Journal of Gerontology: SOCIAL SCIENCES
2007, Vol. 62B, No. 5, S323–S329

Gender Differences in Correlates of Mental Health Among Elderly Koreans

Gyeong-Suk Jeon,[1] Soong-Nang Jang,[2] Seon-Ja Rhee,[1] Ichiro Kawachi,[3] and Sung-Il Cho[1]

[1]Graduate School of Public Health and
[2]Center for Aging and Population Research, Institute of Health and Environment, Seoul National University, Korea.
[3]Department of Society, Human Development, and Health, Harvard School of Public Health, Boston, Massachusetts.

Objectives. This study examined the differential impact of social roles and socioeconomic resources on the mental health of Korean men and women aged 65 years or older.

Methods. The study sample was a weighted population of 930 people (905 survey samples) aged 65 years or older who had responded to the health behavior survey of the 2001 Korean National Health and Nutrition Examination Survey.

Results. We observed striking gender differences in the correlates of poor mental health. Living alone was significantly associated with depressive symptoms and suicidal ideation in men but not in women. Living in a multigenerational family without a spouse and having a lower household income were significantly associated with poor mental health in both men and women.

Discussion. We discuss the intriguing evidence of gender differences in the correlates of mental health within the context of traditional Asian society and suggest further research on social components of gender differences in mental health across diverse cultures.

RESEARCHERS have attributed differences in the mental health of men and women to the influence of gender-related social exposures (Simon, 1995). Such exposures range from differential socioeconomic experiences of men and women in terms of labor force participation, financial independence, and the division of labor and exercise of authority within households (Mirowsky, 1996; Mirowsky & Ross, 1995; Turner & Turner, 1999), to health-related behaviors such as smoking and drinking. These exposures become gender-related because they are associated with gender roles and socialization. Mental health problems may result in selection out of social roles such as being married or employed (Aneshensel, Rutter, & Lachenbruch, 1991). If the selection is gender related, it may also contribute to differences in mental health between gender groups.

Theoretical hypotheses on gendered patterns, arising from the influence of different social exposures of men and women, assume that men have traditionally been socialized to give priority to the breadwinner role, so that any conflict affecting the employee role may have greater adverse effects on the mental health of men compared to women (Turner & Turner, 1999). For example, the loss of work roles (stemming from job loss or retirement) is more threatening to the mental health of men than of women (Möller-Leimkühler, 2003), particularly in societies in which gender roles are much more strongly demarcated (e.g., men as primary breadwinners). In contrast, domestic caregiving needs, such as caring for the young and the old, affect women's mental health more strongly than men's (Rosenfield, Vertefuille, & McAlpine, 2000). Women and men have different expectations of social roles and relationships in the household over the course of their lives; thus, the health consequences of family structure vary (Logan & Spitze, 1996). For example, in midlife, men are the main beneficiaries of their wives' household work and child care; they suffer more distress than women after they lose their spouse, particularly due to the burden of domestic tasks and their lack of social networks and support through, for example, church attendance or voluntary group participation (Lee, DeMaris, Bavin, & Sullivan, 2001; Umberson, Wortman, & Kessler, 1992). Living alone is particularly detrimental to men, whereas its effects on women are weaker or inconsistent (Hughes & Waite, 2002; Joutsenniemi, Martelin, Martikainen, Pirkola, & Koskinen, 2006). Likewise, Hughes and Waite found that women in late midlife exhibited more depressive symptoms when living alone with children, whereas men living in a similar situation did not.

Differences of gender-related social roles and relations between countries may result in different gendered patterns on mental health. Korea, like other East Asian societies, has maintained a culture characterized to a great extent by patriarchy and Confucianism, as evidenced by traditional norms governing the household division of labor, the high gender income gap (the ratio of female to male income is 0.48), and the low representation of women in national politics (13% of parliamentarians are women; United Nations Development Programme [UNDP], 2005). As a result, Korea ranked 59th on the 2005 UNDP index of gender empowerment, which summarizes women's economic autonomy and political participation in society. Takeda and colleagues (2004) observed that patriarchal family structure may influence the mental health of women. For example, women in multigenerational households have significantly higher caregiving concerns than women living with only their husband. Patriarchal culture may also impose a penalty on men through pressure to overcommit to work, leading to health-damaging coping behaviors such as heavy drinking with (male) colleagues after work. Over the past decades, however, rapid social and

economic changes such as the rising standard of living, industrialization, expansion of formal education, and increased female labor force participation have had profound implications for Korean women (Palley, 1990).

