The Factors Associated with Accident and Addiction Among Korean Adults

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ABSTRACT

This study was conducted to investigate the factors related to accidents and addiction among Korean adults. A total of 228,381 adults were included in this study, and 160,546 people (70.3%) under 64 years old and 67,835 people (29.7%) older than 65 years old were analyzed separately. The 2017 Community Health Survey Data was used, a univariate chi-square test and multiple logistic regression analysis were performed to identify and analyze the factors related to accidents and addiction. The results were as follows. The prevalence of one accident and addiction among Korean adults was 6.2% for men and 6.9% for women, and the prevalence of 2 or more accidents and addiction was 0.4% for men and women, respectively. Significant contributing variables to at least one accident and addiction included education, region, administrative district, generation type, marital status, flexibility exercise days, annual drinking, health level, driving status, drunk driving, drunk driving (motorcycle), fastening the rear seat's seat belt, safety level, dyslipidemia, falling, depression, suicidal ideation, and sitting with drunk driver (p<0.05). Significant contributing variables to 2 or more accidents and addiction were gender, region, economic activity, administrative district, health level, driving status, fastening the front seat belt, arthritis, falling, internet, depression, suicidal ideation, and sitting with drunk driver (p<0.05). Many factors related to accidents and addiction among Korean adults have been identified, and it will be needed to consider these various variables in the public health intervention project.

1. Introduction

Accidents and addiction are among the important causes of disease and death for young children and the elderly. The suicide rate per 100,000 Koreans is 23.0 people, ranking Korea second after Lithuania, and for transportation accidents, the sixth after Mexico, the United States, Chile, Greece,

and Canada. According to the statistics on causes of death in Korea in 2017, the intentional self-harm (suicide) ranked fourth, following malignant neoplasm (cancer), cerebrovascular disease, and heart disease, and for transport accidents, the sixth, while the causes of death that men ranked higher than women were intentional self-harm (suicide), liver disease, transport accidents, and falls (National Health Insurance Service, 2014). Notwithstanding which, the proportion of the elderly population aged 65 or older in Korea is 8,537,000 people as of 2022, accounting for 16.5% of the total population (Statistics Korea, 2022). Korea already entered an aged society with 13.8% of the population aged 65 or older in 2017, which increased to 14.9% in 2019, 16.5% in 2021, 21.4% in 2026, super-aged society, 24.5% in 2030, and at which time, it is expected to enter into an "aged society" at 43.9%in 2060. The aging index (per 100 of the youth population) is 138.8 people, which increases every year, and the life expectancy of men is 80.3 years and that of women is 86.3 years. Nevertheless, as for the mortality rate as of December 2019 (people per 100,000 people) there are 574.8 people (626.0 males and 523.9 females), and the mortality rate due to external causes (accidental deaths, etc.) accounted for 9.4% of all deaths, and as the age increases in the life stage, the mortality rate due to various accidents increases (Statistics Korea, 2021).

The reasons for the increase in accidents and addiction among adults in Korea are diseases and symptoms, stress, bad habits and attitudes, lack of knowledge, memory (cognition) due to physical aging, vision, perception of real life, judgment and execution, and motor skills for decreased ability to cope with sudden accidents and awareness of dangerous environments also occurs as momentary mistakes, forgetfulness, mistakes, etc., nuclear families, increase in the number of elderly people living alone, the radius of activity of the elderly gradually widened, and the amount of activity increases, and in order to prevent disasters caused by accidents, it is necessary to complete safety facilities and protective devices, and at the same time, make efforts to form safety related knowledge, skills, attitudes, and habits through safety education (Kim et al., 2008; Butterworth et al., 2004).

The accidents and addictions that occur frequently are 88% caused by negligence or insensitivity to safety, 2% caused by force majeure, 10% caused by unsafe environments, and traffic accidents, falls, and drowning are the most common causes. The total number of deaths from traffic accidents decreased from 5,392 in 2012 to 3,349 in 2019, but the proportion of elderly deaths increased by 9.9% from 34.6% in 2012 to 44.5% in 2018, and among the Organization of Economic Cooperation and Development (OECD) countries, Norway has the lowest elderly traffic accident mortality rate at 3.6 per 100,000 elderly people. Korea has the highest number of 25.6 people, which is about three times higher than the OECD average of 8.8 people (Statistics Korea, 2019).

