Women's Subjective Health Conditions in Korea

Young-taek Kim*

   This study, using the Third National Health and Nutrition Survey in Korea, analyzes health conditions of Korean men and women. Results of logistic regression and ANOVA analyses show that socio-demographic variables are important factors in predicting women's subjective health condition, even after controlling such variables as drinking, smoking, exercise, stress and obesity. Women's subjective health conditions appear to be much poorer than men's. Results also show that the groups with the low socio-demographic status are vulnerable to poor subjective health condition. For instance, women aged 40 and over with a middle or primary school education are more likely to report "bad" and "worst" subjective health condition than the reference group with a university or higher education (odds ratio=6.184, p<.000). Women with the lowest income are more likely to report "bad" and "worst" subjective health condition than the reference group with the highest income (odds ratio=2.157, p<.001). This study recommends that the government increase funding for research on gender and health inequality and enhance education and public awareness for women's health.

I. Background

Importance of Subjective Health Condition

Subjective health condition has been known as one of the best indicators in predicting death rate, occurrence of disease, and physical disability. Although the questionnaire is simple with each question having five response categories (i.e., excellent, good, average, bad, and worst). those responded "poor" have a probability of 50-100% higher mortality than those who responded "very good" or "excellent" (Benyamini & Idler, 1999). Studies by Kawachi, et al., (1999), Lantz, et al. (2001), Yugwe, et al., (200)1 and Knesebeck, et al. (2003) also show that subjective health condition is one of the most useful indicators that reveals the relationship between socio-economic status and subjective health.

   Subjective health condition can reveal current comprehensive health condition of a respondent that cannot be explained by medical results. The concept of subjective health condition can be defined to represent comprehensive physical well-being of a person rather than simply to be defined as presence of physical diseases (Ross & Bird 1994). Basically, the comprehensive concept of health condition can be influenced by objective health condition, but it can be finally formulated by attitude and subjective belief to account for health (Jang, 2007). Subjective health condition can be a measuring stick to disclose what problem of health is, and can be a better measurement than a doctor's judgment on health. For example, those who do not have physical

* Research Fellow, KWDI, ytk@kwdimail.re.kr

diseases can tell that they do not have good health. This can imply that we need to include not only physical condition but also subjective condition to recognize and explain health in detail. The inclusion of both objective and subjective health condition can lead to a final decision of whether people can enjoy healthy life or not. Subjective evaluation and attitude on health can affect daily life activities and behaviors associated with health, which can directly influence enjoyment of healthy life. It is very critical to find causes of not being healthy if they do not think they have good health even though they have good physical condition. Comprehensive understanding on personal, psychological, and social interaction that can be consisted of health condition can be possible when we find the causes of not being healthy.

Moreover, subjective health condition can be tightly associated with a variety of psychological, behavioral, social and environmental factors that can lead to death. In terms of psychological aspects, low happiness and negative emotional states can be connected with the fact that subjective health condition was not good (Benyamini, Idler, Leventhal, & Leventhal, 2000). In case of behavioral views, health risk factors such as obesity, smoking, and drinking are associated with the fact that subjective health condition was not good (Ferraro & Yu, 1995; Meuer, Layde & Guse, 2001). In connection with social aspects, those who have low socioeconomic status reported their subjective health condition was not as good as those who have high socioeconomic status (Kawachi, et al., 1999; Lantz, et al., 2001; Yugwe, et al., 2001; Knesebeck, et al.. 2003). Lastly, for explaining environmental factors, low social capital (Kawachi, Kennedy & Glass, 1999) and low quality of neighborhood (Krause, 1996) were found to be associated with the fact that subjective health condition was not good.

## Different Health Condition Based on Gender

Existing studies reported that women's subjective health condition was found to be lower than men's subjective health condition (Kawachi et al., 1999; MacDough & Walters, 2001; Sax et al., 2001). Subjective health of men and women could be different because ways and path of life could be consisted of not only biological difference but also a different social structure characterized by social role, norm, and economic activity, etc. Accordingly, women could have different context from men in judging their health and leading healthy life style. Different health condition of gender can be accounted for by in terms of different social structure. Socioeconomic status and educational opportunity of women has been lower than those of men. Also, it can be explained by the fact that it is more difficult for women to procure physical resource than for men (Sen. George & Jostling, 2002). Experience resulting from hierarchical system of labor and its gender inequality can bring the most disadvantageous status to women. Therefore, women can have higher probability of negative form of life events and can trigger stress and tension (Mcleod & Kessler, 1990). Examining a social context in Korea, educational opportunity has been open to women, and its difference between men and women has been reduced. Yet, it cannot be positively connected with women's labor participation into a job market (Hwang 2003). Although women's

labor force has been increased more, compared to the past times, women's labor force still occupied a major proportion in service and sales industry in a job market, but men's labor force still have ruling position such as managerial and administrative area in a job market(KNSO 2003).