Given the persistence of traditional norms and concurrent dramatic social changes, older Korean adults who have been faithful in the performance of their filial duties and sex-segregated roles are faced with the undesirable impact of rapid social changes. For example, many older adults, especially older women living with extended family members, cannot alleviate their family obligations by deferring the burden to their married children and daughters-in-law, as their parents did under traditional norms. Rather, they, instead of their working, married children and their children's spouses, often continue to take care of the extended family.

In addition to gender differences, which researchers have almost universally noted with respect to the prevalence of psychiatric morbidity, predictors of mental health may also be gendered. Therefore, this study examined social correlates and gender differences in the socioeconomic and psychosocial correlates of mental health among older Koreans. We hypothesized that there would be a differential impact of social factors on mental health between elderly women and elderly men in South Korea.

Methods

Design and Study Population

The data came from the Korean National Health and Nutrition Examination Survey (KNHANES) conducted in 2001 by the Korean Ministry of Health and Welfare. KNHANES surveys have been repeated with very similar cross-sectional designs since 1992 at 3- to 4-year intervals with nationally representative samples of noninstitutionalized persons residing in Korea. The most recent data available at present are from the 2001 survey.

For the 2001 KNHANES, researchers selected a nationwide probability sample of the population via a stratified multistage probability sampling design based on geographic area, gender, and age group using the 2000 Korean National Census Registry (Korean Ministry of Health and Welfare, 2002). For the health behavior survey, investigators selected 4,400 households within the primary sampling units (13,200), consisting of 10,368 noninstitutionalized individuals aged 12 and older. A total of 9,170 individuals completed interviews by a trained interviewer, constituting a response rate of 88.45%. The present study limited its analysis to a weighted population of 930 (905 survey samples) elderly people aged 65 years or older from the health behavior survey of the 2001 KNHANES. Comparisons to census data showed that the sample was representative of the Korean elderly population aged 65 or older in gender and age. The Research Ethics Review Board of the Seoul National University School of Public Health approved the protocol for our analysis.

Mental Health Outcome Measures

We used two self-reported mental health indicators, depressive symptoms and suicidal ideation, as outcome measures for this analysis. Depressive symptoms were assessed by a single item: "How often have you felt depressed or sad during the past year?" Responses were on a 4-point interval scale: always, sometimes, seldom, and never. We divided the responses into categories for binary logistic regression analysis by classifying responses of "always" in the depression category and combining all other responses into the no depression category. Researchers successfully used this method in a previous study using 1998 KNHANES data (I. H. Kim, Muntaner, Khang, Paek, & Cho, 2006). Different categorizations can be used with other statistical methods. For example, three categories of outcomes (obtained by collapsing "seldom" and "never" into one category) may be used for multinomial logistic regression analysis, and all four categories may be used for ordinal logistic regression analysis. In our study, because these methods gave similar results, we used the more simple binary definition of depression for our analysis. Suicidal ideation was assessed by a single yes/no response item: "Have you ever thought of taking your life during the past year?"

Socioeconomic Measures

Education levels were classified as middle school or higher, elementary school, and uneducated. Current labor market participation was categorized into yes or no ("no" included retired, unemployed, and disabled and out of work). Household equivalized income (total household income divided by the square root of the number of household members) was calculated into tertiles to detect a nonlinear relationship. Subjective socioeconomic status was assessed by the question "How would you describe your current socioeconomic status?" Possible answers were 1 = very rich, 2 = rich, 3 = neither rich nor poor, 4 = poor, 5 = very poor. To avoid collinearity with household income, we dichotomized the responses so that "poor" and "very poor" contrasted with the remaining categories.

Health Behavior and Living Arrangements

We used two indicators of health behavior. Smoking and drinking status was classified as never, former, and current, with never smokers/drinkers as the reference category. Living arrangements were divided into four categories: (a) living with spouse only; (b) living with spouse and adult children, elderly parents, or nonrelated individuals; (c) widowed and living with children or others; and (d) living alone.

Other Covariates

We also included age and self-reported health status (overall perceived health, number of physical illnesses) as covariates. We measured global self-rated health with the question "How would you rate your health in general?" There were five response options: 1 = very good, 2 = good, 3 = fair, 4 = bad, and 5 = very bad. We dichotomized the responses to this question as "very good" or "good" versus the rest. We evaluated the number of physical illnesses using the responses to questions inquiring about a history of chronic disease such as cancer, stroke, hypertension, ischemic heart disease, and diabetes mellitus. We classified participants into three categories according to the total number of aforementioned physical conditions: 0, 1 or 2, and 3 or more.