As for the factors related to adult accidents and addiction, aging related internal factors include aging related physical changes, an increase in chronic diseases, an increase in drug abuse, cognitive and emotional changes, etc., are included, and as for the external factors, a number of physical and social environmental conditions that can indirectly cause harm are included. Alcohol, drug addiction, gambling addiction, and Internet game addiction, which are social problems over the recent years, are estimated to be 6.18 million out of about 50 million people in the Republic of Korea, which corresponds to 1 out of 8 people, and the damage caused by addiction is the addict himself or herself, and furthermore, it has a negative impact on their close family, relatives and acquaintances, and our society as a whole, and has emerged as a risk factor for the foundation of the national

competitiveness. The socioeconomic costs caused by accidents and addiction serve as basic data for understanding the importance of the national health promotion in national development and policy. Based on which, it became possible to compare and quantify the degree of health loss due to diseases, injuries, and health risk factors in a specific time period by age, gender, and region. The global burden of disease (GAD) was investigated up to 2013 based on the continuous research method improvement and regional expansion (Sayola et al., 2005). Depending on the size of the region, the greater the metropolitan area, the higher the death rate due to accidents and addiction. The accident rate varies depending on the amount of alcohol consumed once, stress, smoking, wearing seat belts while driving, and using seat belts in the front and rear seat's seats, and it has to do with whether riding as passenger in a drunk driving vehicle and the accident's occurrence.

Drinking is known not only as a disease, but also as a cause of accidents and addiction, and if one drinks less, there may be no problem. Yet if one drinks too much in excess, one's behavior, emotions, judgment, and ability to cope will deteriorate significantly, and one's ability to drive or operate and respond will decrease, which affects accidents (Sayola et al., 2005; Bellis, 2006; Stephens, 1987). It can also cause physical and mental problems, but if one causes problems such as disabilities, accidents and addictions can negatively affect one, one's family and people related. The negative impact is reaching a level that cannot be overlooked in terms of physical, mental and socioeconomic costs. In order to prevent and manage accidents and addiction, which increase year by year, it is necessary to accurately grasp the level of accident and addiction incidence in Korea, and effective measures should be proposed for this purpose. The previous research data analyzing the current state of accident and addiction have limitations in reflecting the occurrence of accidents and addiction people nationwide, such as the people at hospitals and clinics and the people visiting emergency centers (Ham et al., 2007; Lee, 2003).

Accordingly, this study investigated the actual status of accidents and addiction among the adults in Korea based on the raw data of the 2017 Community Health Survey, and investigated the general characteristics and health behaviors of the survey subjects according to the number of accidents and addictions, presence and absence of chronic diseases, and the characteristics of health awareness behaviors. The purpose of this study was to identify accident and addiction related factors according to the distribution of accidents and addiction, and analyze the related factors to provide the basic data for preventing accidents and addiction for adults and preparing safety measures in the future.

2. Research Subject and Method

2.1 Distribution of accidents and addiction according to research subjects and general characteristics of data

This study is a cross-sectional study using the data from the Korea Community Health Survey conducted from August 16, 2017 to October 31, 2017. In this survey, the sampling of adults across the country was linked to the resident registration population data (Ministry of Public Administration and Security) and the housing type data (Ministry of Land, Infrastructure and Transport), and the

number of samples was about 900 per city/county/district public health center across 255 regions nationwide, while the total number of adults nationwide was 228,381 people. As a research method, a one-on-one interview was conducted by visiting the household of the researcher, and a laptop was used as the research tool.

2.2 Research method

As for the dependent variable in this study, the "experience of accident and addiction" was divided into "once" and "twice or more" experiences. The independent variables were consisted of sociodemographic characteristics, health behavior characteristics, chronic disease prevalence, and health consciousness behavior categories.

The demographic and sociological characteristics included gender, age, education, region, economic activity, administrative district, housing type, 3 generation type (1st generation, 2nd generation, 3rd generation), marital status, and occupation. The health behavior characteristics included annual drinking status (yes, no), annual drinking frequency (less than 4 times a month, 2-4 times a week), driving a car, driving while drinking, motorcycle drinking, bicycle drinking, front seat safety Seatbelts, whether to wear seat belts in the back seat, body mass index (underweight, normal, obese), strength exercise, strenuous physical activity, days of walking, days of flexibility exercise, presence or absence of chronic diseases , sleep time, alcohol consumption, falls, Internet games, smartphone impairment (presence or absence), depression, suicidal ideation, drunk driving, subjective health level (good, average, bad), stress, and the community safety level (satisfactory, dissatisfied).

As for the statistical analysis, the Windows R program (R-3.5.3 for Windows) was used, and the frequency analysis was conducted to identify the general characteristics of the number of accidents and addiction experiences, health behavior, chronic disease, and health care behavior characteristics. Furthermore, to identify factors related to the number of accidents and addiction experiences, a chi-square test was conducted with "more than once" and "more than twice" as the dependent variables, and research variables that demonstrated a significant relationship in the univariate analysis were input, and the multivariate logistic regression analysis was conducted for the factors affecting the accident and addiction experience.

