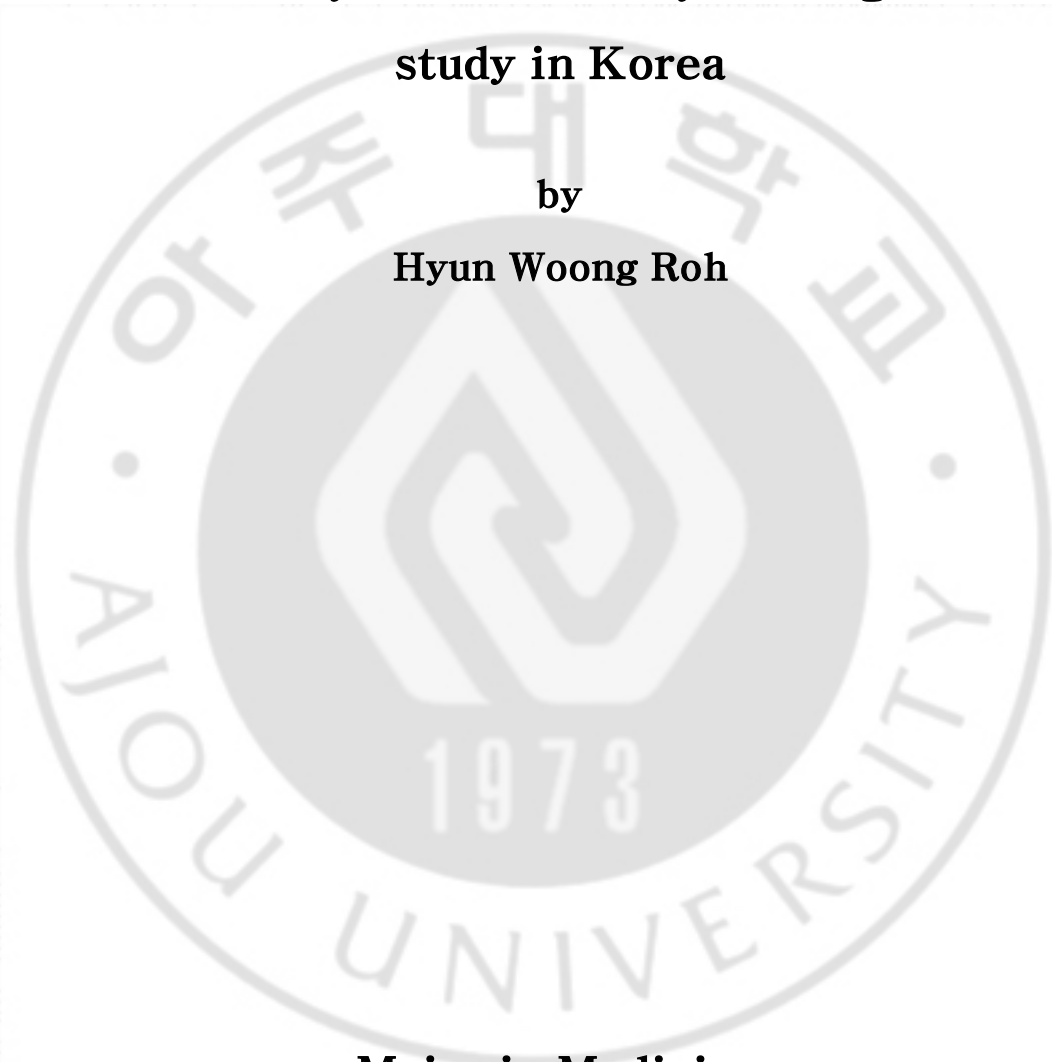


**Frequency of contact with non-cohabitating
adult children and risk of depression in elderly:
A community-based three-year longitudinal
study in Korea**

by

Hyun Woong Roh



Major in Medicine

Department of Medical Sciences

The Graduate School, Ajou University

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**A Dissertation Submitted to The Graduate School of
Ajou University in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Medicine**

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Abstract

Purpose: Our study aimed to assess the longitudinal association of frequency of contact with non-cohabitating adult children and risk of depression in the elderly.

Method: Elderly aged ≥ 60 years were included from Living Profiles of Older People Survey (LPOPS) in Korea. The baseline assessment, Wave 1, was conducted in 2008, and follow-up assessment, Wave 2, was conducted in 2011. We included participants who completed both waves and excluded those who met the following criteria: no adult children, living with adult children, cognitive impairment at either waves, and depression at baseline ($n = 4398$). We defined infrequent contact as <1 time per month face-to-face contact or <1 time per week phone contact and classified participants into four groups based on contact method and frequency. Depression was measured using the 15-item geriatric depression scales (SGDS-K).

Results: In multivariable logistic regression analysis, infrequent face-to-face and phone contact group had adjusted odds ratio (OR) of 1.86 (95% CI, 1.44–2.42) when compared with frequent face-to-face and phone contact group. Frequent face-to-face contact with infrequent phone contact group and infrequent face-to-face contact with frequent phone contact group had adjusted OR of 1.49 (95% CI, 1.12–1.98) and 1.44 (95% CI, 1.15–1.80), respectively, when compared with frequent face-to-face and phone contact group.

Conclusion: These results propose that the risk of subsequent depression in elderly is associated with frequency of contact with non-cohabitating adult children. Moreover, the efficacy of face-to-face contact and that of phone contact were similar, while the group lacking both types of contact demonstrated the highest risk of depression.

