Risk Factors for Suicide Attempts of Korean Elderly: Relative Effects of Individual Traits and Social Quality

Meeae Lee

Dev. of Humanities & Community, Hansei University, Korea meeae@hansei.ac.kr

Abstract

The main purpose of this research is to explore risk factors for suicide attempts of Korean elderly persons who are aged 61 and over. Using data from 2011 Elderly Living Condition Survey database, this study focuses on the effects of social quality on suicide attempts. Social quality is estimated by social unkindness, which is operationalized through having experiences of feeling hurt by others' unkind words or actions. Analysis results show that age, area of residence, ADL functional score, geriatric depression score, communication frequency with children, communication frequency with friends or neighbors, and having experiences of feeling hurt by others' unkind words or actions are significant predictors. Key findings are that those with experiences of feeling hurt by social unkindness have far higher probability of attempting suicide. This implies that, for those who are exposed and vulnerable to social unkindness, without improving unkind social quality, it is not possible to get lowering those suicide attempts. Based on the analysis results, to prevent suicide attempts among older persons, improvement in social quality through encouraging members of society to activate an act of kindness with each other is needed. Policy makers should take this into account when developing policies to deter suicide attempts among the elderly persons.

Keywords: suicide attempts, social quality, kindness, unkind social atmosphere

1. Introduction

Over the past few decades, the proportion of the elderly persons in Korea has been rapidly increasing. In 2013, the proportion of those aged 65 and over was about 12% of the population (6.14 million) (National Statistical Office 2013; Lee & Lee 2005). The uniqueness in Korean population aging is a drastic increase in the rate of older persons. Above all, elderly poverty rate has been ranked as the first among OECD nations. Concurrently, elderly suicide rate has been increased drastically (Ko 2004; Choi & Chang 2010; National Statistical Office 2011; Kim *et al.* 2013; Lee *et al.* 2013).

Other countries are reported that suicide is increasing from the teens to the thirties, and then decreasing or in the case of increase, increasing slightly, in older age. By contrast, suicide rate in Korea has kept an increasing pace and in older age it increases more drastically than any other age groups. Elderly suicide rate has been as 2.5 times as overall suicide rate. In 1990, 14.3 persons per 100,000 persons who aged 65 and over were died of suicide in average; in 2009, 77.0 persons per 100,000 persons killed themselves (Korea Institute for Health and Social Affairs 2012). In 2011, 4,406 older persons committed suicide, which means that 12 persons took one's own life per day.

By the survey which conducted by Seoul Metropolitan government, from January, 2004 to March, 2005, those families of 833 persons who committed suicide and at the time of killing oneself, their age was 60 and over, were interviewed. The survey results show that the

motives of suicide are as follow: suffering from illness (49.5 percent), being despondent about one's situation (38.3 percent), family trouble (4.9 percent) economic hardship (3.7 percent), transient impact (2.6 percent), etc.

Compared to the past, Korean society, economy has been developed dramatically. Despite that there were ups and downs in economy such as industrialization, IMF crisis, etc., it is a fact that Koreans in average has been well off and government expenditure for the elderly has been skyrocketing. Why suicide among the elderly persons so pervasive in Korea? And why have been government policies in order to deter or prevent or lower elderly suicide rate not succeeded?

Prior research on elderly suicide has been focused on individual characteristics such as age, gender, income, illness, subjective health status, family relations, social support, etc. This study proposes that limiting predictors of suicide into an individual characteristics is not enough. The quality of society which the individual lives in can play a critical role over the decision-making procedure like committing suicide. To gather more valid and reliable information on risk factors for suicide attempts, this study includes quality of community and society which one is residing in can influence one's motives of suicide. Using data from the 2011 Elderly Living Condition Survey database, this study investigates what factors influence suicide attempts, focusing on relative effects of individual characteristics and social characteristics. The analysis sample consists of 10,003 cases.