3. Research Results

3.1 Distribution of accidents and addictions according to the general characteristics

The subjects of this study were a total of 228,381 people (100.0%), including 102,484 males (44.9%) and 125,897 females (55.1%). Examining the age distribution of accidents and addiction according to the general characteristics of the subjects, 160,546 people (70.3%) were under the age of 64, and 67,835 (29.7%) were over the age of 65, and in terms of education, 145,420 people (63.7%) or less graduated from middle school, and by region, 139,752 people (52.5%) were in other rural areas. In terms of economic activities, 144,519 people (63.3%) said yes, and in terms

334

of administrative district, 128,188 people (56.1%) were residing in dong. By housing type, 137,087 people (60%) lived in general housing, and by household type, 107,805 people (47.2%) in 2nd households, 103,476 people (45.3%) in 3 generations, 17,100 (7.5%) in 3 generations. As for the marital status, 153,932 people (67.4%) had a spouse, and by occupation, agriculture and fisheries and others were the most with 154,151 people (67.5%). Of the total 228,381 subjects, 212,326 (93.0%) had no accident or addiction experience, 15,097 (6.6%) had one experience, and 958 (0.4%) had two or more. Accident and addiction experiences demonstrated statistically significant differences in gender, age, education, region, economic activity, administrative district, housing type, household type, marital status, and occupation (p<0.001). The distribution of accidents and addictions according to general characteristics was examined.

First examining gender, 95,697 males (93.4%) had no accident or addiction experience, compared to 116,629 females (92.6%), while 8,707 women (6.9%) experienced it once, which was higher than 6,390 men (6.2%), and 561 women (0.4%) experienced it twice or more, higher than 397 men (0.4%) (p<0.001). In terms of age, 62,029 (91.4%) of those aged 65 or older were lower than 150,297 (93.6%) of those aged 64 or younger in no accident or addiction experience, and for once, 5,440 people (8.0%) were over 65 years of age, compared to 9,657 people (6.0%) under 64 years of age, and for twice or more, those aged 65 or older was 366 (0.5%), which was high (p<0.001). In terms of education, 78,281 people (94.4%) graduated from high school or higher had higher educational attainment than 134,045 people (92.2%) who graduated from middle school or less in the case of no accident or addiction experience, and for once, 10,679 people (7.3%) graduated from middle school or less, and for twice or more, 696 people (0.5%) or less graduated from middle school, and in terms of region, 60,147 people (93.9%) in special/metropolitan cities were high in no accidents and addiction, and for once, the number of other rural areas was high at 2,631 (7.4%), and for twice or more, there were 155 people (0.5%) in other rural areas (p<0.001). As for economic activities, 135,056 people (93.5%) had a high rate of accidents and no addiction, and for once, no was as high as 6,124 (7.3%), and for twice or more, 468 (0.6%) answered no (p<0.001). In terms of generation type, the second generation accounted for 101,094 (93.8%) in no accidents and addictions, the first generation accounted for 7,678 (7.4%) for once, and the first generation accounted for 499 (0.5%) for twice or more (p <0.001) (Table 1).

Table 1. Experience of accident and addiction among Korean adult by general characteristics of study subject

Unit: n(%)

Variables	Total	Experience of accident and addiction			p-value*
		None	Once	More than twice	
Gender					
Men	102,484(44.9)	95,697(93.4)	6,390(6.2)	397(0.4)	p<0.001
Women	125,897(55.1)	116,629(92.7)	8,707(6.9)	561(0.4)	
Age(years)					
≤ 64 years	160,546(70.3)	150,297(93.6)	9,657(6.0)	592(0.4)	p<0.001
≥ 65 years	67,835(29.7)	62,029(91.5)	5,440(8.0)	366(0.5)	
Education					
≤ Middle school	145,420(63.7)	134,045(92.2)	10,679(7.3)	696(0.5)	p<0.001
≥ High school	82,961(36.3)	78,281(94.4)	4,418(5.3)	262(0.3)	

Variables	Total	Experience of accident and addiction			p-value*
		None	Once	More than twice	
Region					
Special & metropolitan city	88,629(47.5)	60,147(93.9)	3,578(5.7)	229(0.4)	p<0.001
Others	139,752(52.5)	41,739(92.1)	2,631(7.4)	155(0.5)	
Economic activity status					
Yes	144,519(63.3)	135,056(93.5)	8,973(6.2)	490(0.3)	p<0.001
No	83,862(36.7)	77,270(92.1)	6,124(7.3)	468(0.6)	
Administrative district					
Eup · Myeon	128,188(56.1)	119,877(93.5)	7,789(6.1)	522(0.4)	p<0.001
Dong	100,193(43.9)	92,449(92.3)	7,308(7.3)	436(0.4)	
Housing type					
General house	137,087(60.0)	126,684(92.4)	9,762(7.1)	641(0.5)	p<0.001
Apartment	91,294(40.0)	85,642(93.8)	5,335(5.8)	317(0.4)	
Generation type					
1st generation	103,476(45.3)	95,299(92.1)	7,678(7.4)	499(0.5)	p<0.001
2nd generation	107,805(47.2)	101,094(93.8)	6,321(5.9)	390(0.3)	
3rd generation	17,100(7.5)	15,933(93.2)	1,098(6.4)	69(0.4)	
Marital status					
Married	153,932(67.4)	143,414(93.2)	9,924(6.4)	593(0.4)	p<0.001
Others	74,449(32.6)	68,912(92.6)	5,173(6.9)	364(0.5)	
Occupation					
White colors	74,230(32.5)	235,77(94.1)	1,368(5.6)	87(0.3)	p<0.001
Blue colors	154,151(67.5)	64,356(92.4)	4,845(7.1)	247(0.5)	
Total	74,230(100.0)	212,326(93.0)	15,097(6.6)	958(0.4)	