Szanflarski (2001) suggested a structural theory that stresses different health condition of men and women, given by a different social role between men and women. Women tend to raise their children and work at home, while men tend to be considered a 'breadwinner' who work outside home to support their families. Such labor division based on gender could indicate that family structure and relationships among family members could affect women's health condition (Feldberg & Glenn, 1979), but conditions and a structure of job could influence men's condition (Haw, 1982; Lowe & Northcott, 1988).

Davidson et al. (2006) emphasized a variety of factors affecting health in order to account for gender differences. All factors are different by gender and tend to interact with each other to differently affect health conditions between men and women. They suggested that biological factors cannot be changed, but other psychological and social factors can be changed due to changes in life style by individuals and change in heath policy by governments. Considering the change and non-change factors by gender, Davidson et al. (2006) advised to adjust our health education and policy by gender that can lead to improvement of health condition of men and women (Picture 1). We have to understand that the factors suggested above have multiple dimensions such as micro (individual level) and macro (government level) levels affecting health condition by gender. We should also recognize complex interactions of micro and macro levels that can differently affect heath conditions by gender. As a result, Davidson et al. (2006) concluded that more careful analytical tools are needed to measure such complex systems such as our health.

There is an insufficient number of studies that deal with how women themselves in Korea express their health condition. Moreover, more studies should give particular attention to factors affecting different health condition between men and women. Studying subjective health condition of women in Korea not only will tell current health condition of women, but will also allow us to form the basics of analyzing factors affecting health and health behaviors of women. The purpose of this article is to identify how subjective heath condition of men and women can differ as well as what factors can truly affect a connection between gender and health.

Picture1. Davidson's Mode(2006)
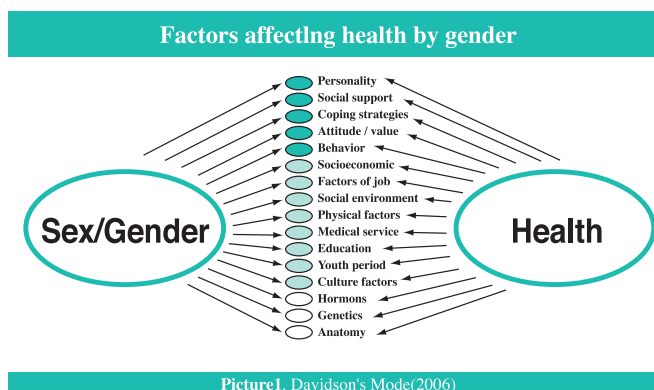
II. Method

We use the Third National Health Nutrition Survey for the study. This survey, sponsored by the Korean government, has been conducted at the national level every three years since 1998. Although the data set has a lot of variables including socio-demographic, health related, behavioral and nutritional variables, various socio-environmental variables such as conflict of job and family role, domestic violence, and relationship among family members as well as variables that measure social support, personality, coping strategy, and culture that are needed to measure those variables in Picture 1 above are missing..

The data set, however, is a best fit for this study since it has basic socio-demographic variables as well as variables associated with health behaviors. To analyze the data, we first use analysis of variance (ANOVA) to find the relationships between independent and dependent variables and then logistic multiple regression analysis. Gender is treated as a conditional variable dictating a whole spectrum of independent variables and dependent variables. That is, the relationship between independent variables and subjective health condition is analyzed separated by men and women.

The choice of the variables used for our statistical models is accomplished based upon reviewing prior studies of social aspects and their impact on health. Van Lenthe, et al. (2004) classified social aspects into three ways. The first classification is a materialist or structural theory. This theory considers such social, structural, and environmental factors as socio-economic status, labor, and residential environments that affect our subjective health in a critical way. The second classification is an explanation of behavioral or lifestyles such as drinking, smoking, and physical activity that affect our subjective health. The third one is a psycho-social theory. This theory holds that unhealthy habits can trigger stress and anger that can influence our subjective health.

Using the three classifications underscored in the work of Van Lenthe, et al. (2004), the following model is formulated:

$$Y = a + b_1 X + b_2 Z + b_3 Q + e,$$

where X is socio-economic status separated by men and women (40 years old and older), Z is drinking, smoking, and exercise separated by men and women (40 years old and older), Q is stress and obesity separated by men and women (40 years old and older), and Y is subjective heath condition (bad and worst condition=1 and others=0 in logistic regression).