Keywords: Depression, Frequency of contact, Face-to-face contact, Phone contact, Elderly, Adult children



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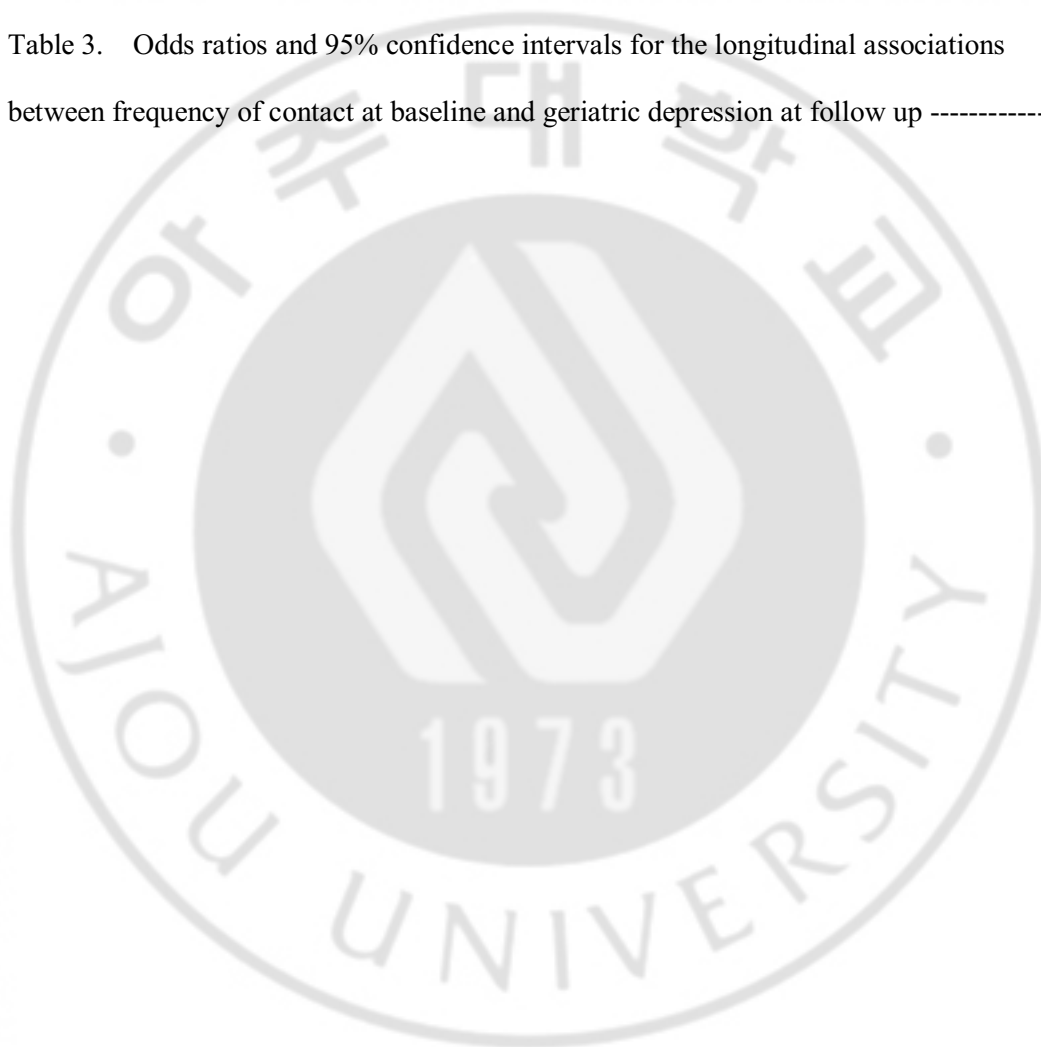
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I. INTRODUCTION

The increasing prevalence of depression among the elderly is an emerging major public health problem in Korea. Several community-based studies have demonstrated a high prevalence of geriatric depression around 15%, and as high as 33% (Cho et al., 1998; Kim et al., 2003). The elderly population also has been increasing at an unprecedented rate. According to the latest government projections, 40% of the population will be elderly by 2060 (Korea National Statistical Office [KNSO], 2011). The aging population is attributed to the aging of the baby boom generation born after the Korean War in 1950. There has also been a dramatic rise in life expectancy, along with rapid economic and medical advances. The total fertility rate has also decreased from 6.0 in 1960 to 1.2 in 2010 (KNSO, 2011). The speed of this demographic transition is one of the fastest paced in the world. In addition to the change in population structure, massive industrialization and urbanization has reorganized the traditional agrarian family-centered extended family system into a westernized nuclear family system. (Choi, 1996; Sung, 2001).