* by chi-square test

3.2 Distribution of accidents and addictions by health behavior

Examining the annual drinking status in the distribution of accidents and addiction according to health behavior, "yes" was 153,487 people (67.%), which was more than "no", 74,894 (32.8%), and the annual drinking frequency was less than 4 times a month. 178,47 people (78.0%) were high, and 120,866 people (52.9%) answered "yes" to whether they drove a car, and many experienced accidents and addiction. While 11,219 people (4.9%) answered "yes" to drinking and driving, 2,192 people (1.0%) said "yes" to motorcycle drinking, who had little experience with addiction. There were 4,883 (2.1%) bicycle drinkers, and they had fewer accidents and addiction experiences than those who did not. Front seat's seat belt "no" was low at 23,756 (10.4%), and rear seat's seat belt "no" was high at 117,053 (51.3%). As for the body mass index, "underweight" was 17,752 people (7.8%), "normal" 94,079 (41.2%), and obese 116,486 (51.0%), while the number of walking days was 123,437 (54.0%), which was higher than 4 days.

Of the total 228,381 subjects, 212,326 people (93.0%) had no experience of accidents and addiction according to the health behavior, 15,097 (6.6%) had one experience, and 955 people (0.4%) had two or more experiences.

Table 2. Experience of accident and addiction among Korean adult according to health behaviors

Unit: n(%)

Variables	Total	Experience of accident and addiction			p-value*
		None	Once	More than twice	
Annual alcohol drinking					
Yes	153,487(67.2)	143,487(93.5)	9,459(6.1)	541(0.4)	p<0.001
No	74,894(32.8)	68,839(91.9)	5,638(7.5)	417(0.6)	
Annual drinking frequency					
<4/month	178,047(78.0)	165,358(92.9)	11,906(6.7)	783(0.4)	p<0.001
2-4/week	50,334(22.0)	46,968(93.3)	3,191(6.4)	175(0.3)	
Driving status					
Yes	120,866(52.9)	112,959(87.0)	7,475(11.4)	432(1.6)	p<0.001
No	107,515(47.1)	99,367(93.4)	7,622(6.3)	523(0.3)	
Driving after getting drunk(Car)					
Yes	11,219(4.9)	10,281(93.5)	895(6.1)	43(0.4)	p<0.001
No	217,162(95.1)	202,045(92.4)	14,202(7.1)	915(0.5)	
Driving after getting drunk(Motorcycle)					
Yes	2,192(1.0)	1,977(91.6)	205(8.0)	10(0.4)	p<0.001
No	226,189(99.0)	210,349(93.1)	14,892(6.5)	948(0.4)	
Driving after getting drunk(Bicycle)					
Yes	4,883(2.1)	4,457(90.1)	398(9.4)	28(0.5)	p<0.001
No	223,498(97.9)	207,869(93.0)	14,699(6.6)	930(0.4)	
Fastening the seat belt(front)					
Yes	204,625(89.6)	190,494(91.2)	13,286(8.2)	845(0.6)	p<0.001
No	23,756(10.4)	21,832(93.0)	1,811(6.6)	113(0.4)	
Fastening the seat belt(rear)					
Yes	111,328(48.7)	103,794(93.1)	7,089(6.5)	445(0.4)	p<0.001
No	117,053(51.3)	108,532(91.9)	8,008(7.6)	513(0.5)	
BMI					
Underweight	17,816(7.8)	16,327(91.6)	1,373(7.7)	116(0.7)	p<0.001
Normal	94,079(41.2)	87,691(93.2)	6,007(6.4)	381(0.4)	
Overweight	116,486(51.0)	108,312(93.0)	7,713(6.6)	461(0.4)	
Muscular exercise					
Yes	46,862(20.5)	43,839(93.5)	2,864(6.2)	159(0.3)	p<0.001
No	181,519(79.5)	168,487(92.8)	12,233(6.8)	799(0.4)	
Physical activity(strenuous level)					
Under 3 days	206,918(90.6)	192,418(93.0)	13,637(6.6)	863(0.4)	0.419
Over 4 days	21,463(9.4)	19,908(92.8)	1,460(6.8)	95(0.4)	
Physical activity(moderate level)					
Under 3 days	190,452(83.4)	177,136(93.0)	12,512(6.6)	804(0.4)	0.195
Over 4 days	37,929(16.6)	35,190(92.8)	2,585(6.8)	154(0.4)	
Walking					
Under 3 days	104,944(46.0)	97,089(92.5)	7,388(7.1)	467(0.4)	p<0.001
Over 4 days	123,437(54.0)	115,237(93.4)	7,709(6.2)	491(0.4)	
Flexibility exercise					
Yes	111,576(48.9)	103,856(93.1)	7,301(6.5)	419(0.4)	p<0.001
No	116,805(51.1)	103,773(92.8)	12,233(6.7)	799(0.5)	
Total	111,576(100,0)	212,326(93.0)	15,097(6.6)	955(0.4)	