2. Literature Review

Durkheim insists that one's committing suicide implies his/her maladjustment to society. The causes of maladjustment to society are reported due to the lack of social solidarity (Seomun & Lee, 2011). Therefore, those who have a strong cohesion between a person and society tend to be less likely to commit suicide. For example, being a Catholic rather than a Christian, residing in rural areas rather than urban areas, being a female rather than male are likely to have strong social solidarity, therefore, less likely to commit suicide. Namely, when one is going to kill himself or herself, there are various kinds of motives, social solidarity is proved to be one of those predictors.

The research literature shows that the following factors affect suicide attempts, suicide instincts, and suicide ideations: socio-demographic factors such as age, gender, income level, education years, etc.; health factors such as physical health status, numbers of illnesses and their progress, mental health, stress, depression, feeling of loneliness, sense of isolation, etc.; social network factors such as contact or communication frequency with families, relatives, friends, and/or neighbors, and publicly-financed community-based social services (Park *et al.*, 2009).

Factors affecting suicide attempts, suicide instincts, and suicide ideations can also be summarized as individual traits and societal characteristics. Currently, social quality as societal characteristics which determine subjective well-being of an individual has been calling an attention. Social quality includes from economic and social structural factors to social ambience such as benevolence, kindness, trust, etc. (Lin *et al.*, 2009; Walker, 2009; Ward & Meyer, 2009; Meyer *et al.*, 2010; Lee, 2012; Yuan & Golpelwar, 2012).

Prior study on suicide includes only individual traits such as socio-demographic characteristics, health characteristics, family and social network characteristics, etc. As a result, prior research has been missing the impact of society on an individual's suicide. This study will examine the relative effects of individual traits and societal characteristics by including social quality factors in the analysis.

3. Methods

1. Population Sample

Data for the analysis are from 2011 Elderly Living Condition Survey conducted by Korean Institute of Health and Social Affairs. [5] This is a nationwide interview survey of the non-institutionalized population. The data sets contain information for 10,003 individuals aged 60 and over.

2. Measures

1) Dependent variable

Suicide attempts was been created by the question, 'have you ever attempted suicide since you were 61 years old?' Respondents were scored from 0 to 1, with 0 no, 1 yes.

2) Independent variables

Major characteristics of respondents included socio-demographic factors, health factors, social network factors, social quality factors.

Socio-demographic factors – They included age, gender, education and residential area. Age and education were continuous variables. Gender and residential area were coded dichotomously with female or residing in rural areas coded 0 and male or residing in urban areas coded 0.

Health factors – They included activities of daily living (ADL) and geriatric depression. ADL functional score was derived if impairment was assessed by asking respondents whether or not they received assistance in each of seven areas: dressing, face washing, bathing, eating, moving, toilet use, and continence. In each area of ADL function, respondents were scored from 1 to 3, with 1 indicating did not receive assistance, 2 indicating did receive partial assistance, and 3 indicating did receive total assistance. The number was totaled to obtain a composite ADL functional score ranging from 7 to 21. The higher ADL functional score, the more severe physical impairment. For the reliability of the seven items, alpha coefficient was 0.908.

In the same way, geriatric depression score was created by asking respondents fifteen questions—"Are you satisfied with your current life in general?", "Currently, are you losing your drive to live?", etc.—and the scores of the fifteen items were totaled to obtain a composite depression score. The score ranged from 0 to 15; the larger the number, the more severe the depression. Alpha coefficient was 0.906. Sleep hours was a continuous variable.

Social network factors – They included living alone, communication frequency with children, communication frequency with siblings and relatives, communication friends and neighbors. Living alone was coded dichotomously with yes coded 1 and no coded 0. Other were continuous variables.

Social quality factors – Social quality was estimated by social kindness which respondents were living in. It was operationalized by whether respondents had experiences of feeling hurt by others' unkind words and actions over the last one year period. The following specific question was asked: "have you been felt hurt from others' words and actions like avoiding conversations, disregarding one's opinions (ignoring one's comments), pretending to be not

heard, getting irritated, grumbling, etc.?" Social quality factors were coded dichotomously with yes coded 1 and no coded 0.