III. Results

In general, women reported worse subjective health condition than men in Korea. Among women, only 3.3% reported "excellent" subject health condition, 35.8% reported "good", and 24.5% reported "bad" and "worst". Among men, 5.7% reported "excellent" health condition, 44.9% reported "good", and 16.4% reported "bad" and "worst. Needless to say, less than 40% of women reported "excellent" and "good" health condition while more than 50% of men reported "excellent" and "good" health condition.

   Table 1 and **Table 2** report results of subjective health condition given by socio-demographic characteristics and forms of health behaviors of women and men respectively. **Table 1** shows that the lower the education level and the lower the income level, women's subjective health condition becomes worse. 46.1 % of women reported "bad" and "worst" subjective health condition out of those who have an educational background of middle school and below compared to only 7.4% out of those who have an educational background of university and over. Men also show similar patterns, but the percentage differences for men are lower than those for women. Moreover, those who reported "bad" and "worse" subjective health condition out of those in the lowest income category are 37.4% and 6.4% respectively. On the contrary, those who reported "bad" and "worst" subjective health condition out of those in the highest income category are 11.3% and 1.6% respectively. Also, men show similar patterns, but the percentage differences for men are lower than those for women. According to the chi-square tests, most of them above found to be statistically significant .

   When examining a marital condition and subjective health condition, 40.3% of women reported "worst" subjective health condition out of those who are divorced/widowed/separated compared to 26.9% out of those who are widowed/divorced/separated. In general, women with spouse have better health subjective condition than men, and is statistically significant at the 1% level (p=.000). 17.5% of women reported "good" and "very good" subjective health conditions out of those who have farming and fishing jobs, while more than 55% reported "good" and "very good" subjective health conditions out of those who have managerial and white collar jobs.

   Turning to health forms, 33.7% of women reported "bad" subjective health condition out of those who are currently smoking compared to the average rate of 20.6% out of those who are non-smokers, who are ex-smokers and who have never smoked and who reported "bad" subjective health condition. For men, 56.7% reported "excellent" subjective health condition out of those have never smoked compared 42.6% who reported "excellent" subjective health condition out of those who are currently smoking. This is a big difference, and is statistically significant at the 1% level (p=.000). In addition, for women and men, those who exercise more and have less stress are less likely to report "bad" and "worst" subject health conditions than those who exercise less and have stress more. For women, 28% reported "bad" health condition

out of those who are obese compared to 21.5% out who have normal weight and 22.0% who are underweight. For men, the underweight group tends to report "bad" subjective health condition more than the normal weight and obese groups.

Table 1. Subjective health condition given by socio-demographic characteristics and forms of health behaviors for women

Socio-demographic characteristics		Recognition of subjective health condition				
		Women				
		excellent	good	Average	bad	worst	(chi-square, p value)
Education	middle school and below	1.2% (63)	18.7% (1013)	33.7% (1821)	39.5% (2134)	6.9% (373)	2758.993 (.000)
	high school	3.9% (175)	43.0% (1912)	41.0% (1821)	11.1% (491)	1.0% (43)	
	university and over	5.8% (212)	52.2% (1898)	34.5% (1255)	6.8% (248)	0.6% (20)	
	total	3.3% (450)	35.8% (4823)	36.3% (4897)	21.3% (2873)	3.2% (436)	
Income	1st 25th percentile	1.8% (74)	22.3% (934)	32.0% (1340)	37.4% (1564)	6.4% (269)	1404.187 (.000)
	2nd 25th percentile	3.1% (99)	37.7% (1216)	40.0% (1290)	17.0% (548)	2.3% (74)	
	3rd 25th percentile	4.2% (127)	43.8% (1322)	37.5% (1131)	13.3% (400)	1.2% (37)	
	4th 25rh percentile	5.0% (146)	44.9% (1306)	37.1% (1079)	11.3% (329)	1.6% (46)	
	Total	3.3% (446)	35.8% (4778)	36.3% (4840)	21.3% (2841)	3.2% (426)	
Marital condition	widowed/divorced /separated	1.5% (40)	18.4% (476)	31.9% (826)	40.3% (1044)	7.9% (206)	1502.589 (.000)
	Unmarried	6.4% (143)	54.4% (1209)	33.0% (733)	5.7% (126)	0.5% (12)	
	living with spouse	3.1% (268)	36.2% (3141)	38.5% (3334)	19.7% (1704)	2.5% (218)	
	Total	3.3% (451)	35.8% (4826)	36.3% (4893)	21.3% (2804)	3.2% (436)	
Job	managerial worker	5.8% (53)	54.6% (495)	33.1% (300)	6.0% (54)	0.6% (5)	1803.496 (.000)
	clerical worker	5.8% (56)	52.4% (504)	36.8% (354)	4.7% (45)	0.2% (2)	
	sales/service worker	3.8% (75)	41.5% (821)	38.9% (768)	14.4% (285)	1.4% (27)	
	fishing and farming worker	0.4% (3)	17.1% (141)	34.9% (288)	43.7% (361)	4.0% (33)	