Statistical Methods

We calculated the age-standardized prevalence of the endpoints (depressive symptoms and suicidal ideation) with age adjustment for 5-year age groups using the direct method. We used the distribution of all samples as the standard in calculating prevalence. We performed logistic regression analyses to assess the association between mental health indices and the covariates. We present results here as odds ratios (ORs) with 95% confidence intervals (CIs). We evaluated possible multicollinearity between covariates such as age and labor market participation by correlation analysis and collinearity statistics tests (tolerance and variance inflation factor tests) as suggested for logistic regression (Allison, 2003). There was no significant collinearity between any of the covariates. As we found a significant interaction between gender and living arrangement in the case of both depression and suicidal ideation ($p < .05$), we present all results separately for men and women. To verify whether there was a significant difference between gender groups, we performed statistical tests comparing logit coefficients across groups (Allison, 1999) with the following two steps. First, we used Wald chi-square statistics to test the difference in the coefficients between the gender-specific models. Second, we fitted disturbance variance unconstrained models to assess whether there was significant residual variation across gender groups. All statistical analyses were preformed with SPSS (Version 12.0, SPSS, Chicago, IL) or SAS (Version 9, SAS Institute, Cary, NC).

Results

Table 1 summarizes the descriptive information for our sample, as well as the age-adjusted, gender-stratified prevalence of mental health problems (depressive symptoms and suicidal ideation). As expected, men reported significantly higher levels of educational attainment than women, as well as higher levels of active labor market participation. Men were less likely than women to belong to the bottom tertile of household income and were also less likely to be living alone. In addition, as expected, men were more likely than women to be current smokers and current drinkers. In contrast, women were more likely than men to report physical illnesses. The majority of elders in our sample rated their health as either poor or very poor (74.9% of men and 83.7% of women).

Women reported significantly higher age-adjusted prevalence for depressive symptoms and suicidal ideation than men. Among both men and women, mental health problems were associated with indicators of socioeconomic position in the expected directions (i.e., lower educational attainment, lower equivalized household income, and lower subjective socioeconomic status were each associated with a higher prevalence of mental health problems). Living alone or as part of a multigenerational household (couples living with their children, elderly parents, or others) was also associated with significantly elevated risks for mental health problems compared to living with a spouse alone. Mental health problems were similarly associated with other predictors in the expected directions (e.g., a higher prevalence of depressive symptoms and suicidal ideation was associated with a greater number of physical illnesses and poor self-rated health; Table 1).

Next we examined gender differences as correlates of mental health problems. The adjusted ORs for depressive symptoms and suicidal ideation stratified by gender showed some interesting differences. Living alone was strongly associated with depressive symptoms in men (OR = 3.58, 95% CI = 1.18–10.76) but not in women (OR = 1.10, 95% CI = 0.56–2.17). Living in a multigenerational family without spouse was significantly associated with depression in women and with suicidal ideation in both men and women. Gender difference was significant in living arrangement by Wald chi-square test ($p < .05$).

Although the difference in effects by gender was not statistically significant, being separated from the labor market was significantly associated with suicidal ideation in men (OR = 2.19, 95% CI = 1.12–4.26) but not in women (OR = 1.24, 95% CI = 0.70–2.19). Among men, current drinkers were twice as likely to report suicidal ideation in the past year than other groups, whereas among former drinkers, higher depression was reported by women; however, the difference in effects by gender was not statistically significant. In addition, lower equivalized household income was significantly associated with poor mental health in both men and women (Table 2). None of the unconstrained models showed a significant disturbance variance, suggesting that the differences in the coefficients between men and women had not arisen from differential residual variation.

Discussion

Our study revealed evidence of gender differences in correlates of mental health among older adults in Korea within their living arrangement. In addition, labor market participation was a significant correlate among men but not among women. Lower socioeconomic status was significantly associated with poor mental health in both men and women.

Researchers have generally assumed that in cultures in which intergenerational ties are highly valued, coresidence with children has a positive influence on the mental health of elders. For example, a study of people older than 65 in Spain, where children's obligation toward their elderly parents is a social norm, reported that coresidence was associated with a low prevalence of depressive symptoms (Zunzunegui, Béland, & Otero, 2001). Similarly, studies in rural Taiwan (Wang, Snyder, & Kaas, 2001) and rural China (Silverstein, Cong, & Li, 2006), where extended family is culturally dominant, found a positive effect of coresidence with children on mental health and physical well-being. In contrast, studies in the United States (Hughes & Waite, 2002; Silverstein & Bengtson, 1994), where independence in later life is highly valued, found that coresidence with children can be detrimental to the psychological well-being of elders. Our study shows that both older men and women living with other family members (e.g., children or aging parents) reported worse mental health than did those living with their spouses only. This finding is consistent with the results from other studies that suggested a social transition in Korea from multigenerational coresidence as a standard living arrangement to a more Westernized family lifestyle with heightened values of privacy and independence (C. S. Kim & Rhee, 1997). Gender differences arising from family living arrangements are even more striking if the estimates are compared between living with children and living alone. Compared to living with children, living alone appears detrimental to men, whereas living alone appears beneficial to women. This suggested difference may be explained