3. Analytical Model

T and chi squared tests were performed to assess the differences among sub-groups in each variable. In order to determine predictors of suicide attempts of older persons, a hierarchical logistic regression model was chosen. The dependent variable in this analysis has the value 1 if the individual attempted suicide since s/he was 61 years old or the value 0 if the individual did not. The model estimates the probability of an individual's committing suicide, including the following regressors; socio-demographic factors, health factors, social network factors, and social quality factors.

4. Results

1. Major Characteristics of Respondents

Table 1 shows descriptive statistics of variables. The sample consists of 10,005 respondents. About 40% of the samples are male. The mean age of respondents is 73.9 (SD = 6.379) ranging from 61 to 101. About 60% of respondents are residing in urban areas. The mean value of ADL functional score is 7.22, which means slight physical impairment; The mean value of geriatric depression score is 20.12, which implies slight depression. Respondents' sleep hours are 6.7 hours in average.

As to social network factors, about one fourth of the sample is living alone. Communication frequency with children is the highest, 5.6, communication frequency with friends or neighbors, 4.5, communication frequency with siblings and relatives, 3.3. Those who had experiences of feeling hurt by others' unkind words and actions are about 9% of the sample.

2. The different characteristics of respondents between those with suicide attempts and those without suicide attempts

Table 2 shows that there is statistically significant differences between those with suicide attempts and those without suicide attempts in having experiences of feeling hurt by others' unkind words or actions, geriatric depression score, and communication frequency with children at p < .001; in sleeping hours at p < 0.01; in residential area, living alone, and ADL functional score at p < 0.05; in age and education at p < 0.1.

There is a significant variability between those with suicide attempts and those without suicide attempts in terms of socio-demographic factors. Compared to those without suicide attempts, those with suicide attempts are more likely to be relatively younger, tend to have lower education years, and to reside in urban areas.

It is also found that among those with suicide attempts, ADL functional score and geriatric depression score are significantly higher than their counterparts. Those with suicide attempts are reported to sleep fewer hours. Overall, those with suicide attempts tend to be more physically impaired, more mentally depressed, and have fewer sleeping hours than their counterparts.

In terms of social network, communication frequency with children is significantly higher among those with suicide attempts and so is a proportion of living alone.

The proportion of those who had experiences of feeling hurt by others' unkind words or actions such as avoiding conversations, disregarding one's opinions(ignoring one's comments), pretending to be not heard, getting irritated, grumbling, etc. is analyzed to be higher among those with suicide attempts.

3. Hierarchical logistic regression on suicide attempts of older persons who aged 61 and over

In order to examine risk factors for suicide attempts of older persons, hierarchical logistic regression analyses have been employed to estimate relative effects, specifically the magnitude and the direction of effects of each factors, on suicide attempts. Regressors are included the following hierarchical order, in Model 1, social-demographic factors, in Model 2, adding health factors, in Model 3, adding social network factors, in Model 4, adding social quality factors. Table 3 shows the results of hierarchical logistic regression. The changes of chi-squared values for four Models indicate that they are all statistically significant: Model 1 ($\chi^2 = 16.974$, p < .005); Model 2 ($\chi^2 = 114.879$, p < .001); Model 3 ($\chi^2 = 128.2755$, p < .001); Model 1 ($\chi^2 = 148.631$, p < .001). In addition, Nagelkerke R², which reflects explaining power of the models has been going up when regressors are added: Nagelkerke R² of Model 2 is higher than Model 1 by 8.6%; Model 3, higher than Model 2 by 1.2%; Model 4, higher than Model 3 by 11.8%.

Model 1 estimates the effects of socio-demographic factors on suicide attempts. Education and residential area are significantly associated with suicide attempts at p < .001. $exp(\beta)$ of education is .729, meaning that there is a negative causal between education years and suicide attempts. Namely, those with higher education are less like to attempt suicide. $Exp(\beta)$ of residential area is 1.786, meaning that those residing in urban areas are about 1.8 times higher than their counterparts. Age is also negatively related to suicide attempts, implying that as one grows older, one tends to adjust to negative risks for suicide attempts. As a result, getting older itself could play as a cushion with regard to suicide attempts.