Job	blue color worker	2.9% (42)	30.1% (441)	43.1% (631)	22.2% (325)	1.6% (24)	1803.496 (.000)
	Student	8.3% (45)	57.5% (310)	28.9% (156)	4.8% (26)	0.4% (2)	
	Housewife	2.8% (135)	35.0% (1710)	38.0% (1858)	21.1% (1033)	3.2% (156)	
	no jobs	2.2% (42)	21.0% (402)	28.3% (542)	38.8% (743)	9.8% (187)	
	Total	3.3% (451)	35.8% (4824)	36.3% (4897)	21.3% (2872)	3.2% (436)	
Age	19-28	6.4% (144)	55.8% (1254)	32.2% (723)	5.3% (120)	0.2% (5)	3342.648 (.000)
	29-38	4.5% (126)	47.2% (1320)	40.5% (1133)	7.5% (209)	0.4% (11)	
	39-48	3.7% (113)	40.0% (1217)	40.8% (1240)	14.1% (429)	1.3% (41)	
	49-58	2.0% (42)	28.0% (593)	39.4% (835)	26.8% (567)	3.8% (81)	
	59-68	0.7% (13)	15.6% (270)	33.0% (573)	42.9% (744)	7.8% (135)	
	69 years old and over	0.8% (13)	11.1% (172)	25.4% (393)	52.1% (805)	10.5% (163)	
	Total	3.3% (451)	35.8% (4826)	36.3% (4897)	21.3% (2874)	3.2% (436)	

Forms of health behaviors		excellent	good	Average	bad	worst	(chi-square, p value)
Current smoking status	currently smoking	2.9% (6)	26.9% (56)	30.8% (64)	33.7% (70)	5.8% (12)	31.025 (.002)
	irregularly smoking	2.6% ()	23.1% (9)	51.3% (20)	17.9% (7)	5.1% (2)	
	used to be a smoker	2.2% (4)	28.3% (52)	38.6% (71)	24.5% (45)	6.5% (12)	
	Never smoking	3.6% (139)	33.0% (1275)	38.7% (1492)	20.6% (797)	4.1% (157)	
	Total	3.5% (150)	32.4% (1392)	38.4% (1647)	21.4% (919)	4.3% (183)	
High risk days of drinking (7 cups of strong Alcohol: one bottle of Soju)	no risky days of drinking	3.0% (48)	33.1% (521)	40.4% (636)	19.6% (308)	3.9% (61)	273.253 (.000)
	once per month and no risky days of drinking per month	4.7% (48)	40.1% (408)	41.3% (420)	12.8% (130)	1.1% (11)	
	once every week and every day	6.2% (20)	41.8% (136)	36.6% (119)	14.8% (48)	0.6% ()	

		excellent	good	Average	bad	worst	(chi-square, p value)
	never drinking	2.5% (34)	23.8% (327)	34.3% (472)	31.5% (433)	7.9% (109)	273.253 (.000)
	Total	3.5% (150)	32.4% (1392)	38.4% (1647)	21.4% (919)	4.3% (183)	273.253 (.000)
Days of enthusiastic exercise activity (exercise lasting more than 10 minutes)	Never	3.2% (110)	30.9% (1056)	37.7% (1286)	23.3% (794)	4.9% (166)	63.157 (.000)
	one day	4.7% (11)	38.6% (91)	44.5% (105)	11.0% (26)	1.3% (3)	63.157 (.000)
	two and three days	5.2% (16)	39.2% (121)	39.8% (123)	13.3% (41)	2.6% (8)	63.157 (.000)
	our days and more	3.9% (13)	37.1% (124)	39.8% (133)	17.4% (58)	1.8% (6)	63.157 (.000)
	Total	3.5% (150)	32.4% (1392)	38.4% (1647)	21.4% (919)	4.3% (183)	63.157 (.000)
Degree of Stress	extremely	3.6% (10)	20.0% (55)	33.5% (92)	30.5% (84)	12.4% (34)	224.729 (.000)
	not many times	3.1% (39)	25.1% (311)	36.7% (455)	28.3% (351)	6.8% (84)	224.729 (.000)
	little	3.6% (78)	36.7% (786)	41.8% (894)	15.8% (337)	2.1% (44)	224.729 (.000)
	Rare	3.6% (23)	37.7% (240)	32.3% (206)	23.1% (147)	3.3% (21)	224.729 (.000)
	Total	3.5% (50)	32.4% (1392)	38.4% (1647)	21.4% (919)	4.3% (183)	224.729 (.000)
Weight (Body Mass Index)	(BMI<18.5)	2.7% (4)	26.0% (39)	44.0% (66)	22.0% (33)	5.3% (8)	32.276 (.000)
	normal(18.5=BMI<25)	3.7% (76)	31.6% (654)	39.4% (815)	21.5% (444)	3.8% (79)	32.276 (.000)
	obesity(25=BMI)	2.0% (19)	27.4% (257)	36.5% (343)	28.0% (263)	6.1% (57)	32.276 (.000)
	Total	3.1% (99)	30.1% (950)	38.8% (1224)	23.4% (740)	4.6% (144)	32.276 (.000)