Over the past decades, the proportion of elderly individuals living with their adult children has steadily decreased from 81.5% in 1980 to 38.2% in 2011 (Korea Institute for Health and Social Affairs, 1981, 2012). Most Asian people still conceive of the family as the basic social unit for elderly care. However, some authors suggest that the rapid reorganization of the family system is likely to erode the family's ability to provide emotional and physical support for the elderly, as well as decrease elderly co-residence with adult children (Knodel and Debavalya, 1992; Mason, 1992). In fact, the nucleation of the family system associated with urbanization and industrialization in developing countries was

indicated to be an important risk factor for depression in the elderly (Harpham, 1994; Taqui et al., 2007). In addition, many studies have revealed that geriatric depression could be highly associated with a lack of social interaction and support from social networks (Chi and Chou, 2001; Bruce, 2002; Kim et al., 2004; Taqui et al., 2007; Kwon et al., 2009; Chen et al., 2012). The association between social relationships and geriatric depression has long been of interest. It has generally been accepted that social relationships act as a buffer to physical or emotional stress. Furthermore, it is well documented that weak social ties and social relationship deficits could result in adverse physical and mental health problems among the elderly (House et al., 1988; Mojtabai and Olfson, 2004; Routasalo et al., 2006; Steptoe et al., 2013; Teo et al., 2013).

The rapid demographic transition accompanied by changing in family systems, decreasing numbers of elderly living with their adult children, and an association between social relationships and geriatric depression, highlight the important of attending to the relationship between adult children and their elderly parents. In addition, as the size of the social network usually decreases as the elderly grow older, elderly parents' relationships with adult children becomes a greater proportion of their social relationships (Ajrouch et al., 2001). Especially in Asian countries where blood relations have been emphasized, relationships between adult children and elderly parents have previously been considered a core element of the family structure (Choi, 2009). The connectedness between adult children and elderly parent should be assessed using a multidimensional concept made up of: frequency of contact, emotional closeness, agreement in values, geographic distance, financial support and strength of expectations and obligations (Roberts and Bengtson, 1990).

However, based on the rapid rise in the proportion of the elderly who do not live with their children, there is growing interest in frequency of contact between the elderly and non-cohabitating adult children. That said, there is paucity of well-controlled studies about the association of geriatric depression and frequency of contact between adult children and elderly parents.

In addition, change in the family system and steady migration of rural youth to urban areas has led to changing methods of contact between elderly parents and their adult children. Although face-to-face contact is less accessible for elderly parents who live far away from their adult children, the widely popular use of telephones and cellphones make interaction easier. However, there is no comparative study to identify the potential differences in effectiveness between face-to-face and phone contact.

The objective of the present study was to assess the longitudinal association of frequency of contact between elderly parents with non-cohabitating adult children and the risk of depression. We hypothesized that infrequent contact with non-cohabitating adult children would increase the risk of subsequent depression in cognitively intact non-depressed elderly parents. We also utilized a comparative approach to identify differences in effectiveness between face-to-face contact and phone contact.

II. MATERIALS AND METHODS

A. PARTICIPANTS

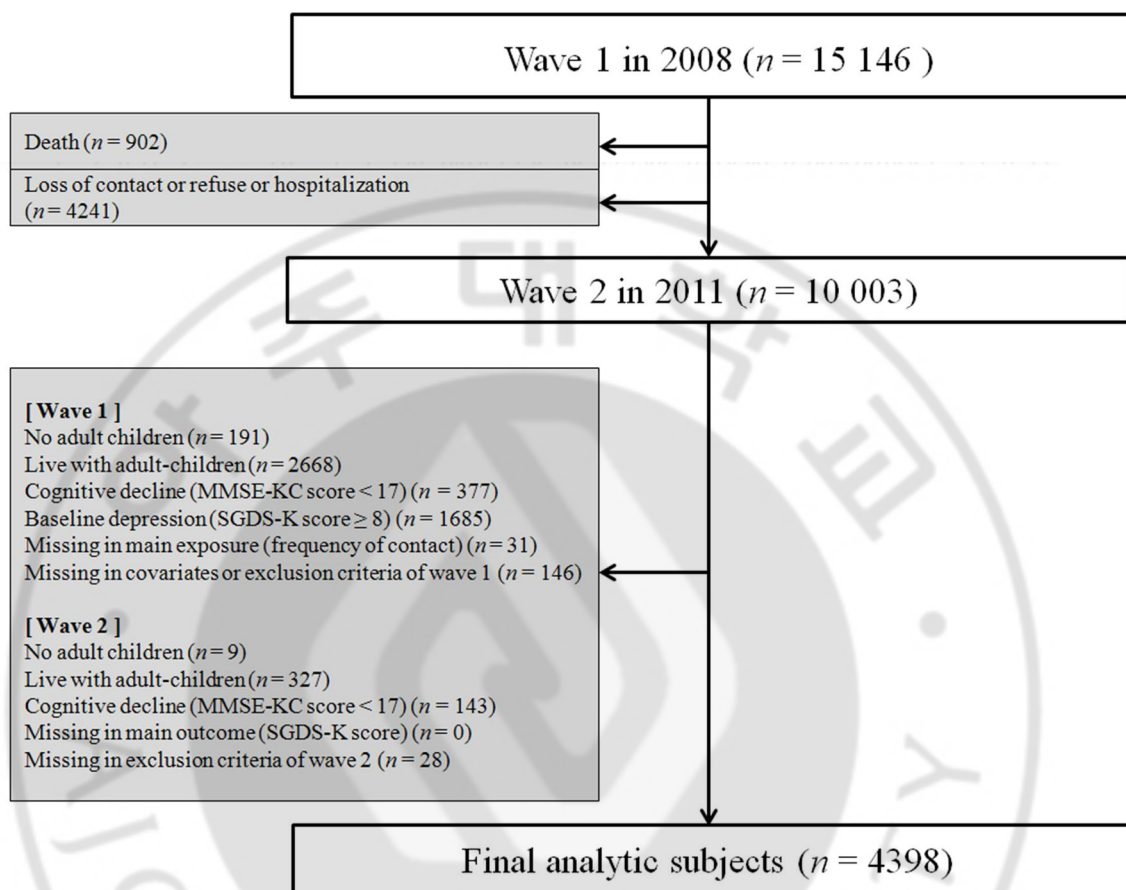
Participants were from the Living Profiles of Older People Survey (LPOPS) conducted by the Ministry of Health Welfare and Family in Korea. The LPOPS was planned as nationwide three-year interval longitudinal survey and started in 2008. The geographic and demographic information based two-stage stratified cluster sampling method was applied. First, the data were stratified by seven constituent metropolitan areas and nine constituent provinces, with the nine provinces further stratified by urban area (neighborhood) and rural area (town or township). The subjects were then allocated to their 25 secondary geographic strata. This geographic stratification covered all of six-teen metropolitan areas or provinces in Korea. Sampling within secondary geographic strata was done using auxiliary stratification indexes such as gender ratio and average age obtained from surveys to yield a representative sample. At baseline, participants were informed of the survey and invited to participate in it via telephone. Approximately four weeks later, trained interviewers visited participants' homes and completed informed consent and the full survey and written questionnaire. This process was repeated for Wave 2. The baseline assessment, Wave 1, was conducted in 2008, and a follow-up assessment, Wave 2, was conducted in 2011. Out of the 19 007 non-institutionalized elderly 60 years of age or older who had been invited to LPOPS, 15 146 had completed the baseline assessment. Response rate of LPOPS at baseline assessment was 79.7%. Of the baseline participants, at follow-up three years later, 902 (6.0%) elderly had died and 4241 (28.0%) had not completed survey due to refusal, hospitalization, institutionalization or loss of contact. This left a final follow-up sample of 10 003 (66.6%). A