Table 1. Age-Adjusted, Gender-Stratified Prevalence[a] of Self-Reported Mental Health Among People Aged 65 Years or Older ($N = 930$)[b] in the 2001 Korean National Health and Nutrition Examination Survey

			Depressive Symptoms			Suicidal Ideation		
Variable	Men *n* (%)	Women *n* (%)	Men	Women	All	Men	Women	All
Age-adjusted prevalence			17.0	24.7		23.2	30.6	
Equivalized household income[c]					‡			‡
Q3 (high)	135 (36.6)	193 (34.4)	11.7	15.0	13.7	16.3	22.0	19.6
Q2 (middle)	126 (34.1)	166 (29.6)	12.5	21.6*	17.5	19.0	28.0	24.1
Q1 (low)	108 (29.3)	202 (36.0)	29.7	36.6	34.2	35.3	39.5	38.1
Education					‡			‡
Middle school or higher	169 (45.8)	72 (12.9)	13.2	12.8	13.3	23.7	17.0	21.6
Elementary	115 (31.2)	157 (28.0)	21.4	19.1	20.1	16.3	25.0	21.2
Uneducated	85 (23.0)	331 (59.1)	19.4	30.0*	27.9	30.2	35.4	34.4
Subjective economic status					‡			‡
Not poor	191 (51.8)	275 (49.0)	10.8	16.3	14.0	14.9	23.8*	20.2
Poor	178 (48.2)	286 (51.0)	24.2	32.8*	29.5	31.3	36.2	34.3
Labor market participation								†
Active	119 (32.2)	88 (15.7)	13.9	22.9	17.9	16.2	26.0	20.3
Inactive	250 (67.8)	472 (84.3)	18.7	25.1	22.9	26.0	30.9	29.2
Living arrangement					‡			‡
Living with spouse	177 (48.1)	121 (21.6)	13.5	16.4	14.8	17.7	21.0	19.1
Living with spouse and others	143 (38.9)	70 (12.5)	17.9	23.9	19.7	23.4	34.1	26.9
Widowed and living with others	27 (7.3)	217 (38.7)	22.5	25.6	25.0	33.8	33.6	33.6
Alone	21 (5.7)	153 (27.3)	38.7	30.4	31.6	48.4	30.5	32.8
Smoking								
Never smoker	66 (17.9)	466 (83.1)	13.9	22.9	21.8	17.0	28.9*	27.3
Former smoker	149 (40.4)	20 (3.6)	13.8	34.5*	16.1	17.5	45.6**	20.8
Current smoker	154 (41.7)	75 (13.4)	21.8	33.6	25.8	30.6	33.8	31.4
Drinking								
Never drinker	147 (39.8)	490 (87.5)	16.3	24.1*	22.3	19.3	29.6*	27.2
Former drinker	61 (16.5)	15 (2.7)	18.5	54.5**	25.0	27.0	54.5*	32.0
Current drinker	161 (43.6)	55 (9.8)	17.4	22.2	18.9	24.6	28.0	25.5
Age								†
65–74	275 (74.5)	382 (68.1)	17.3	23.7	21.0	20.7	27.4	24.7
75+	94 (25.5)	179 (31.9)	16.8	27.0	23.5	29.2	35.8	33.5
Number of physical illnesses					‡			‡
None	55 (14.9)	49 (8.8)	3.8	5.6	4.8	8.8	16.8	12.5
1–2	209 (56.6)	239 (42.7)	19.6	17.3	18.3	23.1	24.9	24.1
3+	105 (28.5)	272 (48.6)	19.5	34.7**	30.4	30.0	36.9	35.0
Self-rated health					‡			‡
Healthy	93 (25.2)	91 (16.3)	10.7	4.9	7.6	14.0	15.0	14.2
Unhealthy	276 (74.8)	469 (83.8)	19.4	28.6**	25.2	25.9	33.0*	30.4

Notes: [a]The age-adjusted prevalence (%) was calculated after adjusting for 5-year age groups by the direct method using the 2000 National Population Census data.
[b]Weighted sample of adults aged ≥65 years from the 2001 KNHANES.
[c]Monthly household income divided by the square root of the number of household members.
*$p < .05$; **$p < .01$ for difference between men and women.
†$p < .05$; ‡$p < .01$ for difference among different levels of each variable.