Table 2. Subjective health condition given by socio-demographic characteristics and forms of health behaviors for men

Socio-demographic characteristics		Recognition of subjective health condition					
		Men					
		excellent	good	Average	bad	worst	(chi-square, p value)
Education	middle school and below	2.5% (74)	28.1% (837)	33.2% (990)	29.9% (890)	6.3% (187)	
	high school	5.0% (208)	46.5% (1930)	35.4% (1466)	11.5% (475)	1.6% (68)	1419.159 (.000)

Education	university and over	8.4% (385)	54.2% (2486)	30.7% (1407)	5.8% (268)	0.8% (38)	
	total	5.7% (667)	44.9% (5253)	33.0% (3863)	13.9% (1633)	2.5% (293)	1419.159 (.000)
Income	1st 25th percentile	3.4% (105)	31.4% (975)	32.8% (1017)	25.8% (801)	6.6% (204)	
	2nd 25th percentile	5.7% (172)	47.3% (1422)	33.7% (1014)	11.7% (352)	1.5% (45)	
	3rd 25th percentile	6.6% (186)	50.9% (1430)	32.8% (921)	8.7% (243)	1.0% (29)	948.572 (.000)
	4th 25th percentile	7.3% (193)	51.6% (1364)	32.2% (853)	8.5% (224)	0.4% (11)	
	Total	5.7% (656)	44.9% (5191)	32.9% (3805)	14.0% (1620)	2.5% (289)	
Marital condition	widowed/divorced /separated	4.3% (28)	28.2% (182)	34.4% (222)	26.9% (174)	6.2% (40)	568.119 (.000)
	Unmarried	10.1% (267)	57.0% (1511)	25.3% (672)	6.3% (168)	1.2% (33)	568.119 (.000)
	living with spouse	4.4% (371)	42.3% (3561)	35.3% (2970)	15.3% (1290)	2.6% (220)	568.119 (000)
	Total	5.7% (666)	44.9% (5254)	33.0% (3864)	13.9% (1632)	2.5% (293)	568.119 (.000)
Job	managerial worker	7.5% (113)	53.4% (809)	33.1% (502)	5.9% (90)	0.1% (2)	
	clerical worker	7.8% (108)	56.0% (773)	31.7% (438)	4.3% (59)	0.1% (2)	
	sales/service worker	6.3% (101)	48.6% (777)	35.4% (565)	8.9% (143)	0.8% (12)	
	fishing and farming worker	2.9% (26)	31.7% (286)	36.5% (330)	27.0% (244)	1.9% (17)	1739.756 (.000)
	blue color worker	4.3% (147)	45.5% (1567)	36.2% (1248)	13.2% (454)	0.9% (31)	
	Student	14.4% (90)	58.5% (367)	22.5% (141)	4.5% (28)	0.2% ()	
	Housewife	33.3% (1)	33.3% (1)	0.0% (0)	33.3% (1)	0.0% (0)	
	no jobs	3.6% (81)	30.1% (674)	28.6% (639)	27.5% (614)	10.2% (228)	
	Total	5.7% (667)	44.9% (5254)	33.0% (3863)	13.9% (1633	2.5% (293)	
Age	19-28	12.0% (220)	59.6% (1091)	23.6% (432)	4.5% (83)	0.3% (5)	1833.146 (.000)
	29-38	6.0% (157)	53.5% (1398)	34.0% (887)	5.9% (154)	0.6% (15)	

Age		excellent	good	average	bad	worst	(chi-square, p value)
	39-48	5.4% (155)	47.5% (1369)	36.0% (1037)	9.7% (281)	1.5% (42)	
	49-58	4.5% (90)	38.5% (764)	36.4% (723)	17.9% (355)	2.7% (54)	
Age	59-68	2.1% (31)	30.1% (448)	33.6% (499)	28.4% (422)	5.8% (86)	1833.146 (.000)
	69 years old and over	1.5% (14)	20.2% (185)	31.3% (286)	37.0% (338)	10.0% (91)	
	Total	5.7% (667)	44.9% (5255)	33.0% (3864)	13.9% (1633)	2.5% (293)	