In Model 2, health factors are inserted in addition to the existing regressors of Model 1. ADL functional score and geriatric depression score are significant predictors on suicide attempts at p < .05, p < .001 respectively. Sleeping hours are also negatively related to suicide attempts. Overall, those who are more physically impaired, more mentally depressed, and having fewer sleeping hours are causally related with a higher probability of attempting suicide among respondents.

Model 3 assesses the causal relations between social network factors and suicide attempts. Communication frequency with children has the value of β , -.246, meaning that those who communicate with children more often have a lower probability of suicide attempts. Unexpectedly, communication frequency with friends and neighbors has a positive relation to suicide attempts. This can be explained that higher communication frequency with friends and neighbors may reflect less communication with children or feeling of more aloneness or loneliness. Living alone is not significant risk factor in Model 3, where other correlates are controlled.

In Model 4, social quality factors, which is operationalized as social unkindness, whether one had experiences of feeling hurt by others' unkind words and actions, is included. It is noticeable that social unkindness has the largest effects on suicide attempts than any other variable. β of having experiences of feeling hurt by others' unkind words and actions is 1.075. Exp(β) is 2.929, meaning that those who responded that they had experiences of feeling hurt by others' unkind words and actions are about 3 times higher in the probability of suicide attempts than those who didn't have the same experiences. Relative effects of each variable in the Model 4 are as follows: having experiences of feeling hurt by others' unkind words and actions ((exp(β) = 2.929, p < .001); residential area ((exp(β) 1.598, p < .01); geriatric depression score ((exp(β) = 1.190, p < .001); ADL functional score ((exp(β) = 1.161, p< .01); communication frequency with friends and neighbors ((exp(β) = 1.116, p < .01); age $((\exp(\beta) = .948, p < .001);$ communication frequency with children $((\exp(\beta) = .804, p < .001))$. In sum, those who had no experiences of others' unkind words and actions, those who live in rural areas, those who are less depressed, less physically impaired, those who communicate less often with friends and neighbors, older age, those who communicate more often with children are less likely to commit suicide.

Variable		Ν	Minimum	Maximum	Mean	SD
Suicide attempts	yes	10,003	0	1	.013	.112
	Gender	10,003	0	1	.401	.490
Socio-	Age	10,003	61	101	73.879	6.379
demograp hic	Education	10,003	1	5	2.840	1.076
factors	Residential area	10,003	0	1	.603	.489
Health factors	ADL functional score	10,000	7	21	7.219	1.141
	Geriatric depression score	9,882	15	30	20.109	4.588
	sleep hours	10,003	1	20	6.732	1.608
Social network factors	living alone	10,003	0	1	.249	.432
	Communication frequency with children	9,624	1	7	5.566	1.182
	Communication frequency with siblings or relatives	9,975	1	7	3.276	1.421
	Communication frequency with friends or neighbors	9,978	1	7	4.451	1.899
Social quality factors	Having experiences of feeling hurt by others' unkind words or actions	911	0	1	.920	.289

Table 1. Descriptive Statistics of Variables (N = 10,003)

Table 2. The Different Characteristics of Respondents between those with Suicide Attempts and those without Suicide Attempts

Variable		With Suicide attempts N or Mean(SD)	Without Suicide attempts N or Mean(SD)	χ^2 or t	р
Gandar	Male	45	3,968	1 175	316
Gender	Female	82	5,908	1.175	.510
Desidential area	urban areas	89	5,942	5 146	024
Residential area	rural areas	38	3,934	5.140	.024
living alone	yes	42	2,447	4 614	.036
inving atome	no	85	7,429	4.014	
Having experiences of feeling hurt by	yes	33	878	12 266	.000
others' unkind words or actions	no	94	8895	43.300	
Age		72.81(5.993)	73.89(6.382)	1.886	.059
Educatio	n	2.66(1.078)	2.84(1.075)	1.886	.059
ADL functiona	il score	7.46(1.753)	7.21(1.131)	-2.440	.015
Geriatric Depress	sion score	24.41(4.672)	20.05(4.560)	-10.659	.000

