The Japanese elderly receive social support in the form of family, relatives, friends and neighbors (Aoki, 2000). Therefore, most elderly supported by friends may also receive social support from family and relatives. In any case, receiving social support from others is considered to lead to a decrease in depression in the elderly.

Osada et al. (1995) indicated that the old-old elderly with a high functional ability to perform advanced activities of daily living (AADL) and who had leisure and vocational activities, showed lower depression levels. Sugisawa and Shibata (1995) also indicated that the frequency of leisure activities contributes to preventing depression in the noninstitutionalized elderly with cerebrovascular diseases. In this study however, depression was significantly related to the social network (number of friends) but not to ADL ability. One of the reasons for this result is considered to be that almost all subjects in this study had ADL ability with independent living or more level. Therefore, although ADL ability with an independent living level is necessary to decrease depression in the elderly, a substantial social network may be more important for the independent elderly with high functional ability.

Similarly, judging by the result of the odds ratio of "morale", high-depression symptoms decrease 1.52 times (1/0.656) with a one point increase of morale score. A previous study investigating the relationship between depression and morale using the PGC morale scale reported that a significant relationship was found but it was not as high. The present result supported the previous study, and further, suggested that "morale" is related to depression level.

In this study, economic factors were assessed by rating the individual's satisfaction with their own economic situation, and the assessment was determined by their own sense of values, regardless of the amount of income. In the results, a significant partial correlation between depression and satisfaction with economic situation was only found in the old-old female group (r_p=0.569). In the white paper on health and welfare in 2000, the young-old Japanese elderly in 1997 had a similar or higher personal income compared with that of the second generation family they were staying with, while the personal income of the old-old elderly was lower by 500,000 yen per year compared with the young-old elderly. Hamashima et al. (1994) indicated that the life satisfaction of the elderly with a small personal income is low, and activity in daily life also decreases. The results of this study suggest that depression in the old-old female elderly was influenced by satisfaction with their economic condition as well as actual income. In this study, however, a significant relationship between depression and satisfaction with economic condition was not found in the old-old male group. This study did not have sufficient evidence to explain the differences between genders. Further research to investigate the cause will be required.

Attending a hospital showed a moderate relationship to depression in the old-old elderly (r_p=0.354, $p<0.01$), but showed a low relationship in the young-old elderly (r_p=0.108, $p>0.01$). Depression in the elderly was more influenced by disease (Masuchi and Kishi, 2001). "Attending a hospital" does not itself reflect the stage of disease. However, diseases in the old-old elderly are expected to be a more direct influence on their life compared with the young-old elderly, and this is

considered to influence the result that the relationship between "attending a hospital" and depression was higher in the old-old elderly than in the young-old elderly.

In the relationship between "self evaluation of physical fitness" and depression, different trends were not found in gender and age groups. The self evaluation of health status showed a moderately significant relationship to depression in the old-old female group (r_p=0.599, $p<0.01$). Morale, which is a main index of subjective QOL in the elderly, showed a lower correlation to daily habits and exercise, but showed a higher correlation to subjective evaluations of physical fitness and health status (Demura, et al., 2002). In this study, the frequency of exercise and sports was highly related to depression in the old-old females, and ADL ability was also highly related in the old-old males. Further research should investigate the interrelationships between subjective evaluations of physical fitness and health, ADL ability and social support, and should comprehensively discuss the relationship between depression and these factors.

The relationship between "regularity of food habits" and depression was higher in the old-old elderly than in the young-old elderly. Regularity of food habit is fundamental to daily life, and health status, economic situation, and social support networks act on the premise of the existence of desirable food habits. Based on the result of the relationship between depression and regularity of food habit, it is suggested that regular food habits tend to contribute to a decrease in depression more in the old-old elderly rather than in the young-old elderly.

This study indicated that depression in the elderly participating in volunteer activities is lower, and this trend was found in the old-old elderly rather than in the young-old elderly. In addition, depression showed higher correlation to "participation in volunteer activity" in the old-old males and to "number of friends" and "frequency of going out" in the old-old females. The elderly living at home tend to require the forming of human relationships in volunteer activities (Masuchi and Kishi, 2001) and a higher level of social activity is considered to contribute to a decrease in depression. According to a survey by Ministry Health and Welfare (2000), the elderly enjoy "encounters with new friends and groups" and "fulfillment in their life." It is inferred that these impressions have a good influence on decreasing depression, and that the old-old elderly were influenced by the good effect of volunteer activities rather than the young-old elderly. Therefore, not only the ability to perform basic activities in daily life but also social activities are important for reducing depression in the elderly, and countermeasures for the old-old females are required.

In conclusion, depression characteristics of the elderly differ among gender and age groups. Depression increases in the old-old elderly rather than in the young-old elderly and is highest in old-old females. The factors significantly related to depression in community dwelling elderly were the number of friends and morale. In particular, an increase in the number of friends contributes to a decrease in depression. Depression in the old-old elderly significantly related to many lifestyle items compared with the young-old elderly, and especially in the old-old elderly, more social activities contributes to a decrease in depression.

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