more detailed description of LPOPS is available elsewhere (Han et al., 2014; Lee et al., 2014).

For our analysis, we included participants who completed both waves and excluded those who met following criteria: no adult children, living with adult children, cognitive impairment at either waves and depression at baseline. A total of 4398 participants were included in the final analysis (Fig 1).



Fig. 1. Flow chart of participants.



MMSE-KC: Korean version of mini mental state examination, SGDS-K: Korean version of 15-item geriatric depression scale.

B. ASSESSMENTS AND MEASUREMENTS

1. *Depression*

Depression was our primary outcome of interest. It was measured using the Korean version of the 15-item Geriatric Depression Scale (SGDS-K), which was introduced by Sheik and Yesavage and translated into Korean by Cho et al (Sheik & Yesavage, 1986; Bae & Cho, 2004). SGDS-K scores range from 0 to 15 and are highly correlated with the 30-item Korean version of Geriatric Depression Scale. A community-based study in Korea suggested the optimal cut-off point for screening major depressive disorder as a SGDS-K score of 8 or higher, and the sensitivity and specificity of the findings were 93.6% and 76.0%, respectively. The SGDS-K had satisfactory reliability (Cronbach's alpha of 0.90) and validity (Sheikh JI, 1986; Bae and Cho, 2004; Lee et al., 2013).

2. *Frequency of contact*

Frequency of contact with non-cohabitating adult children was our primary exposure of interest, and it was assessed utilizing verbal questions posed by trained interviewers. Participants were asked, "How often are you in face-to-face contact with adult children who do not live with you?", and "How often are you in phone contact with adult children who do not live with you?" As the use of Voice-over-Internet Protocol (VoIP) was not specified in our questionnaires, we were not able to know whether VoIP was used by our participants or not. Seven response options were available for the two questions, ranging from 1= "daily contact" to 7= "hardly ever." Although there was no specific research to suggest optimal cut-off point for effectiveness of social contact, previous research revealed that once a month or

once a week face-to-face or phone contact have protective effects on depression in elderly (Harris et al., 2003; Guerra et al., 2009). After consideration of existing research and the distribution of responses in our study, we defined infrequent contact as less than once a month face-to-face contact or less than once a week phone contact. At this binary cut-off point, the percentage of participants who had infrequent face-to-face and infrequent phone contact was 20.4% and 14.6%, respectively. Based on this operational definition, we expected to be able to suggest an intuitive and realizable intervention point for public campaigns or family education programs for community mental health services. Subsequently, we classified participants into four groups based on the responses to questions about the frequency of their face-to-face and phone contact. Group 1 was comprised of participants who responded that they had frequent face-to-face contact and frequent phone contact. Group 2 was comprised of participants who responded that they had frequent face-to-face contact and infrequent phone contact. Group 3 was comprised of participants who responded that they had infrequent face-to-face contact and frequent phone contact. Group 4 was comprised of participants who responded as having infrequent face-to-face contact and infrequent phone contact. As a result, 3196 (72.7%) participants were classified into Group 1, 301 (6.8%) participants were classified into Group 2, 563 (12.8%) participants were classified into Group 3, and 338 (7.7%) participants were classified into Group 4. (Table 1)

Table 1 Classification of participants by frequency of contact at baseline ($n = 4398$).