Forms of health behaviors		excellent	good	average	bad	worst	(chi-square, p value)
	currently smoking	4.8% (83)	37.8% (654)	39.8% (687)	15.4% (266)	2.2% (38)	
	irregularly smoking	6.1% (7)	45.6% (52)	37.7% (43)	7.9% (9)	2.6% (3)	
Current smoking status	used to be a smoker	4.8% (52)	39.4% (429)	35.7% (389)	16.1% (175)	4.0% (44)	56.511 (.000)
	Never smoking	8.3% (48)	48.4% (279)	30.8% (178)	10.1% (58)	2.4% (14)	
	Total	5.4% (190)	40.3% (1414)	37.0% (1297)	14.5% (508)	2.8% (99)	
	no risky days of drinking	5.3% (34)	38.1% (243)	36.5% (233)	16.9% (108)	3.1% (20)	
	once per month and no risky days of drinking per month	5.6% (55)	45.3% (444)	37.0% (363)	10.4% (102)	1.6% (16)	
High risky days of drinking (7 cups of strong Alcohol: bottle of Soju)	once every week and every day	5.8% (82)	40.6% (571)	38.6% (543)	13.2% (185)	1.7% (24)	120.207 (.000)
	never drinking	3.9% (19)	32.3% (157)	32.5% (158)	23.3% (113)	8.0% (39)	
	Total	5.4% (190)	40.3% (1415)	37.0% (1297)	14.5% (508)	2.8% (99)	
	Never	4.6% (97)	36.6% (766)	37.0% (774)	17.6% (369)	4.2% (88)	
Days of enthusiastic exercise activity (exercise lasting more than 10 minutes)	one day	5.4% (24)	44.6% (200)	40.4% (181)	8.9% (40)	0.7% (3)	
	two and three days	7.3% (36)	45.2% (223)	38.1% (188)	9.1% (45)	0.2% ()	103.766 (.000)
	our days and more	7.0% (33)	47.7% (226)	32.5% (154)	11.5% (54)	1.5% (7)	
	Total	5.4% (190)	40.3% (1415)	37.0% (1297)	14.5% (508)	2.8% (99)	

	extremely	3.2%	32.7%	31.9%	21.0%	11.3%	
		(8)	(81)	(79)	(52)	(28)	
	not many times	4.0%	34.1%	41.1%	18.2%	2.6%	
		(40)	(337)	(406)	(180)	(26)	
Degree of Stress	little	6.3%	44.5%	36.7%	10.9%	1.6%	147.008
		(112)	(791)	(652)	(193)	(28)	(.000)
	Rare	6.0%	41.5%	32.3%	16.7%	3.4%	
		(30)	(206)	(160)	(83)	(17)	
	Total	5.4%	40.3%	37.0%	14.5%	2.8%	
		(190)	(1415)	(1297)	(508)	(99)	
	skinny(BMI<18.5)	2.4%	25.0%	34.5%	25.0%	13.1%	57.520
		(2)	(21)	(29)	(21)	(11)	(.000)
	normal(18.5≡BMI<25)	5.3%	36.6%	37.9%	17.8%	2.4%	57.520
		(75)	(520)	(538)	(253)	(34)	(.000)
	obesity(25≡BMI)	3.6%	43.7%	36.7%	13.1%	2.9%	57.520
		(30)	(366)	(307)	(110)	(24)	(.000)
	Total	4.6%	38.7%	37.3%	16.4%	2.9%	57.520
		(107)	(907)	(874)	(384)	(69)	(.000)

Table 3 and **Table 4** report results of the hierarchical logistic regressions on subjective health condition given by socio-demographic characteristics and forms of health behaviors for both women and men aged 40 and over respectively. Both tables have three models. Model 1includes only socio-demographic variables, while model 2 includes smoking, drinking, and exercising in addition to the socio-demographic variables. Lastly, model 3 is a full model.

Results of model 1 in **Table 3** indicate that the lower the levels of education and income, women are more likely to report "bad" and "worst" subjective health condition. Women aged 40 and over with a middle school education or lower are more likely to report "bad" and "worst" subjective health condition than the reference group of those who have a university education or above Women with a high school education are more likely to report "bad" and "worst" subjective health condition than the reference group of those with a university education or above. Women in the lowest income level are more likely to report "bad" and "worst" subjective health condition than the reference group in the highest income level.. Moreover, women who are widowed/divorced/separated are more likely to report "bad" and "worst" subjective health condition than the reference group of women who are married. All the results above are statistically significant at the 1% level with p<.001.

