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A study on the health literacy of the elderly in rural area.

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Abstract

The purpose of this study is to determine the impact factors of health literacy target the elderly in rural areas. From February 1, 2013 to March 31, 2014, IRB approval was given to the elderly in rural areas and the survey was conducted. 172 participants were used in the final analysis. The questionnaire consisted of demographic characteristics, family support, self-efficacy, and health literacy. The collected data were analysed using descriptive statistics, t-test, ANOVA, Pearson's correlation and multiple regression using SPSS 18.0 statistical program. As a result of this study, it was found that most of the variables except for gender were influential on health literacy in addition to educational literacy, literacy, occupation, subjective health status, frequency of drug use and recent hospitalization. The level of family support, self-efficacy, and health literacy were higher than average, showing a positive correlation with each other. The factors affecting health literacy were subjective health status, self-efficacy, and reading and writing disability negatively.

Keywords: Health Literacy, Family support, Self-efficacy, Elderly, Rural area.

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Introduction

An arrival at senescence leads to a drop in physical function owing to physiological aging, to the bigger in susceptibility to disease along with a mental-social change, and simultaneously to the easy disease morbidity due to a reduction in resistance, resulting in coming to have diverse chronic diseases [1]. According to data by Korea Institute for Health and Social Affairs in 2014, the chronic disease prevalence in senior citizens aged over 65 was indicated to be 89.2%. Even a case of having more than 3 chronic diseases accounted for 46.2%. The whole old people were shown to have 2.6 chronic diseases on the average. The elderly's medical care utilization rate was high as well, thereby having been surveyed to be taking averagely more than 5 drugs prescribed by a doctor [2].

To effectively manage the elderly's chronic diseases, the correct understanding about medical information is needed. For this, it is very important to grasp the elderly's health literacy level [3]. However, compared to what the actual health care utilization rate was high, many old people appeared not to know properly about own disease status [4]. The medical information of being offered to the elderly is written at too high level to the elderly or subjects of being lacking in understanding, thereby being consistently reported to be ineffective [5].

Health-information understanding ability, namely, health literacy is a factor of affecting a chronically ill patient's successful health management, and is what grasps the subject's basic ability of understanding information related to health care [6]. It was indicated that the promotion in knowledge on a disease, in a health habit, and in a preventive behavior relevant to disease brings about a positive outcome, and that people with low health literacy are apt to misunderstand medical information and suffer difficulty in implementing medical directions [7]. Especially, elderly people, a low-educated bracket and a lower-income group, a minority race and an immigrant group are being reported to be a health risk group with low health literacy [8].

A family support as an influential factor upon health literacy has never been reported a previous research. But as a family is the most important unofficial social-support system that may have an effect on the protection and management of a chronically ill patient, it was proved in the researches on diverse chronic diseases that there is a positive correlation between a family support and a disease control [9,10].

Self-efficacy is a major factor of complying with medical regimen and of enhancing health result in a chronically ill patient [11]. The elderly with chronic disease were shown to have the higher self-efficacy in the higher health-information

understanding ability [12]. Self- efficacy increases even the implementation of taking drugs in the elderly with chronic illness and has the greatest effect on compliance of taking medicine. Also, drug-taking appeared to be implemented better in the higher health literary and self-efficacy [12,13].

Seeing a previous research, about 40% of old people in our country have a disability in understanding health information and in applying this to daily life. In a research of targeting the elderly of dwelling in urban area, the health literacy was indicated to have a difference depending primarily on gender, age and education level [14]. The rural area is being quickly developed aging compared to a city, is high in a growth rate of elders who live alone, and has low academic background level [15]. Hence, the health promotion activity is needed for improving the differentiated health literacy from the elderly of living in a city. However, it is the real situation of being lacking in a research on health literacy targeting old people who dwell in farm village [16].

Accordingly, this study was attempted in order to offer basic data to the development in educational materials and a nursing intervention program through confirming a factor of affecting the health promotion behavior in rural elders after confirming a family support, self-efficacy, and health literacy level among many factors of influencing a health promotion behavior and then grasping a relationship among these variables targeting the elderly in rural area [17], which account for 39.1% as the elderly population aged over 65 out of the total population percentage.

Research Method

Research design

This study is a descriptive survey research that used a structured questionnaire in order to grasp an effect on health literacy in rural elders.