Type of contact	<i>n</i>	%
Frequency of “Face to Face” contact		
Daily contact	492	11.2
Twice or three times a week	601	13.7
Once a week	1,020	23.2
Once or twice a month	1,384	31.5
Once or twice every 3 months	672	15.3
Once or twice a year	213	4.8
No contact	16	0.4
Frequency of “Phone” contact		
Daily contact	1,178	26.8
Twice or three times a week	1,406	32.0
Once a week	1,175	26.7
Once or twice a month	545	12.4
Once or twice every 3 months	62	1.4
Once or twice a year	25	0.6
No contact	7	0.2
Combination of frequency of contact ^a		
Group 1 (both)	3,196	72.7
Group 2 (face to face)	301	6.8
Group 3 (phone)	563	12.8
Group 4 (neither)	338	7.7

^aGroup 1 (≥ 1 time/month in frequency of “face to face” contact and ≥ 1 time/week in frequency of “phone” contact), group 2

(≥ 1 time/month in frequency of “face to face” contact and <1 time/week in frequency of “phone” contact), group 3 (<1

time/month in frequency of “face to face” contact and ≥ 1 time/week in frequency of “phone” contact), group 4 (<1 time/month

in frequency of “face to face” contact and <1 time/week in frequency of “phone” contact).

3. Other variables

Covariates assessed in this study were age, gender, education, quartiles of household income, area of residency, smoking, alcohol intake, number of diseases, disability, cognitive function, number of adult children and baseline SGDS-K score.

Area of residency was assessed using the Korean administrative division system in. Thus, rural area was defined by town (*eup*) or township (*myeon*), which is the smallest subdivision level of rural government. Urban area was defined by neighborhood (*dong*), which is the smallest subdivision level of urban government.

Number of diseases was counted when the elderly responded that they had a disease that was diagnosed by a physician. Our questionnaire included: four cardiovascular diseases (hypertension, stroke, hyperlipidemia and angina pectoris), two endocrine diseases (diabetes and thyroid disease), four musculoskeletal diseases (arthritis, osteoporosis, back pain and sciatica), three pulmonary diseases (chronic obstructive pulmonary disease, asthma and tuberculosis), three eye and ear diseases (cataracts, glaucoma and chronic otitis media), oncologic diseases (all cancers), three gastrointestinal diseases (ulcer or gastritis, hepatitis and liver cirrhosis), four genitourinary diseases (chronic renal failure, benign prostate hyperplasia, urinary incontinence and sexually transmitted infection) and other diseases (anemia and chronic dermatologic disease).

Disability was measured using the Korean version of the Instrumental Activities of Daily Living scale (K-IADL). The K-IADL includes 10 questions about instrumental daily living and scores range from 10 to 33. Lower scores mean a higher capability for instrumental daily living. The K-IADL had satisfactory reliability (Cronbach's alpha of 0.94) and validity (Won

et al., 2002a; Won et al., 2002b).

Cognitive function was measured using the Korean version of the Mini Mental State Examination (MMSE-KC). The MMSE-KC includes 26-items for temporal orientation, registration, recollection, concentration, calculation, language, understanding, and judgment. MMSE-KC scores range from 0 to 30. Higher scores mean a higher level of cognitive function. A community-based study in Korea defined the cut-off point on the MMSE-KC for screening dementia as score of 16 or lower, and the sensitivity and specificity of the findings were 76.8% and 90.0%, respectively. The MMSE-KC had satisfactory reliability (Cronbach's alpha of 0.83) and validity (Lee et al., 2002; Lee et al., 2009). A trained interviewer used a written questionnaire to assess other covariates.

C. STATISTICAL ANALYSIS

Descriptive statistics were performed. Categorical variables were compared using the Chi-square test for trend, and continuous variables were compared using an ANOVA for each of the frequency of contact groups. Depression was a dichotomous variable that was determined by SGDS-K score. After checking collinearity, forward stepwise multiple logistic regression analysis was used to examine the association of frequency of contact and risk of geriatric depression. The Hosmer and Lemeshow test was used to confirm goodness of fit for the logistic regression model. Unadjusted as well as adjusted odds ratios (ORs) were presented using a 95% confidence interval (CI). A p -value < 0.05 was considered statistically significant. Data were analyzed using The Statistical Package for Social Sciences (IBM SPSS Statistics 18.0).

III. RESULTS

A. GENERAL CHARACTERISTICS OF PARTICIPANTS

The general characteristics of the total participants and participants in each of the frequency of contact groups are provided in Table 2. Of the 4398 participants without geriatric depression at baseline, 883 (20.1%) participants had geriatric depression (SGDS-K score ≥ 8) at follow-up. The mean age of total participants was 69.9 years (SD = 5.7) and majority of participants (94.3%) were in the age range of 60–79 years. Approximately 47.4% of the participants were men and 52.6% were women. Among the participants, 78.4% had some form of formal education. Of these, 44.5% had attained elementary school level education (1~6 years), 26.9% had attained middle to high school level (7~12 years), and 7.0% had attained college level (over 13 years). As the household income was categorized into a quartile variable based on 15 146 persons in Wave 1, our study participants who did not live with their children demonstrated relatively low household income. Only 15.2% of the participants were classified into the upper quartile household income group. Approximately 13.8% of the participants were current smokers, and 38.7% were current drinkers. The mean number of diseases was 1.8 (SD = 1.5), the mean K-IADL score was 10.3 (SD = 1.3) and the mean MMSE-KC score was 25.0 (SD = 3.2). The mean number of adult children was 4.0 (SD = 1.5) (Table 2). There were statistically significant baseline group differences in age, education, household income quartile, area of residency, MMSE-KC score and SGDS-K score (Table 2).