by the fact that older women are often expected to provide support and care for their grandchildren while their daughters or daughters-in-law work outside the home. Today, working married women are much more common among younger couples in Korea (Brinton, Lee, & Parish, 1995). However, social support of child care for working mothers is lacking, and, as a result, child care is often transferred to grandparents in the same household (Chae & Jeong, 2004). In a Korean study of parenting stress of working mothers (Kang & Cho, 1999), 58.2% of employed mothers with infants aged 4 to 36 months delegated their caring responsibility to their mothers or mothers-in-law. Living alone was also associated with a three- to sixfold increase in the risks of depressive symptoms and suicidal ideation among men but not among women. When their spouses die, men lose many of the benefits that wives provide, such as emotional support and the maintenance of social contact with children and others

Table 2. Self-Reported Depressive Symptoms and Suicidal Ideation Among Men ($n = 369$) and Women ($n = 561$) Aged 65 Years or Older in the 2001 Korean National Health and Nutrition Examination Survey

	Depressive Symptoms		Suicidal Ideation	
Variable	Men OR (95% CI)	Women OR (95% CI)	Men OR (95% CI)	Women OR (95% CI)
Equivalized household income[a]				
Q3 (high)	1	1	1	1
Q2 (middle)	0.78 (0.33–1.84)	1.61 (0.85–3.02)	1.27 (0.59–2.68)	1.48 (0.85–2.56)
Q1 (low)	1.95 (0.83–4.59)	3.14 (1.57–6.26)	2.29 (1.01–5.16)	2.71 (1.45–5.03)
Education				
Middle school or higher	1	1	1	1
Elementary	1.55 (0.76–3.16)	1.21 (0.50–2.89)	0.39 (0.19–0.80)	1.28 (0.82–2.00)
Uneducated	1.03 (0.44–2.36)	1.39 (0.59–3.22)	0.73 (0.34–1.54)	1.44 (0.93–2.23)
Subjective socioeconomic status				
Not poor	1	1	1	1
Poor	1.85 (0.90–3.74)	1.71 (1.05–2.77)	1.91 (1.00–3.63)	1.40 (0.90–2.16)
Labor market participation				
Active	1	1	1	1
Inactive	1.69 (0.84–3.37)	1.22 (0.66–2.25)	2.19 (1.12–4.26)	1.24 (0.70–2.19)
Living arrangement*				
Living with spouse only	1	1	1	1
Living with spouse and others	1.48 (0.76–2.85)	1.77 (0.79–3.92)	1.60 (0.87–2.93)	2.03 (1.00–4.08)
Widowed and living with others	2.45 (0.80–7.40)	2.41 (1.22–4.74)	3.83 (1.39–10.50)	2.21 (1.20–4.06)
Alone	3.58 (1.18–10.76)	1.10 (0.56–2.17)	5.57 (1.83–16.89)	0.86 (0.45–1.60)
Smoking				
Never smoker	1	1	1	1
Former smoker	0.80 (0.31–2.02)	0.59 (0.18–1.86)	0.69 (0.29–1.63)	0.95 (0.33–2.68)
Current smoker	1.34 (0.53–3.33)	1.29 (0.70–2.35)	1.66 (0.71–3.86)	1.00 (0.56–1.76)
Drinking				
Never a drinker	1	1	1	1
Former drinker	1.04 (0.43–2.47)	3.71 (1.22–12.24)	1.34 (0.59–3.01)	2.45 (0.77–7.71)
Current drinker	1.24 (0.62–2.45)	0.70 (0.34–1.43)	1.80 (0.93–3.44)	0.83 (0.43–1.60)
Age				
65–74	1	1	1	1
75+	1.06 (0.51–2.20)	1.03 (0.68–1.67)	1.90 (0.98–3.65)	1.27 (0.81–1.98)
Number of physical illnesses				
None	1	1	1	1
1–2	5.87 (1.28–26.77)	2.15 (0.57–7.97)	3.27 (1.09–9.78)	1.21 (0.51–2.88)
3+	5.82 (1.20–28.16)	4.76 (1.30–17.45)	5.01 (1.55–16.11)	2.06 (0.86–4.91)
Self-rated health				
Healthy	1	1	1	1
Unhealthy	1.69 (0.72–3.92)	4.84 (1.74–13.41)	2.19 (0.98–4.87)	2.12 (1.09–4.14)

Notes: Adjusted odds ratios (95% CI) were calculated using multiple logistic regression analyses among the weighted sample of adults aged 65 years or older from the 2001 Korean National Health and Nutrition Examination Survey. OR = odds ratio; CI = confidence interval.

[a]Monthly household income divided by the square root of the number of household members. Household equivalized income was categorized into tertiles (high, middle, and low).