Research subjects

The rural area elderly people were set to be target population. The elders who use Senior Welfare Service Center in G city of Gangwondo Province were selected as accessible population. The selection standard for subjects was set to be those who have no problem of cognitive function with less than 6 points through KDSQ-C (Korean Dementia Screening Questionnaire-cognition) as the elderly aged over fully 65 who reside in community, and who made a written consent of participating in a research after being explained the objective and necessity of the research. Among subjects, the people who want to take part in this research even if having a limitation in reading Hangeul (Korean alphabet) were included as the subjects through a verbal explanation. Still, it was excluded a person of being difficult for communication due to having a problem of hearing, a person who is hard to talk because of having a disorder in eyesight even though wearing glasses, and a person who has a mental disease. Number of samples was calculated a number necessary for multiple regression analysis by using G*Power 3.1.5 program. 129 people corresponded to sample size that was calculated when having been set to be significance level at 0.05, test power at 0.95, and moderate level in effect size at 0.15. 200 copies were widely distributed by anticipating dropouts. 195 copies were collected. But 172 pieces of data excluding 23 copies with an inadequate response among them were applied to the final analysis.

Research tools

1) Family support: The family support is what aims to measure the support level that the significant family members actually give to family members while subjects see information on family members' taking care of, loving, respecting subjects and making them have a sense of value, and on allowing subjects to believe that they belong to an organizational network of communication and mutual responsibility. Gang Hyeon-suk's family support tool was used [18], which was developed by modifying and supplementing Cobb [19]'s tool. It was rated on a 5-point Likert scale. Cronbach's α value of the tool stood at .86. Cronbach's α value in this study amounted to 0.90

2) Self efficacy: As self-efficacy is what aims to gauge the generalized faith in own ability in diversely new situations, it was used [21] what Noh Ji-hye translated the self-efficacy measurement tool developed by Chen [20]. It was composed of a 5-point Likert scale with totally 8 items. Cronbach's α value stood at 0.92. Cronbach's α value in this study came to 0.96.

3) Health literacy: Health literacy implies ability of properly obtaining, handling and understanding basic health information and service necessary for an individual to make an appropriate decision related to medical treatment oneself, and represents reading, listening, speaking, and problem-solving in terms of the health-related information [4]. This study was used totally 12-item tool that was developed by Lee and Gang [14]. Cronbach's α value of the tool amounted to 0.89. Cronbach's α value in this study reached 0.80.

Procedure of data collection

Data collection was made through one-to-one interview by each individual with a researcher and 3 research assistants, who were trained in advance, from February 1, 2017 to March 13. A structured questionnaire was used in subjects with a written consent of participating in the research. Explanation was offered to a part that is difficult to be understood out of questionnaire items. Among 200 widely-distributed copies of the questionnaire, 172 copies were utilized in the final analysis.

Statistical analysis

The collected data were analysed using SPSS 18.0 program. The differences in health literacy, family support, and self-efficacy according to demographic and sociological characteristics were analysed by descriptive statistics, t-test, and ANOVA, Post-test was conducted using Scheff'e test. The correlation between family support, self-efficacy and health literacy is Pearson's correlation, Family support, and self-

efficacy on health literacy were analysed by multiple regression.

Ethical considerations

The progression was made with being approved (IRB NO. 2017-0001) by the deliberation of IRB (Institutional Review Board) at G university. The researcher received a consent form of participating in the research after explaining the research objective and method to subjects before widely distributing questionnaire. It was specified what the acquired personal information shall not be used except research objective, what there will not be any disadvantage even if not joining while being available for taking part in the research on own volition, and also what is available for withdrawing at any time given desiring not to join during the research.

Results

Difference in health literacy of according to general characteristics

Health literacy differences in general characteristics was statistically significant with age (F=5.96, P<0.003), education (F=4.30, P<0.002), read and write disabilities (t=-6.26, P<0.001), marital status (T=2.04, P<0.047), living status (F=3.63, P<0.028), occupation (t=5.51, P<0.001), monthly income (F=9.77, P<0.001), subjective health status (F=9.79, P<0.001), number of diseases (F=6.49, P<0.002), number of drugs (F=9.77, P<0.001), health concern (F=3.12, P<0.027), number of recent hospitalizations (t=3.32, P<0.001). In particular, there was a statistically significant difference in read and write disabilities, occupation, subjective health status, number of drug use, and the number of recent hospitalizations (Table 1).

Level of family support, self-efficacy and health literacy

Family support was 39.54 ± 9.15 points on the scale of 55 points, and self-efficacy was 23.38 ± 9.34 points on the scale of 40 points. The level of health literacy was 8.73 ± 2.76 points out of 12 points, in the sub domain, health-related terms were 4.04 ± 1.20 points based on the 5-point scale and 4.69 ± 1.89 points on the 7-point scale in the comprehension and mathematics domain (Table 2).