Model 2 is an expanded of model 1 with smoking, drinking, and exercising. Including the three behavioral variables in model 1 slightly decreased odds ratio of socio-demographic variables, but their strength and statistical significance still remained the same in the model 2. Women aged 40 and over who are current smokers are more likely to report "bad" and "worst" subjective health condition than the reference group of women who have never smoked

Similarly, women who have never exercised more than 10 minutes per week are more likely to report "bad" and "worst" subjective health condition than the reference group of women who have exercised more than 10 minutes per week four times or more.. In addition, women who experienced risky days of drinking and no risky days of drinking but are still drinking are less likely to report "bad" and "worst" subjective health condition than the reference group of those who have never had an experience of drinking. All the results above are statistically significant at the 1% level.

Model 3 in **Table 3** is a full model that includes the stress and weight variables. (When impact of socio-demographic variables, drinking, smoking, and exercising on subjective health condition remain.) Women who experience stress (extreme and not many times) are more likely to report "bad" and "worst" subjective health condition than the reference group of women who do not experience stress. All the groups in relation to the reference groups are statistically significant at the 1% level.

Table 3. Hierarchical logistic regression on subjective health condition given by socio-demographic characteristics and forms of health behaviors for women aged 40 and over.

Variables		Model 1 Odds Ratio (standard error)	Model 2 Odds Ratio (standard error)	Model 3 Odds Ratio (standard error)
Education	middle school and below	6.551***	5.835***	6.184***
		(.269)	(.272)	(.277)
	high school	2.180**	2.192**	2.349**
		(.282)	(.285)	(.289)
	university and over(reference group)			
Income	1st 25th percentile	2.529***	2.353***	2.157***
		(.167)	(.171)	(.174)
	2nd 25th percentile	1.244	1.209	1.126
		(.185)	(.188)	(.192)
	3rd 25th percentile	1.136	1.135	1.110
		(.189)	(.192)	(.196)
	4th 25th percentile(reference group)			
Marital condition	widowed/divorced	1.384**	1.266*	1.279*
	/separated/unmarried	(.111)	(.117)	(.119)
	living with spouse(reference group)			
Current smoking status	currently/irregularly smoking		1.889***	1.802*
			(.244)	(.25)
	used to be a smoker		1.060	1.802
			(.256)	(.25)
	Never smoking(reference group)			
High risky days of drinking	no risky days of drinking		0.727**	0.716**
			(.114)	(.117)

		Model 1	Model 2	Model 3
(7 cups of strong Alcohol: no risky days of drinking per month	once per month and one bottle of Soju)		0.488*** (.166)	0.494*** (.17)
	once every week and every day		0.313*** (.285)	0.281*** (.29)
	never drinking(reference group)			
Days of enthusiastic exercise activity	Never		1.449 † (.200)	1.501** (.206)
(exercise lasting more than 10 minutes	one day		0.738 (.337)	0.663 (.349)
	two and three days		0.661 (.300)	0.680 (.307)
	four days and more(reference group)			
Degree of Stress	extremely			3.058*** (.236)
	not many times			2.507*** (.152)
	Little			1.190 (.145)
	rare(reference group)			
Weight (Body Mass Index)	skinny(BMI<18.5)			1.592 (.366)
	normal(18.5≤BMI<25)			1.098 (.110)
	obesity(25≤BMI)(reference group)			
Invariable		0.076*** (.272)	0.085*** (.332)	0.051*** (.371)

*** p<.000 ** p<0.01, * p<0.05, † p<0.1

Table 4 shows that education, income, risky days of drinking, and stress all have similar impacts on subjective health condition of men aged 40 and over, as they did on women aged 40 and over. Yet, the odds ratios among the groups' educational backgrounds appeared to be lower for men than for women. Also, men who are underweight and have normal weight are more likely to report "bad" and "worst" subjective health condition than men who are obese . All groups in relation to the reference groups are statistically significant at the 1% level.