Table 2 Baseline characteristics of the study participants by frequency of contact (n= 4,398).

Variable	Frequency of contact ^a					F or χ^2 ^b	p-value
	Total (n= 4,398)	Group 1 (n= 3,196)	Group 2 (n= 302)	Group 3 (n=564)	Group 4 (n= 338)		
Age	69.9±5.7	69.8±5.7	70.6±5.9	69.8±5.8	70.5±5.8	3.595	0.013
Gender							
Men	2084 (47.4)	1523 (47.7)	137 (45.5)	262 (46.5)	162 (47.9)	0.088	0.766
Women	2314 (52.6)	1673 (52.3)	164 (54.5)	301 (53.5)	176 (52.1)		
Education							
No education	948 (21.6)	626 (19.6)	79 (26.2)	138 (24.5)	105 (31.1)	46.142	<0.001
1-6 years	1958 (44.5)	1412 (44.2)	140 (46.5)	254 (45.1)	152 (45.0)		
7-12 years	1183 (26.9)	902 (28.2)	63 (20.9)	149 (26.5)	69 (20.4)		
≥ 13 years	309 (7.0)	256 (8.0)	19 (6.3)	22 (3.9)	12 (3.6)		
Quartiles (Q) of household income							
Q1 (lowest)	943 (21.4)	622 (19.5)	79 (26.2)	112 (19.9)	130 (38.5)	80.609	<0.001
Q2	1403 (31.9)	954 (29.8)	115 (38.2)	220 (39.1)	114 (33.7)		
Q3	1385 (31.5)	1083 (33.9)	78 (25.9)	150 (26.6)	74 (21.9)		
Q4 (highest)	667 (15.2)	537 (16.8)	29 (9.6)	81 (14.4)	20 (5.9)		
Area of residency							
Rural	1945 (44.2)	1281 (40.1)	143 (47.5)	338 (60.0)	183 (54.1)	79.548	<0.001
Urban	2453 (55.8)	1915 (59.9)	158 (52.5)	225 (40.0)	155 (45.9)		
Smoking							
Ex or none smoker	3789 (86.2)	2777 (86.9)	249 (82.7)	474 (84.2)	289 (85.5)	3.005	0.083
Current smoker	609 (13.8)	419 (13.1)	52 (17.3)	89 (15.8)	49 (14.5)		
Alcohol intake							
No drinking	2695 (61.3)	1948 (61.0)	187 (62.1)	353 (62.7)	207 (61.2)	0.002	0.961
Once a week (or less)	852 (19.4)	632 (19.8)	64 (21.3)	93 (16.5)	63 (18.6)		
Two times a week (or more)	851 (19.3)	616 (19.3)	50 (16.6)	117 (20.8)	68 (20.1)		
Number of disease	1.8±1.5	1.8±1.5	1.7±1.4	1.7±1.4	1.9±1.6	1.717	0.161
K-IADL score	10.3±1.3	10.3±1.2	10.3±1.6	10.3±1.4	10.5±2.0	1.820	0.141
MMSE-KC score	25.0±3.2	25.1±3.1	24.5±3.3	24.8±3.1	24.5±3.1	7.218	<0.001
Number of adult children	4.0±1.5	4.0±1.4	3.9±1.5	3.9±1.5	3.8±1.6	2.107	0.097

SGDS-K score	2.4±2.2	2.3±2.2	2.7±2.3	2.5±2.3	2.7±2.3	6.112	<0.001
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Values are mean ± standard deviation (SD) or *n* (%).

^aGroup 1 (≥1 time/month in frequency of “face to face” contact and ≥1 time/week in frequency of “phone” contact) group 2

(≥1 time/month in frequency of “face to face” contact and <1 time/week in frequency of “phone” contact), group 3 (<1

time/month in frequency of “face to face” contact and ≥1 time/week in frequency of “phone” contact), group 4 (<1 time/month

in frequency of “face to face” contact and <1 time/week in frequency of “phone” contact).

^b Analysis of variance (ANOVA) for continuous variables and χ^2 -test for categorical variables.

K-IADL: Korean version of instrumental activities of daily living, MMSE-KC: Korean version of mini mental state examination, SGDS-K: Korean version of 15-item geriatric depression scale.



B. LONGITUDINAL ASSOCIATION BETWEEN FREQUENCY OF CONTACT AT BASELINE AND RISK OF DEPRESSION AT FOLLOW UP

In the univariable analysis, all variables except current smoking were associated with subsequent geriatric depression. As the covariates assessed in this study were already known or expected risk factors associated with the exhibition of geriatric depression, these results were acceptable.

In the multivariable analysis, age, gender, education, household income, area of residency, smoking, alcohol intake, number of disease, K-IADL score, MMSE-KC score, number of adult children, SGDS-K score and frequency of contact group were subjected to forward stepwise multiple logistic regression model and seven variables were selected by computerized process. The best fit multivariable model to predict risk of depression included age, education, household income, smoking, number of diseases, SGDS-K scores and frequency of contact group.