* by chi-square test

The accident and addiction experiences were annual drinking status, annual drinking frequency, car driving status, drunk driving status, motorcycle drinking, bicycle drinking, front seat's seat belt, rear seat's seat belt, body mass index, strength exercise, number of days of walking, flexibility exercise, all of which had statistically significant differences (p<0.001). However, there is a significant difference between intense physical activities and moderate physical activities. As a result of examining the distribution of accidents and addictions according to health behavior, looking at annual drinking status, "yes" was 143,487 (93.5%) in no accident or addiction experience, which was higher than 68,839 people (91.9%) with "no," and for once, "no" was higher with 5,638 (7.5%), and for twice or more, "no" was higher by 417 (0.6%) (p<0.001). In terms of annual drinking frequency, 165,358 (92.9%) were less than 4 times a month in no accident or addiction experience, lower than 46,968 (93.3%) 2-4 times a week, and less than 4 times a month in 1 to 4 times a week, and it was high with 11,906 (6.7%) for once, and for twice or more, less than 4 times a month was high with 783 people (0.4%) (p<0.001). In the case of no accident or addiction experience in the body mass index, the normal weight was the highest with 87,691 (93.2%), the underweight was the highest with 1,373 (7.7%) for once, and the underweight was 116 (0.7%) for twice or more being the highest (p<0.001) (Table 2).

3.3 Distribution of accidents and addiction according to the presence or absence of chronic diseases and health awareness behavioral characteristics

In the distribution of accidents and addiction according to the presence or absence of chronic diseases and the characteristics of health awareness and behavior, the number of people with hypertension was low at 62,535 people (27.4%), and the number of people with diabetes was low at 25,219 (11.0%). 39,790 people (17.4%) had dyslipidemia, 36,046 people (15.8%) had arthritis, 108,178 people (47.4%) had less than 6 hours of sleep, and 33,888 people (14.8%) fell. 14,248 people (6.2%) had depression, 18,193 people (8.0%) had suicidal thoughts, and 15,128 people (6.6%) experienced drunk driving. 83,541 people (36.6%) had a poor subjective health level, 88,629 people (38.8%) felt a lot of stress, and 44,386 people (19.4%) were dissatisfied with the community safety level. Among the total 228,381 subjects, 212,326 (93.0%) had no accident or addiction experience, and 15,097 (6.6%) had one experience, and 958 (0.4%) had two or more experiences. Accident and addiction experience demonstrated statistically significant differences in hypertension, diabetes, dyslipidemia, arthritis, sleep time, falls, depression, suicidal ideation, driving together under the influence, subjective health level, stress, and community safety level (p<0.001).

As a result of examining the distribution of the number of accidents and addiction according to the presence or absence of chronic diseases and the characteristics of health awareness and behavior, the number of people with hypertension was low at 57,401 people (91.8%) in the case of no accident or addiction experience, and 4,814 people (7.7%), and 320 people (0.5%) had more than twice (p<0.001).

As for the people with diabetes, 23,017 people (91.3%) did not have an accident or addiction experience, and 2,054 people (8.1%) had it once, and 148 people (0.6%) had it twice or more (p<0.001). Among the people with dyslipidemia, 36,321 people (91.3%) had no accident or addiction

experience, and 3,249 people (8.2%) had it once, and 220 people (0.6%) had it twice or more (p<0.001). For the people with arthritis, 32,408 people (89.9%) had no accident or addiction experience, and 3,360 people (9.3%) said yes once, and 278 people (0.8%) said yes twice or more. Among those with the alcohol consumption, 7 or more drinks were the highest with 42,946 people (93.2%) with no accident or addiction experience. For once, drinking less than 6 cups was as high as 12,108 (6.6%), and for twice or more, drinking was as high as 790 (0.4%) (p<0.001). In terms of the subjective health level, 79,235 people (94.8%) rated bad for no accident or addiction experience, 4,144 people (5.0%) rated bad for once, and 162 people (0.2%) rated bad for twice or more. However, there was a statistically significant difference (p<0.001) (Table 3).