Table 4. Hierarchical logistic regression on subjective health condition given by socio-demographic characteristics and forms of health behaviors for men aged 40 and over

		Model 1	Model 2	Model 3
Variables		Odds Ratio (standard error)	Odds Ratio (standard error)	Odds Ratio (standard error)
Education	middle school and below	4.595*** (.215)	4.308*** (.217)	4.725*** (.222)

	high school	1.838** (.226)	1.814** (.228)	1.897** (.231)
	university and over(reference group)			
Income	1st 25th percentile	2.819*** (.209)	2.604*** (.211)	2.459*** (.215)
	2nd 25th percentile	1.068 (.234)	1.024 (.236)	1.031 (.24)
	3rd 25th percentile	1.032 (.237)	1.068 (.239)	1.073 (.243)
	4th 25th percentile(reference group)			
Marital condition	widowed/divorced /separated/unmarried	1.158 (.190)	1.085 (.193)	1.008 (.197)
	living with spouse(reference group)			
Current smoking status	currently/irregularly smoking		1.498 † (.211)	1.273 (.217)
	used to be a smoker		1.180 (.211)	1.136 (.215)
	Never smoking(reference group)			
High risky days of drinking	no risky days of drinking		0.765 (.19)	0.747 (.194)
(7 cups of strong Alcohol: one bottle of Soju)	once per month and no risky days of drinking per month		0.676 † (.202)	0.671 † (.207)
	once every week and every day		0.669* (.179)	0.638* (.183)
	never drinking(reference group)			
Days of enthusiastic exercise activity (exercise lasting more than 10 minutes)	Never		1.377 (.201)	1.328 (.205)
	one day		0.759 (.301)	0.713 (.307)
	two and three days		0.921 (.288)	0.896 (.294)
	four days and more(reference group)			
Degree of Stress	extremely			3.116*** (.285)
	not many times			1.835** (.191)
	little			0.996 (.179)
	rare(reference group)			
Weight (Body Mass Index)	skinny(BMI<18.5)			1.967* (.33)
	normal(18.5=BMI<25)			1.392* (.145)
	obesity(25=BMI)(reference group)			

Invariable		0.079***	0.074***	0.051***
		(.224)	(.348)	(.383)

*** p<.000 ** p<0.01, * p<0.05, † p<0.1

IV. Conclusion

This study, using the Third National Health and Nutrition Survey in Korea, analyzes health conditions of Korean men and women. Results of logistic regression and ANOVA analyses show that socio-demographic variables are important factors in predicting women's subjective health condition, even after controlling such variables as drinking, smoking, exercise, stress and obesity. Women's subjective health conditions appear to be much poorer than men's. Results also show that the groups with the low socio-demographic status are vulnerable to poor subjective health condition. For instance, women aged 40 and over with a middle or primary school education are more likely to report "bad" and "worst" subjective health condition than the reference group with a university or higher education (odds ratio=6.184, p<.000). Women with the lowest income are more likely to report "bad" and "worst" subjective health condition than the reference group with the highest income (odds ratio=2.157, p<.001). Moreover, the marital status in this study is associated with subjective health condition. Those who are divorced/widowed/separated are more likely to report worse subjective health condition than those who are married. The reason might be that marriage may provide material and financial resources as well as psychological security that positive affect health of women.

These findings can be well explained by recent studies that focused on social aspects. For example, Rieker & Bird (2005) suggested a "constrained choice" theory that can emphasize the reasons why we need understanding of different health conditions by gender in terms of social and biological perspectives. Rieker & Bird (2005) suggested priorities of health between men and women are different, which can lead to different a choice and an opportunity associated with health behaviors. This theory was borrowed from a "rational choice theory" in economics telling that the choice and opportunity are constrained by each other, not by independent of each other. That is, a constrained choice can affect a different level of health condition between men and women, because men and women have different resources and time which can cause different socio-psychological and physical responses. Gender differences of the constrained factors can affect their health conditions directly and indirectly. This can accumulate into a form of biological danger, contributing to health inequality by gender. This model also described environments explaining a variety of factors that can differently affect men and women's life. The environments in the model included a decision process at each choice level of an individual and a group. Asocial context influencing the choice of an individual level could be a macro level of a governmental health policy or factors belonging to family and community environments. Rieker & Bird (2005) also argued that more study are urgently needed to fill the gap of our understanding "paradox of gender", which can be summarized in high disease rates for women and a low life expectancy for men. In conclusion, Rieker & Bird (2005) emphasized importance of

multidisciplinary studies, and argued that social scientists need to cooperate with biological and natural scientists when they study differences of health conditions by gender.

It should be noted that we should need a panel data to study a relationship between gender and health. The reason why gender cannot be easily excluded in the study of subjective health condition is that differences of gender in the short time period is very minimal, but it may get larger in the long time perspective. That is, different subjective health conditions of gender can be disclosed through a panel study for a long time, not through a cross-sectional study at a particular point in time. Also, we need more variables that can explain women's health condition well in the Third National Health and Nutrition Survey. Specifically, the variables such as conflict of job and family role, domestic violence, and relationship among family members are missing in the data.

Based on these findings, it is necessary to increase government funding for research on gender and health inequality and to enhance education and public awareness for women's health.

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