In the results related to frequency of contact between elderly participants and their non-cohabitating adult children, the infrequent face-to-face and phone contact group (Group 4) had an adjusted OR of 1.86 (95% CI, 1.44–2.42) when compared with frequent face-to-face and phone contact group (Group 1). The frequent face-to-face contact with infrequent phone contact group (Group 2) and infrequent face-to-face contact with frequent phone contact group (Group 3) had an adjusted OR of 1.49 (95% CI, 1.12–1.98) and 1.44 (95% CI, 1.15–1.80), respectively, when compared with frequent face-to-face and phone contact group (Group 1) (Table 3).

Table 3 Odds ratios (OR) and 95% confidence intervals (CIs) for the longitudinal associations between frequency of contact at baseline and geriatric depression (SGDS-K score ≥ 8) at follow-up ($n = 4398$).

Variable	Univariable model			Multivariable model ^a		
	OR	95% CI	P-Value	OR	95% CI	P-Value
Frequency of contact ^b						
Group 1 (both) (ref)	1.00			1.00		
Group 2 (face to face)	1.72	1.31-2.26	<0.001	1.49	1.12-1.98	0.006
Group 3 (phone)	1.54	1.25-1.91	<0.001	1.44	1.15-1.80	0.001
Group 4 (neither)	2.26	1.77-2.89	<0.001	1.86	1.44-2.42	<0.001

^aForward stepwise multiple logistic regression analysis was conducted.

^bGroup 1 (≥ 1 time/month in frequency of “face to face” contact and ≥ 1 time/week in frequency of “phone” contact) group 2

(≥ 1 time/month in frequency of “face to face” contact and < 1 time/week in frequency of “phone” contact), group 3 (< 1

time/month in frequency of “face to face” contact and ≥ 1 time/week in frequency of “phone” contact), group 4 (< 1

time/month in frequency of “face to face” contact and < 1 time/week in frequency of “phone” contact).

SGDS-K: Korean version of 15-item geriatric depression scale.

IV. DISCUSSION

This community-based three year longitudinal study in Korea demonstrated that, even after adjustments were made for known confounding factors, among cognitively intact and non-depressed elderly who did not cohabit with adult children the risk of developing depression was associated with frequency of contact with non-cohabitating adult children.

Preceding researchers have shown that the elderly's social network affects their physical and psychological well-being by buffering stress and promoting health relevant behaviors (House et al., 1988; Kawachi and Berkman, 2001). However, the approaches utilized in prior studies have been insufficient in identifying what kinds of relationships are important for the elderly. Moreover, existing research has not quantitatively assessed the effects of such important relationships on the elderly. Only a few studies have exhibited that qualitative aspects of marriage-like relationships had effect on anxiety or depression (Kiecolt-Glaser and Newton, 2001; Frech and Williams, 2007). In contrast, the present research, taking into consideration the rapid demographic transition and family system changes that are occurring in Korea, made the first research to focus solely on the quantitative aspects of relationships between the elderly and non-cohabitating adult children and obtained positive results.

There are several possible interpretations of the results about the association between the elderly's frequency of contact with non-cohabitating adult children and risk of depression. First, non-cohabitating adult children could play a key role in positively affecting the social network of their elderly parents. It is well known that an older population experiences more losses of spouse, reduction in the range of relationships with friends, and difficulty developing new relationships. In such a situation, relationships with adult children become

an increasingly more important component of the elderly's social network (Ajrouch et al., 2001). Therefore, for those that have frequent contact with non-cohabiting children who can thus be conceived as a key part of their social network, it is highly likely that adult children play a core role in facilitating a sense of being cared for, buffering emotional stress and promoting positive health related behaviors. Therefore, these factors may be a reason for the decrease in the risk of subsequent depression. Second, the elderly who have frequent contact with non-cohabiting children could have an increased sense of self-efficacy. It has been demonstrated that there is a reciprocal relationship between the elderly and their adult children, and it is established that a balanced relationship is an important factor that greatly affects mental health and relationship quality (Schwarz et al., 2005; Fyrand, 2010). Specifically, elderly parents do not want to be passive recipients of one-sided support, but to continue playing an active parental role. In some circumstances, elderly parents remain the main source of emotional support for their adult children (Bankoff, 1983). Therefore, the elderly who have frequent contact with non-cohabiting adult children would have more opportunities to give emotional or other types of support, providing them with an increased sense of self-efficacy that could have a protective effect against subsequent depression (Maciejewski et al., 2000). Finally, frequency of contact with adult children may serve as a representative value that reflects the degree of the elderly's social isolation. It is possible that those who have infrequent contact with adult children can have active relationships with other people. However, generally the quantitative aspect of contact with adult children is considered to be a good reflection of the quantitative aspect of relationships with others. Since social isolation and loss of social ties are known to be important predictors of geriatric

depression, there is a high possibility that the elderly who have less frequent contact with adult children are also in socially isolated states. This may be another reason for the association between the frequency of contact with non-cohabitating adult children and the accompanying risk of depression.

Considering the diversification of contact methods associated with changes in the family system and developments in technology, this research also examined the differences in effects between face-to-face and phone contact. The results showed that the risk of infrequent face-to-face and phone contact was similar, while the group lacking both types of contact demonstrated the highest risk of depression. Such a result indicates that the characteristics of face-to-face contact are to some degree independent from those of phone contact. For example, face-to-face contact may involve practical support for household affairs and nursing, or social activities with adult children such as eating out and going out. This type of contact would not only provide emotional support, but also promote health related behaviors and relieve stress by participating in activities together. In contrast, phone contact could not be conceived as an actual activity and would involve comparatively short interaction time. However, phone contact has the characteristic of higher accessibility, allowing for frequent interactions. Through frequent phone contact, the elderly can have a sense of being cared for by their children, and at the same time can provide emotional support as parents. Thus, phone contact could also be related to self-efficacy.