Table 3. Experience of accidents and addiction according to status of chronic disease, and the characteristics of health consciousness and behaviors

Unit: n(%)

Variables	Total	Experience of accident and addiction			p-value*
		None	Once	More than twice	
High blood pressure					
Yes	62,535(27.4)	57,401(91.8)	4,814(7.7)	320(0.5)	p<0.001
No	165,846(72.6)	154,925(93.4)	10,283(6.2)	638(0.4)	
Diabetes					
Yes	25,219(11.0)	23,017(91.3)	2,054(8.1)	148(0.6)	p<0.001
No	203,162(89.0)	189,309(93.2)	13,043(6.4)	810(0.4)	
Dyslipidemia					
Yes	39,790(17.4)	36,321(91.2)	3,249(8.2)	220(0.6)	p<0.001
No	188,591(82.6)	176,005(93.3)	11,848(6.3)	738(0.4)	
Arthritis					
Yes	36,046(15.8)	32,408(89.9)	3,360(9.3)	278(0.8)	p<0.001
No	192,335(84.2)	179,918(93.5)	11,737(6.1)	680(0.4)	
Sleep time					
Under 6 hours	108,178(47.4)	100,196(92.6)	7,473(6.9)	509(0.5)	p<0.001
Over 7 hours	120,203(52.6)	112,130(93.3)	7,624(6.3)	449(0.4)	
Drinking amount					0.055
Under 6 Glass	182,278(79.8)	169,380(92.9)	12,108(6.7)	790(0.4)	
Over 7 Glass	46,103(20.2)	42,946(93.2)	989(6.4)	168(0.4)	
Falling					
Yes	33,888(14.8)	26,814(79.2)	2,989(6.6)	404(1.2)	p<0.001
No	194,493(85.2)	185,513(95.4)	8,427(4.3)	553(0.3)	
Playing Internet games / smart phone					
Yes	14,404(6.3)	13,394(93.0)	928(6.4)	82(0.6)	0.012
No	213,977(93.7)	198,932(93.0)	14,169(6.6)	876(0.4)	
Depression					
Yes	14,248(6.2)	12,395(87.0)	1,626(11.4)	227(1.6)	p<0.001
No	214,133(93.8)	199,931(93.4)	13,471(6.3)	731(0.3)	
Suicidal Ideation					
Yes	18,193(8.0)	15,895(87.4)	2,017(11.1)	281(1.5)	p<0.001
No	210,188(92.0)	196,431(93.5)	13,080(6.2)	677(0.3)	

Variables	Total	Experience of accident and addiction			p-value*
		None	Once	More than twice	
Sitting with drunk driver					
Yes	15,128(6.6)	13,723(90.7)	1,316(8.7)	89(0.6)	p<0.001
No	213,253(93.4)	198,603(93.1)	13,781(6.5)	869(0.4)	
Subjective health status					
Good	48,787(21.4)	43,412(89.0)	4,908(10.0)	467(1.0)	p<0.001
Normal	96,053(42.0)	89,679(93.4)	6,045(6.3)	2,329(0.3)	
Bad	83,541(36.6)	79,235(94.8)	4,144(5.0)	162(0.2)	
Subjective stress					p<0.001
Yes	88,629(38.8)	82,854(93.4)	5,460(6.2)	315(0.4)	
No	139,752(61.2)	129,479(92.6)	9,630(6.9)	643(0.5)	
Community safety					
Satisfaction	183,995(80.6)	171,461(93.2)	11,811(6.4)	723(0.4)	p<0.001
Not	44,386(19.4)	40,865(92.8)	3,286(6.8)	235(0.4)	
Total	228,381 (100.0)	212326(93.0)	15,097(6.6)	958(0.4)	

* by chi-square test

3.4 Results of the logistic regression analysis for the analysis of accident and addiction influencing factors

In order to find out the factors related to sociodemographic characteristics, that is, the subject's general characteristics, health behavior characteristics, presence of chronic diseases, and health awareness behavior characteristics, etc., on accident and addiction experiences, only the statistically significant variables were selected, and the multiple logistic regression analysis was performed.

As for the factors influencing accidents and addiction more than once, education, region, economic activity, administrative district, household type, marital status, number of days of flexibility exercise, annual drinking, health level, driving status, drunk driving, motorcycle drinking, seat belt in the back seat safety level, high blood pressure, dyslipidemia, fall, depression, suicidal ideation, and driving together under the influence of alcohol were included (p<0.001). In terms of level of education, the odds ratio was 1.13 times (95% confidence interval 1.09-1.18) for high school graduates and middle school graduates or less, and accidents and addictions increased with lower educational attainment, which was statistically significant (p<0.001). In terms of region, special and metropolitan areas for other rural areas decreased by 0.81 times (95% confidence interval: 0.78-0.85), and in administrative districts, dongs for Eup and Myeon were 1.06 times higher (95% confidence interval: 1.02. -1.11), In terms of generation type, the 2nd generation decreased by 0.94 times (95% confidence interval: 0.88-1.00) compared to the 3rd generation, and in the case of marriage, those with a spouse were 1.05 times (95% confidence interval L 1.01-1.08) the accident and addiction experiences, which were statistically significant (p<0.001).