Sleep hours Communication frequency with children	6.25(1.936) 3.01(1.176)	6.73(1.602) 2.43(1.502)	3.330 -5.233	.001 .000
Communication frequency with siblings or relatives	4.92(1.624)	4.72(1.418)	-1.554	.120
Communication frequency with friends or neighbors	3.60(2.184)	3.55(1.895)	273	.785

* p < .1; ** p < .05; *** p < .001.

Table 3. Hierarchical Logistic Regre	ssion on Suicide Attem	pts (N = 10,003)
--------------------------------------	------------------------	------------------

Variable		Model 1		Model 2		Model 3		Model 4	
		В	Exp(B)	В	Exp(B)	В	Exp(B)	В	Exp(B)
Socio- demograph ic factors	Gender	.139	1.149	.264	1.302	.304	1.359	.318	1.375
	Age	038 **	.963	061 ***	.941	060 ***	.942	054 ***	.948
	Education	317 ***	.729	144	.866	138	.869	131	.877
	Residential area	.580 ***	1.786	.499 **	1.646	.499 **	1.642	.469 **	1.598
	ADL functional score			.103 *	1.108	.145 **	1.155	.149 **	1.161
Health factors	Geriatric depression score			.191 ***	1.211	.184 ***	1.203	.174 ***	1.190
	sleep hours			103 *	.902	093	.912	086	.918
	living alone					.214	1.258	.229	1.257
Social network factors	Communication frequency with children					236 ***	1.267	218 ***	.804
	Communication frequency with siblings or relatives					.028	.973	.023	1.023
	Communication frequency with friends or neighbors					.103 *	1.109	.110 **	1.116
Social quality factors	Having experiences of feeling hurt by others' unkind words or actions							1.075 ***	2.929
Constant		-1.248	.287	- 4.299* **	.014	- 3.983* *	.019	-4.607 ***	.010
χ ²		16.9	974***	114.	879***	12	8.275	148.631	
-2LL		118	31.722	108	33.817	107	/0.421	1050	0.065
Nagelkerke R2		.015 .101 .113		.131					

* p < .1; ** p < .05; *** p < .001.

5. Conclusion

This study analyzed risk factors for suicide attempts of Korean elderly persons who are aged 61 years old and over. Analysis results show that having experiences of feeling hurt by others' unkind words and actions (($\exp(\beta) = 2.929$, p < .001), residential area (($\exp(\beta) 1.598$, p < .01), geriatric depression score (($\exp(\beta) = 1.190$, p < .001), ADL functional score (($\exp(\beta) = 1.161$, p < .01), communication frequency with friends and neighbors (($\exp(\beta) = 1.161$), p < .01), communication frequency with friends and neighbors ($\exp(\beta) = 1.161$).

1.116, p < .01), age ((exp(β) = .948, p < .001), and communication frequency with children ((exp(β) = .804, p < .001) are significant factors.

Compared to those without suicide attempts, 1) in terms of socio-demographic factors, those with suicide attempts are younger and more likely to reside in urban areas; 2) in terms of health factors, they tend to have worse health status, physically as well as mentally; 3) in terms of social network factors, they responded to communicate less with children but more with friends or neighbors; 4) in terms of social quality factors, they had experiences of feeling hurt from others' unkind words and actions.

Key findings of this research are that unkind words and actions of other members of society is not as minimal as one usually expects. Unkind social atmosphere and unkind behavior such as avoiding conversations, disregarding one's opinions(ignoring one's comments), pretending to be not heard, getting irritated, grumbling, etc. can play a critical impact on determining to take one's own life in an extreme case. Others' unkind words and actions, even when it's done carelessly or with no bad intentions, can increase the rate of elderly suicide rate.