*$p < .05$ by Wald chi-square statistic for testing the difference between coefficients for men and women.

(Lee & DeMaris, 2007; Lee et al., 2001). In contrast, a longitudinal health study of women aged 60 to 72 years found that women living alone were not at risk for increased mental health or for isolation from social networks and social engagement (Michael, Berkman, Colditz, & Kawachi, 2001). Unlike our results, the strong relationship between living alone and psychological distress in men was attenuated after adjusting for other social variables (i.e., unemployment, lack of social support, and household income) in a recent representative Finnish study (Joutsenniemi et al., 2006) and an American study (Hughes & Waite, 2002). In our sample, the more strongly gendered pattern of mental health among those living alone reflects the traditional norms governing the roles of men and women in Korean society.

In our study, the harmful consequences of living with other widowed people may partly reflect the influence of spousal loss (Bennett, 1997, 1998; Carr, 2004; Zisook, Paulus, Shuchter, & Judd, 1997). The gender differences in the effects of being widowed and living with others may partly account for the stronger adverse effects of depression on widowers than on widows (Lee et al., 2001; Stroebe, Stroebe, & Schut, 2001)

because the men are more recently bereaved than the women, given the gender differences in mortality patterns (Lee et al., 2001; Mastekaasa, 1994).

Regarding gender differences in other correlates of mental health, we found that labor market participation was a significant correlate in suicidal ideation among men but not among women. According to data compiled by the UNDP (2005), Korean men spend 88% of their time in market activities and 12% in nonmarket activities. In contrast, Korean women allocate 45% of their time to market activities and 55% to nonmarket activities. Although this degree of gender imbalance in time allocation is fairly typical of Asian societies (e.g., Japan, India), the division of labor between market and nonmarket activities is shared much more equally among men and women in developed Western societies (UNDP, 2005). In other words, compared to women, Korean men may be much more invested in their work, deriving status, authority, and meaning from their role as primary breadwinner for their household. Consequently, separation from work roles through either job loss or retirement may be more detrimental to the mental health of men than it is to that of women.

In sum, gender difference in the effects of living arrangements and labor market participation on mental health among elderly Koreans seems to result from two sources specific to Korean society: men's strong traditional social roles that are lost later in life and women's traditional social burdens that are intensified later in life. In addition, the social transition in Korea has increased women's labor participation and has added a new burden to their traditional burden of child care, which now overflows to the older generation.

Turning to other correlates of mental health, our findings demonstrate the importance of household income for mental health among both older men and women. This result is consistent with the results of other studies in Korea (Bae, Kim, & Yoon, 2005; H. S. Kim, 2003) and in Hong Kong (Zhang, Ho, & Woo, 2005). In contrast, evidence relating income to mental health among elderly individuals in Western developed countries is less consistent. Researchers have observed no association of income with depression in some U.S. studies (Kubzansky et al., 2005; Muramatsu, 2003); however, they have found this association in other studies (Kahn & Fazio, 2005). The finding of a strong association between household income and mental health in Korea may be explained, in part, by inadequate social safety nets for elders. For example, only 12.4% of elderly Koreans receive a public pension, and only 15.6% of these pensioners receive a pension designed to help protect elderly people with low incomes who are excluded from the National Pension Scheme (National Pension Service and Korea Institute for Health and Social Affairs, 2005). Thus, the family still remains the traditional unit for the care and support of elders, who tend to live with their children, predominantly with their sons (J. S. Kim, 2005). Taking care of elders has become a burden for low-income families, especially since the 1997 economic crisis that has deepened income inequality in South Korea (C. H. Kim & Jung, 2003).

Readers should consider several limitations when interpreting our results. First, our data were cross-sectional, so we cannot rule out reverse causation for several of the associations we found. For example, mental health problems could precipitate job loss and early retirement, rather than vice versa. People with mental health problems may also tend not to marry or may become separated from their spouses, and thus may more frequently live alone. However, we would have expected these biases to operate similarly for men and women, whereas we found a strong association only among men and not among women. This suggests that some other process is at work besides social selection alone.

Our measures were also limited in several respects. The KNHANES survey included information on living arrangement only. No detailed information was available on such factors as the household division of labor, caregiving burdens, availability of social support, and expectations of reciprocity. Further studies are needed to examine how such variables could explain gender differences in mental health, as well as the relationships between work and home conflicts and mental health. Finally, our study was limited with respect to the single-item measures used to assess mental health problems. Although the single-item assessments probably had limited reliability, we nevertheless demonstrated that each outcome (depressive symptoms and suicidal ideation) was associated with known predictors in the expected directions.