In terms of the number of days of flexibility exercise, less than 3 days compared to 4 days or more increased 1.06 times (95% confidence interval: 1.03-1.10), which was statistically significant

(p<0.001). Good for poor health increased by 1.4twice (95% confidence interval: 1.34-1.49), and average for poor health increased 1.15 times (95% confidence interval: 1.11-1.20). 1.24 times (95% confidence interval: 1.18-1.29) for those who drive, and 1.11 times (95% confidence interval: 1.03-1.20) for the people who drink and drive for accidents and addiction to those who do not drink and drive, and in motorcycle drinking, the number of drinkers compared to non-drinkers increased 1.19 times (95% confidence interval: 1.03-1.39), which was statistically significant (p<0.001). In terms of the safety level, satisfaction with dissatisfaction decreased by 0.89 times (95% confidence interval: 0.85-0.92), and those with dyslipidemia increased by 1.10 times (95% confidence interval: 1.06-1.15) (p<0.001). Accidents and addictions increased 4.83 times (95% confidence interval: 4.67-5.00) among those with falls versus those without falls, and 1.36 times (95% confidence interval: 1.28-1.44) among those with depression versus those without depression, whose accidents and addiction increased, which was significant (p<0.001). The number of people with suicidal ideation increased by 1.07 times (95% confidence interval: 1.01-1.13) compared to those without suicidal thoughts, and the number of people with a driver who had drunk driving increased by 1.17 times (95% confidence interval: 1.09-1.24) whose accidents and addiction increased (p<0.001).

As for the factors influencing the accidents and addiction more than once, gender, region, economic activity, administrative district, walking days, health level, driving status, front seat belt, dyslipidemia, arthritis, falls, Internet, depression, suicidal thoughts, driving together under the influence, etc. were all statistically significant (p<0.001). In terms of gender, the odds ratio was 1.19 times (95% confidence interval: 1.02-1.40) higher for women than for men, and 0.70 times (95% confidence interval: 0.60-0.83) for other rural and metropolitan areas compared to other rural areas. In terms of economic activity, the number of accidents and addiction decreased by 0.83 times (95% confidence interval: 0.70-0.99) for those who are economically active compared to those who are not engaged in economic activities, and in administrative districts, the same for Eup/Myeon areas was 1.32 times (95% confidence interval: 1.12-1.57) whose accidents and addiction increased (p<0.001). Good for poor health increased by 2.38 times (95% confidence interval: 1.91-2.97), moderate for bad increased 1.49 times (95% confidence interval: 1.23-1.81), and drivers increased 1.36 times (95% confidence interval: 1.15-1.61) accidents and addiction (p<0.001). Those with seatbelts were 1.25 times (95% confidence interval: 1.02-1.54) higher than those without seatbelts in the front seat, and those with arthritis were 3.52 times (95% confidence interval: 1.03-1.43) higher than those without arthritis. , there was a 3.42 times (95% confidence interval: 2.98-3.91) increase in the number of people with a fall experience versus those without a fall (p<0.001). The number of accidents and addictions increased 1.50 times (95% confidence interval: 1.18-1.91) among those who use the Internet versus those who do not use the Internet, and those with depression are 1.84 times (95% confidence interval: 1.54-1.54-2.21), the number of people with suicidal thoughts increased by 1.81 times (95% confidence interval: 1.52-2.15), and the number of people with drunk driving companions increased by 1.31 times (95% confidence interval: 1.52-2.15), and there was a 1.31 times (95% confidence interval: 1.03-1.66) increase in the number of people with a drunk driving companion compared to those without a drunk driving companion (p<0.001) (Table 4).

Table 4. Logistic regression analysis on accidents and addiction among Korean adults