Correlation between family support, self-efficacy, and health literacy

Family support was significant positive correlation with self-efficacy (r=0.428, P<0.001), health literacy (r=0.198, P<0.009), health related terms (r=0.183, P<0.016), comprehension and mathematics domain (r=0.172, P<0.024). Self-efficacy was significant positive correlation with health literacy (r=0.357, P<0.001), health related terms (r=0.257, P<0.001), comprehension and mathematics domain (r=0.358, P<0.001). Health literacy was significant positive correlation with health related terms (r=0.825, P<0.001), comprehension and mathematics domain (r=0.933, P<0.001). Health-related terms among the sub-factors of health literacy was significant positive correlation in the comprehension and mathematics domain (r=0.568, P<0.001) (Table 3).

Factors affecting Health Literacy

As a result of examining tolerance limit and VIF (Variance Inflation Factor) value in order to confirm whether multicolinearity occurs between variables in each before carrying out regression analysis, the VIF value stood at 0.69~0.79. Thus, all were bigger than 0.1. The VIF value came to 1.25~1.43. Thus, all did not exceed 10. Hence, it was indicated that there is no problem of multicolinearity. In consequence of conducting Stepwise regression on significant variable out of socio-demographic variables, on family support and on self-efficacy, the subjective health status (β=0.188 P<0.013), self-efficacy (β=0.176, P<0.029), and disability in reading and writing (β=-0.299, P<0.001) as the factors of affecting health literacy appeared to have a statistically significant influence. In other words, the factors of affecting health literacy were shown to be subjective health status and self-efficacy in order. The disability of reading and writing was analysed to have a negative impact. These factors were indicated to explain 24% of health literacy (Table 4).

Table 1. *Difference in Health literacy of according to general characteristics (N=172).*

Characteristics	Categories	n (%)	Health literacy	
			M ± SD	t/F(p), Scheffe
Gender	Male	73 (42.4)	8.38 ± 3.03	-1.451 (0.149)
	Female	99 (57.6)	9.00 ± 2.53	
Age(year)	65~74[a]	97 (56.4)	9.31 ± 2.63	5.96 (0.003)
	75~84[b]	62 (36)	8.16 ± 2.92	a>c
	≥ 85[c]	13 (7.6)	7.15 ± 1.62	
Education	Illiteracy[a]	18 (10.5)	6.50 ± 2.79	4.30 (0.002)
	Primary school[b]	53 (30.8)	8.64 ± 2.90	a<[d,e]

	Middle school[c]	45 (26.2)	8.84 ± 2.67	
	High school[d]	46 (26.7)	9.39 ± 2.37	
	≥ College[e]	10 (5.8)	9.80 ± 2.20	
Read and write disabilities	Yes	51 (29.7)	6.09 ± 2.85	-6.26 (<0.001)
	No	121 (70.3)	9.51 ± 2.33	
Marital status	With spouse	98 (57)	9.01 ± 2.62	2.04 (0.047)
	No spouse	74 (43)	8.25 ± 2.88	
Living status	Alone[a]	60 (34.9)	8.01 ± 2.95	3.63 (0.028)
	Spouse[b]	68 (39.5)	8.94 ± 2.70	a<c
	Spouse and Child[c]	44 (25.6)	9.42 ± 2.39	
Occupation	Yes	51 (29.7)	10.39 ± 1.45	5.51 (<0.001)
	No	121 (70.3)	8.04 ± 2.88	
Monthly income (10,000 won)	≤ 50[a]	49 (28.5)	7.53 ± 3.62	5.20 (0.002)
	51~100[b]	33 (19.2)	8.96 ± 2.65	a<c
	101~150[c]	32 (18.6)	9.71 ± 1.85	
	≥151d	58 (33.7)	9.08 ± 2.01	
Subjective health status	Very good[a]	8 (4.7)	9.12 ± 2.10	9.79 (0<0.001)
	Health[b]	43 (25)	9.72 ± 2.20	a, b, c>e
	Moderate[c]	54 (31.3)	9.70 ± 1.83	
	Not health[d]	55 (32)	7.49 ± 3.09	
	Not very health[e]	12 (7)	6.33 ± 3.39	
Number of diseases	0[a]	13 (7.6)	10.46 ± 1.33	6.498 (0.002)
	1[b]	66 (38.4)	9.27 ± 9.27	a>c
	≥ 2[c]	93 (54)	8.11 ± 8.11	
Medications	Every day[a]	125 (72.7)	8.99 ± 2.39	9.77 (<0.001)
	2~3 (With a week)[b]	25 (14.5)	6.40 ± 3.68	a, c, d>b
	Sometimes[c]	10 (5.8)	9.90 ± 2.40	
	None[d]	12 (7)	10.75 ± 1.35	
Health concern	None[a]	17 (9.9)	6.88 ± 2.75	3.12 (0.027)
	Moderate[b]	40 (23.3)	8.75 ± 2.54	a<b, c, d
	High[c]	62 (36)	9.12 ± 3.01	
	Very high[d]	53 (30.8)	8.86 ± 2.42	
Admission (With last 1 y)	No	113 (65.7)	9.23 ± 2.33	3.32 (0.001)
	Yes	59 (34.3)	7.79 ± 3.25	