In summary, this study provides support for the evidence of differential impact of social resources in mental health between men and women and suggests that social components of gender differences in mental health may differ across diverse cultures. We invite more empirical evidence from diverse cultural settings, especially from Asian societies, to substantiate this finding.

Correspondence

Address correspondence to Soong-Nang Jang, PhD, Center for Aging and Population Research, Institute of Health and Environment, Seoul National University, 28 Yeongun-dong, Jongno-gu, Seoul, Republic of Korea. E-mail: jysr@snu.ac.kr

References

Allison, P. D. (1999). Comparing logit and probit coefficients across groups. *Sociological Methods & Research, 28*(2), 186–208.

Allison, P. D. (2003). *Logistic regression using the SAS system: Theory and application*. Cary, NC: SAS Institute.

Aneshensel, C. S., Rutter, C. M., & Lachenbruch, P. A. (1991). Social structure, stress, and mental health: Competing conceptual and analytic models. *American Sociological Review, 56*, 166–178.

Bae, J. Y., Kim, W. H., & Yoon, K. A. (2005). Noinui uul mit jasal senggake yiseoseo saheoigeock jijiui wanchung hyogwua [Depression, suicidal thoughts and the buffering effect of social support among the elderly]. *Journal of the Korean Gerontological Society, 25*, 59–73.

Bennett, K. M. (1997). Widowhood in elderly women: The medium and long-term effects on mental and physical health. *Mortality, 2*, 137–148.

Bennett, K. M. (1998). Longitudinal changes in mental and physical health among elderly, recently widowed men. *Mortality, 3*, 265–273.

Brinton, M. C., Lee, Y. J., & Parish, W. L. (1995). Married women's employment in rapidly industrializing societies: Examples from East Asia. *American Journal of Sociology, 100*, 1099–1130.

Carr, D. S. (2004). Black/white differences in psychological adjustment to spousal loss among older adults. *Research on Aging, 26*, 591–622.

Chae, O. H., & Jeong, E. M. (2004). Chuiyeophan kihonyeosungui janyio boyook seobis geseonul weihan gyeon [A proposal to improve child care services for working mothers]. *Korean Journal of Human Ecology, 7*(2), 81–96.

Hughes, M. E., & Waite, L. J. (2002). Health in household context: Living arrangements and health in late middle age. *Journal of Health and Behaviors, 43*(1), 1–21.

Joutsenniemi, K., Martelin, T., Martikainen, P., Pirkola S., & Koskinen, S. (2006). Living arrangements and mental health in Finland. *Journal of Epidemiology and Community Health, 60*, 468–475.

Kahn, J. R., & Fazio, E. M. (2005). Economic status over the life course

and racial disparities in health. *Journal of Gerontology: Social Sciences, 60B*, S76–S84.

Kang, H. K., & Cho, B. H. (1999). Samseyiha janiorul dun jeonmoon, samoojick chuieopmoui yangyookstress: eomoni yokwhalgwangwa jiwonchekyerul joongsimuro [Dual-career parenting stress: Effects of mothers' values and support systems]. *Korean Association of Child Studies, 20*(2), 41–55.

Kim, C. H., & Jung, S. H. (2003). Je Ojang Gyonggeuikiwa bingon, gurigo geongang [Economic crisis, poverty, and health]. In C. H. Kim (Ed.), *Bingongwa geongang* [Poverty and health] (pp. 123–136). Seoul, South Korea: Hanul Press.

Kim, C. S., & Rhee, K. O. (1997). Variation in preferred living arrangements among Korean elderly parents. *Journal of Cross-Cultural Gerontology, 12*, 189–202.

Kim, H. S. (2002). Hankooknoinui jasalsanggakgwa gualryunyoin yeongu [A study on the epistemology of suicidal thoughts among elderly Koreans]. *Journal of the Korean Gerontological Society, 22*(1), 159–172.

Kim, I. H., Muntaner, C., Khang, Y. H., Paek, D., & Cho, S. I. (2006). The relationship between nonstandard working and mental health in a representative sample of the South Korean population. *Social Science & Medicine, 63*, 566–574.

Kim, J. S. (2005). Hankooknobumodului nohubuyangguan byonwha [Changes in attitudes of Korean elderly parents toward old-age support, 1994–2004]. *Journal of the Korean Gerontological Society, 25*(4), 1–11.

Korean Ministry of Health and Welfare. (2002). *The Korean National Health and Nutrition Examination Survey 2001*. Seoul, South Korea: Author.

Kubzansky, L. D., Subramanian, S. V., Kawachi, I., Fay, M. E., Soobader, M. J., & Berkman, L. F. (2005). Neighborhood contextual influences on depressive symptoms in the elderly. *American Journal of Epidemiology, 162*, 253–260.