There are some strong points in present study. First, study participants were from relatively large nationwide longitudinal community-based survey in Korea. However, as we applied inclusion and exclusion criteria to LPOPS, representativeness and generalizability of

our study were limited. Second, we considered not only age, gender, education, household income, residential area, smoking and drinking, which are known to be risk factors for depression, but also used reliable information to make adjustments for comorbidity, disability, cognitive decline, and baseline depressive symptoms. Finally, we were able to provide a possible implication for community mental health services. Specifically, the frequency of contact between the elderly and adult children is a bidirectional variable and we suggested an intuitive and realizable cut-off of *at least 1 phone call a week and at least 1 visit a month*. As a result, it is relatively easy to develop an intervention that includes components such as a social promotion campaign, family education, etc. However, this cut-off point should not be taken as absolute value because other factors such as the sociocultural characteristics of a nation, local characteristics and technology level would have to be considered.

There are several limitations in this study. First, the assessment of geriatric depression was based on a screening tool rather than the diagnosis of a clinical doctor. Therefore, in the case of participants who developed and recovered from depression during the study period, it would be difficult to judge whether a proper assessment had been made. It is also possible that life stressor or a psychological event occurred at the time of our assessment and could have affected the SGDS-K score. Second, frequency of contact is not a variable that can sufficiently explain quantitative aspects of the relationship between elderly and adult children. Ideally, frequency of contact would be supplemented by detailed information about key factors such as specific activities or the length of time participants are engaged in their interactions. However, such information was not incorporated into our questionnaire. Instead, we attempted to compensate for this limitation by distinguishing between face-to-face and

phone contact. Moreover, frequency of contact is not a reflection of the quality of relationships. Third, the baseline participants of this study could not represent the entire elderly population. Nevertheless, using a cross-sectional design at baseline provided support for the assertion that a significant portion of the population was examined because approximately 50% of the entire elderly population surveyed satisfied the inclusion and exclusion criteria of this study. Fourth, there could be recall bias based on many potential confounding factors. In addition, the main exposure was the frequency of contact, which depended on participant recall. To minimize recall bias, this research excluded participants who showed cognitive decline (MMSE-KC <17) at either waves. Finally, there could be self-report bias, which is caused by participants reporting in a way that is personally advantageous or socially desirable (Schwarz, 1999; Hunt et al., 2003). However, in our research the interviewer was trained to ask questions in a neutral manner, without exposing emotion. Furthermore, the primary variable of frequency of contact can be considered objective rather than subjective. Therefore, it is judged that distortion by self-report bias was minimal in our study.

V. CONCLUSION

This research proposes that the risk of depression in the cognitively intact non-depressed elderly is significantly associated with the frequency of face-to-face contact and phone contact with non-cohabitating adult children. The results of the comparative approach utilized in our study indicated that the efficacy of face-to-face contact and that of phone contact were similar, and the group lacking both types of contact exhibited the highest risk of developing depression in elderly.



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-국문 요약-

비동거 자녀와의 연락 및 왕래 정도가

노인 우울증 발생에 미치는 영향

아주대학교 대학원 의학과

노현웅

(지도교수: 노재성)

연구목적: 본 연구는 비동거 자녀와의 연락 및 왕래 정도가 노인 우울증 발생에 미치는 영향을 알아보고자 하였다.

연구방법: 본 연구에서는 60세 이상의 노인을 대상으로 하였으며, 2008년과 2011년 총 2차례 실시된 노인실태자료조사를 기반으로 자료를 분석하였다. 본 연구에서는 2차례의 조사가 모두 실시된 노인을 대상으로 포함하였으며, 생존자녀가 없거나 자녀와 동거하는 노인, 이미 인지장애가 있거나 우울증이 있던 노인은 제외하였으며 최종적으로 4,398 명에 대한 분석이 시행되었다. 본 연구에서는 1주일에 1회 이상의 전화연락, 1주일에 1회 이상의 왕래를 기준으로 하여 대상자를 4 그룹으로 나누었으며, 우울에 대해서는 단축형 노인우울척도 (SGDS-K)를 활용하였다.

연구결과: 다변수 로지스틱 회귀분석을 시행한 결과 1주일에 1회 이상의 전화연락 및 1달에 1회 이상의 왕래를 하는 그룹에 비해 1주일에 1회 미만의 전화연락과 1달에 1회 미만의 왕래를 하는 그룹에서 3년 후 우울증 발생에 대한 오즈비가 1.86 (95% CI, 1.44-2.42) 였으며, 왕래만 많이 하는 그룹에서의 오즈비는 1.49 (95% CI, 1.12-1.98), 전화연락만 많이 하는 그룹에서는 오즈비가 1.44 (95% CI, 1.15-1.80) 이었다.

결론: 본 연구 결과는 비동거 자녀와의 전화연락 및 왕래 정도가 노인 우울증 발생위험과 밀접하게 관련되어 있다는 것을 제시한다.

핵심어 : 노인 우울증, 연락 빈도, 전화 연락, 왕래, 성인자녀