Table 2. *Level of family support, self-efficacy and health literacy (N=172).*

Variable	Range	M ± SD
Family support	11~55	39.54 ± 9.15
Self-efficacy	8~40	23.38 ± 9.34
Health literacy	0~12	8.73 ± 2.76
Health related term	0~5	4.04 ± 1.20
Comprehension and mathematics	0~7	4.69 ± 1.89

Table 3. *Correlations between variables (N=172).*

Variable	FS	SE	HL	Subscales	
				HRT	CM
Family support	1				
Self-efficacy	0.428**	1			
Health literacy	0.198*	0.357**	1		
Health related term	0.183*	0.257**	0.825**	1	
Comprehension and mathematics	0.172*	0.358**	0.933**	0.568**	1

Table 4. *Factors affecting health literacy (N=172).*

Variable	B	SE	β	t	p
Family support	0.002	0.023	0.007	0.94	0.925
Self-efficacy	0.052	0.024	0.176	2.209	0.029
Subjective health status	0.511	0.203	0.188	2.513	0.013
Read and Write disabilities	-1.8	0.452	-0.299	-3.995	<0.001
	Adj R^2= 0.24,	R^2=0.26,	F=14.83,	P <0.001	

Discussion

This study was performed in order to grasp an effect on health literacy in the elderly of dwelling in a rural village. As for a difference in health literacy according to general characteristics, a statistically significant difference was indicated in age, in education level, in disability of reading and writing, in spouse, in a housing form, in job, in income level, in subjective health status, in number of diseases in possession, in frequency of taking drugs, in health interest level, and in experience of the recent hospitalization. Out of this, a significant difference in old people's age, education level, reading-and-writing disability, marital status, cohabitation type, and monthly income appeared to be consistent with Lee's findings [14]. However, it is not statistically significant by gender. But women were indicated to have higher health literacy compared to men. Thus, there was a difference [14]. This study was shown an outcome as saying that elderly women's health literacy (9.00 ± 2.53) is high compared to elderly men (8.38 ± 3.03). Considering that the subjects' age is in 65 y old~74 y old, that ratio accounts for 56.4%, and that women amount to 57.6%, this leads to thinking that even the health literacy level was measured highly compared to men because of being much in relatively young elderly women's ratio. It is thought that a follow-up research will need to be carried out in consideration of diverse socio-demographic variables on gender, of characteristics in a group, and of features depending on a cultural difference as the influential factors upon health literacy.

What the health literacy shows a significant difference according to education level or monthly income signifies that there is a difference in the ability of acquiring and utilizing health information depending on the socio-economic status [22]. This is backing up the research outcome as saying that a low-educated bracket and a low-income group are being reported to be a health risk group with low health literacy [23]. Old people who have a spouse or a residence type of living together with a wife or a child were indicated to have high health literacy. Health literacy seems to be influenced by merits such as what family's emotional support or encouragement, and physical accessibility give psychological and emotional stability to subjects and as what living together with a child or a spouse leads to being capable of easily getting a help when being difficult to accept various information.

Out of the health-related characteristics, a case that the subjective health status is good appeared to be high in health literacy [24]. Also, compared to the elderly without illness, the old people who have a large number of diseases in possession were indicated to have low health literacy [22]. This is thought that the necessity of health management is further grown because of having many diseases, but that own health literacy is low, thereby bringing about a result of getting difficulty for the acquisition of accurate medical information or for therapeutic implementation. Also, a group with a high interest in health appeared to have high health literacy compared to a low group. A group without the experience of the recent hospitalization was shown to have high health literacy. The above research outcome seems to support the finding as saying that the health literacy has independent influence upon physical health and mental health as well as subjective health status [7].