Lee, G. R., & DeMaris, A. (2007). Widowhood, gender, and depression: A longitudinal analysis. *Research on Aging, 29*, 56–72.

Lee, G. R., DeMaris, A., Bavin, S., & Sullivan, R. (2001). Gender differences in the depressive effect of widowhood in later life. *Journal of Gerontology: Social Sciences, 56B*, S56–S61.

Logan, J. R., & Spitze, G. D. (1996). *Family ties: Enduring relations between parents and their grown children*. Philadelphia: Temple University Press.

Mastekaasa, A. (1994). The subjective well-being of the previously married: The importance of unmarried cohabitation and time since widowhood or divorce. *Social Forces, 73*, 665–692.

Michael, Y. L., Berkman, L. F., Colditz, G. A., & Kawachi, I. (2001). Living arrangements, social integration, and change in functional health status: Prospective evidence from the Nurses' Health Study. *American Journal of Epidemiology, 153*, 123–131.

Mirowsky, J. (1996). Age and the gender gap in depression. *Journal of Health and Social Behavior, 37*, 362–380.

Mirowsky, J., & Ross, C. E. (1995). Sex difference in distress: Real or artifact? *American Sociological Review, 60*, 449–468.

Möller-Leimkühler, A. M. (2003). The gender gap in suicide and premature death or: Why are men so vulnerable? *European Archives of Psychiatry and Clinical Neuroscience, 253*, 1–8.

Muramatsu, N. (2003). County-level income inequality and depression among older Americans. *Health Services Research, 38*, 1863–1883.

National Pension Service and Korea Institute for Health and Social Affairs. (2005). Hyonnoryungchungui sodeokbojang kangwhabangan maryun [The strategies for income security of the elderly]. Seoul, South Korea: Korean Ministry of Health and Welfare.

Palley, M. L. (1990). Women's status in South Korea: Tradition and change. *Asian Survey, 30*, 1136–1153.

Rosenfield, S., Vertefuille, J., & McAlpine, D. D. (2000). Gender stratification and mental health: An exploration of dimension of the self. *Social Psychology Quarterly, 63*(3), 208–223.

Silverstein, M., & Bengtson, V. L. (1994). Does intergenerational social support influence the psychological well-being of older parents? The contingencies of declining health and widowhood. *Social Science & Medicine, 38*, 943–957.

Silverstein, M., Cong, Z., & Li, S. (2006). Intergenerational transfers and living arrangements of older people in rural China: Consequences for psychological well-being. *Journal of Gerontology: Social Sciences, 61B*, S256–S266.

Simon, R. W. (1995). Gender, multiple roles, role meaning, and mental health. *Journal of Health and Social Behavior, 36*, 182–194.

Stroebe, M., Stroebe, W., & Schut, H. (2001). Gender differences in adjustment to bereavement: An empirical and theoretical review. *Review of General Psychology, 5*(1), 62–83.

Takeda, Y., Kawachi, I., Yamagata, Z., Hashimoto, S., Matsumura, Y., Oguri, S., et al. (2004). Multigenerational family structure in Japanese society: Impacts on stress and health behaviors among women and men. *Social Science & Medicine, 59*, 69–81.

Turner, H. A., & Turner, R. J. (1999). Gender, social status, and emotional reliance. *Journal of Health and Social Behavior, 40*, 360–373.

Umberson, D., Wortman, C. B., & Kessler, R. C. (1992). Widowhood and depression: Explaining long-term gender differences in vulnerability. *Journal of Health and Social Behavior, 33*, 10–24.

United Nations Development Programme. (2005). *UNDP human development report 2005*. New York: Author.

Wang, J. J., Snyder, M., & Kaas, M. (2001). Stress, loneliness, and depression in Taiwanese rural community-dwelling elders. *International Journal of Nursing Studies, 38*, 339–347.

Zhang, J. X., Ho, S. C., & Woo, J. (2005). Assessing mental health and its association with income and resource utilization in old-old Chinese in Hong Kong. *American Journal of Geriatric Psychiatry, 13*(3), 236–243.

Zisook, S., Paulus, M., Shuchter, S. R., & Judd, L. L. (1997). The many faces of depression following spousal bereavement. *Journal of Affective Disorders, 45*, 85–95.

Zunzunegui, M. V., Béland, F., & Otero, A. (2001). Support from children, living arrangements, self-rated health and depressive symptoms of older people in Spain. *International Journal of Epidemiology, 30*, 1090–1099.

Received October 26, 2006
Accepted April 3, 2007
Decision Editor: Kenneth F. Ferraro, PhD