It is noticeable that in terms of relative effects among all other included variables in the analysis, having experiences of feeling hurt by others' unkind words and actions has the largest effects on suicide attempts and those responded to have experienced social unkindness are 3 times higher in suicide attempts than those without the experiences.

Public policies have been developed to lower and deter suicide attempts among older persons. The service programs are not evaluated as successful. To achieve the goals of preventing suicide attempts, it is necessary to gather reliable information on motives and risk factors for suicide attempts. Analysis results imply that social quality such as an act of kindness, though looked as trivial, could play a heroic role for those who are exposed and vulnerable to suicide attempts.

Unkind social quality is proved to be one of those statistically significant risk factors for suicide attempts of older persons. Based on these analysis results, to prevent suicide attempts among older persons, improvement in social quality through encouraging more kind words and actions must be followed. In addition, regarding that without improving unkind social quality, it is not possible to get lowering suicide rate. Therefore, policy makers take it into account when developing policies to deter suicide attempts among the elderly persons.

References

- [1] S. J. Choi and I. H. Chang, "Social welfare for older persons in aging society", Seoul National University Press, (2010).
- [2] K. T. Kim, S. S. Choi, M. J. Park, S. H. Ko and H. S. Park, "The effect of negative stress and loneliness on suicidal ideation of the elderly: with special reference to moderating effect of spirituality", Korean J. Soc. Welfare Research, vol. 34, (2013), pp. 161-185.
- [3] B. S. Ko, "A study on the social support types and determinants of perceive quality of life for the elderly in Jeju", J. Korean Geron. Soc., vol. 24, no. 2, (2004), pp. 145-162.
- [4] Korea Institute for Health and Social Affairs, Summary of living state and its policy implications of Korean elderly, (2012).
- [5] E. J. Lee, "Social cues, E-social ambience, and emotions in web-based fashion retailing: A case of U.S. shoppers", Journal of the Korean Society of Clothing and Textiles, vol. 36, no. 12, (**2012**), pp. 1318-1329.
- [6] M. A. Lee, S. R. Park and H. K. Park, "Returning to the paradigm for elderly care policy through a discourse on the good society: from justice to respect for the elderly", J. Korean Pub Admin History, vol. 33, (2013), pp. 241-256.
- [7] K. Lin, P. Ward and L. J. G. van der Maesen, "Social quality theory in perspective", Development and Society, vol. 38, no. 2, (2009), pp. 201-208.
- [8] S. B. Meyer, T. C. N. Luong, P. R. Ward and G. Tsourtos, "Operationalising the theory of social quality: Analysis of the reliability of an instrument to measure social quality", Development and Society, vol. 39, no. 2, (2010), pp. 329-358.

- [9] National Statistical Office, 2010 Population and Housing Census, (2011).
- [10] National Statistical Office, 2013 Elderly Statistics, (2013).
- [11] J. S. Park, J. C. Lee, G. H. Kim and J. W. Moon, "A study on the relating factors affecting the suicide instinct of the elderly aged 65 or older", Public Health and Social Science, vol. 12, (2009), pp. 115-136.
- [12] J. H. Seomun and H. A. Lee, "A study on influence of subjective health recognition and social support on the elderly suicide ideation: Using parameter effect of depression", Journal of Welfare for the Aged, vol. 54, (2011), pp. 361-385.
- [13] P. Ward and S. Meyer, "Trust, social quality and wellbeing: A sociological exegesis", Development and Society, vol. 38, no. 2, (2009), pp. 339-363.
- [14] A. Walker, "The social quality approach: Bridging Asia and Europe", Development and Society, vol. 38, no. 2, (2009), pp. 209-235.
- [15] H. Yuan and M. K. Golpelwar, "Is social quality related to subjective well-being in Shanghai? An analysis of economic and social structural factors", Development and Society, vol. 41, no. 1, (2012), pp. 31-53.

International Journal of Bio-Science and Bio-Technology Vol.7, No.1 (2015)