As a result of comparing the subjects' family support, self-efficacy, and health literacy, the family support stood at 39.54 ± 9.15 in the range of 11~55 points, thereby having been measured highly with more than moderate. And it was indicated to have a significant positive correlation even with self-efficacy and health literacy. In the general characteristics as well, yes or no of a spouse or a cohabitation type with a child was explained as a relevant element to health literacy. The family support is being described as a main variable of explaining a health promotion behavior in marriage migrant women who are classified into a group with low health literacy [25]. Also, it seems to back up the research outcome of explaining that a family is an unofficial social-support system available for affecting the protection and management of a chronically ill patient [9,10]. However, in the result that carried out regression analysis in order to grasp a factor of affecting the subjects' health literacy, a factor of having the greatest influence upon health literacy appeared to be subjective health status (β=0.188 P<0.013) and self-efficacy (β=0.176, P<0.001) in order. The reading-and-writing disability (β=-0.299, P<0.01) was shown to have a negative impact. The family support was indicated to have a significant correlation (r=0.198, P<0.009) with health literacy, but was not shown a significant outcome as a factor of affecting health literacy in the result of regression analysis. Considering the statistics [2] of family support as saying that 76% of the rural elders are living separately with children along with what the ratio of the living-alone elderly people in rural area is high compared to the increase rate (17.7%) of the living-alone elderly people in urban area with 25.2% in the percentage of the living-alone elderly people in

rural area, the living-together family as for rural elders is thought to support what a family support is more important element for health management. However, it is not what cohabitation does not lead directly to a family support. Thus, it is considered to be capable of knowing which effect the family support in the living-together family has on health literacy only when there is a relevant research of measuring the elderly's contact time and frequency with its living-together family, and the frequency in a health-related promotion behavior. Also, diverse family-support plans for the elderly are needed that can increase a form of family support even in the form of emotional support, not a physical distance dubbed living together.

The self-efficacy level reaches 23.38 ± 9.34 points in the range of 8~40 points, thereby showing the average in moderate level. It was indicated to have a significant positive correlation with family support and health literacy. This is consistent with Yang's result [12] as the higher health-information understanding ability in the elderly with chronic diseases leads to the higher self-efficacy. Even in the result of regression analysis, a significant outcome was shown as the self-efficacy is a factor of affecting health literacy following the subjective health status. Self-efficacy is a major variable related to a health promotion behavior and is the most influential factor upon a behavioral change in desirable direction or upon a self-care behavior [26]. Considering that rural elders may be slightly restrictive to physical accessibility to or information acquisition of health and medical treatment service compared to urban elders, the necessity of the self-care activity or therapeutic implementation in the elderly with chronic diseases is regarded as important further compared to the urban elderly people. In Shin's research on self-care activity according to the elderly's health literacy, the outcome is being shown that the lower health literacy leads to a reduction in self-care implementation level [27]. As the self-efficacy is an influential factor upon self-care, it is thought to be important because this may lead again even to the recurrence of an illness or to rehospitalization given a fall in self-care performance according to the management of a chronic disease. Accordingly, the educational approach is thought to be necessary that increases self-efficacy and raises self-care activity through the customized education in line with health literacy level by individual.

The health literacy level is showing a higher score than moderate with 8.73 ± 2.76 points in the range of 0~12 points. The health-related terminology stood at 4.04 ± 1.20 points in the range of 0~5 points in the sub-sphere, and at 4.69 ± 1.89 points in the range of 0~7 points in the understanding and mathematical section. This implies that the elderly are showing a difficulty in the understanding and mathematical section rather than the health-related terminology. There is a problem of the understanding and mathematical section that health information may be accepted with being misunderstood or distorted, and that the wrong drug-taking may be implemented owing to suffering a difficulty of taking drugs or to a mistake as a mathematical problem. Accordingly, a consideration in line with subjects' level is needed such as text size, understanding level, terminology selection, media choice, and picture insertion given developing educational materials or offering information related to health literacy for the elderly.

Conclusion

The purpose of this study is to determine the impact factors of health literacy target the elderly in rural areas. The results of the study showed statistically significant differences in health literacy differences according to general characteristics that age, education, read and write disabilities, marital status, living status, occupation, monthly income, subjective health status, number of diseases, medications health concern.

In the correlation between health literacy, family support, and self-efficacy, all three variables showed a positive correlation with each other. . In order to identify factors influencing health literacy, the variables that have the greatest influence on health literacy were subjective health status and self-efficacy, read and write disabilities were found to have negative effects. This study can be used as basic data for the development of educational materials and nursing intervention program for health promoting behaviors of the elderly living in rural areas.

Conflict of Interest

The authors report no conflicts of interest related to this study. The author does not have any financial interest in the companies whose materials are included in the article.

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