Variables		Once			More than twice		
		OR	95% CI	p-value	OR	95% CI	p-value
Gender(ref. Male)		1.01	0.97-1.06	0.539	1.19	1.02-1.40	0.032
Age(ref. Over 65)		1.03	0.98-1.08	0.263	1.19	0.99-1.43	0.072
Education level (ref. Higher than high school)		1.13	1.09-1.18	0.000	1.11	0.93-1.33	0.259
Region(ref. Others)		0.81	0.78-0.85	0.000	0.70	0.60-0.83	0.000
Economic activity (ref. No)		1.01	0.96-1.05	0.754	0.83	0.70-0.99	0.040
Administrative district (ref. Eup · Myeon)		1.06	1.02-1.11	0.005	1.32	1.12-1.57	0.001
Housing type(ref. Apartment)		1.02	0.98-1.06	0.264	1.13	0.97-1.32	0.116
Generation type (ref. 3rd Generation)	1st Generation	0.99	0.93-1.06	0.842	0.97	0.75-1.26	0.834
	2nd Generation	0.94	0.88-1.00	0.046	0.96	0.74-1.25	0.763
Marital status(ref. Etc)		1.05	1.01-1.08	0.016	1.05	0.91-1.21	0.477
Occupation(ref. Blue colors)		0.97	0.92-1.01	0.157	1.18	0.96-1.44	0.108
Walking days(ref. Over 4days)		1.01	0.98-1.05	0.490	0.88	0.77-1.01	0.067
Flexibility exercise days (ref. Over 4 days)		1.06	1.03-1.10	0.001	0.94	0.81-1.08	0.376
Muscular exercise days (ref. Over 4 days)		1.01	0.96-1.06	0.663	1.00	0.83-1.22	0.972
Obesity degree(ref. Obesity)	Underweight	0.99	0.93-1.05	0.743	1.17	0.94-1.47	0.155
	Overweight	1.02	0.98-1.05	0.335	1.06	0.92-1.21	0.455
Stress(ref. Barely felt)		1.00	0.95-1.04	0.898	1.02	0.84-1.24	0.835
Annual drinking(ref. No)		0.92	0.87-0.97	0.002	0.83	0.66-1.03	0.096
Annual drinking frequency (ref.2-4 times a week)		1.00	0.95-1.05	0.918	1.07	0.87-1.31	0.519
Health level(ref. Bad)	Good	1.42	1.34-1.49	0.000	2.38	1.91-2.97	0.000
	Moderate	1.15	1.11-1.20	0.000	1.49	1.23-1.81	0.000
Driving status(ref. No)		1.24	1.18-1.29	0.000	1.36	1.15-1.61	0.000
Drunk driving(ref. No)		1.11	1.03-1.20	0.008	0.88	0.63-1.24	0.472
Drunk driving(Motorcycle)(ref. No)		1.19	1.03-1.39	0.021	1.04	0.54-2.00	0.899
Drunk driving(bicycle)(ref. No)		1.06	0.96-1.19	0.248	1.39	0.93-2.08	0.108
Fastening the front seat belt(ref. No)		1.04	0.98-1.09	0.169	1.25	1.02-1.54	0.032
Fastening the rear seat's seat belt(ref. No)		0.96	0.93-0.99	0.019	0.96	0.85-1.10	0.585
Safety level (ref. Dissatisfaction)		0.89	0.85-0.92	0.000	0.89	0.76-1.04	0.129
High blood pressure(ref. No)		0.98	0.94-1.02	0.227	0.91	0.78-1.07	0.256
Diabetes(ref. No)		1.00	0.95-1.05	0.969	0.94	0.78-1.14	0.524
Dyslipidemia(ref. No)		1.10	1.06-1.15	0.000	1.05	0.89-1.24	0.533
Arthritis(ref. No)		1.03	0.99-1.08	0.173	1.22	1.03-1.43	0.020
Sleep time(ref.Over 7 hrs)		1.00	0.97-1.03	0.914	1.03	0.91-1.18	0.607
Falling(ref. No)		4.83	4.67-5.00	0.000	3.42	2.98-3.91	0.000
Internet user(ref. No)		1.03	0.96-1.10	0.394	1.50	1.18-1.91	0.001
Depressive mood(ref. No)		1.36	1.28-1.44	0.000	1.84	1.54-2.21	0.000
Suicidal ideation(ref. No)		1.07	1.01-1.13	0.015	1.81	1.52-2.15	0.000
Sitting with drunk driver(ref. No)		1.17	1.09-1.24	0.000	1.31	1.03-1.66	0.030

4. Consideration

This study uses the results of the 2017 National Community Health Survey to recognize the importance of accidents and addiction problems among the adults in Korea, and with a view to identify the actual conditions and related factors, general characteristics, health behaviors, and presence of chronic diseases as research variables, and as independent variables and dependent variables of health consciousness and behavioral characteristics, accident and addiction experience was set at least once and at least twice, and the related factors were analyzed.

As a result of this study, as for the effect of accidents and addiction experiences more than once and twice, there were gender, level of education, region, administrative district, health level, driving status, falls, depression, suicidal ideation, and driving together under the influence of alcohol. According to a study of Australian cases (Butterworth et al., 2004) targeting all age groups, including the elderly, the incidence of accidents and addiction in a specific group is reported to be related to gender, age, income, level of education, and occupation. Furthermore, the recurrence rate of accidents has also been reported to be high (Ramstad et al., 2004). Furthermore, a domestic study reported that age, gender, level of education, occupation, and income level were related to the occurrence of accidents (Ham et al., 2007).

Accident and addiction experiences according to this study were 1.01 times higher among the females than the males for once or more, but there was no statistical significance, and for twice or more, females were 1.19 times higher than males, and there was also a statistically significant difference. In the case of gender, the incidence rate is generally higher in men than in women, which is consistent with several studies (Ham, 2007; Lee, 2003), but women have a lower ability to protect themselves as a result of the physiological aging process than men. Males generally tend to have higher rates of accidents and addictions, while they are weaker or more vulnerable to accidents and have higher rates of accidents and addictions physically, mentally and socially (Butterworth et al., 2004). Accidents and addiction problems according to gender seem to require more in-depth research for analyzing various causes and consideration accordingly.

As for the level of education, accident and addiction experiences were 1.13 times higher among the middle school graduates or less than the high school graduates or higher, and there was a statistically significant difference, and 1.11 times higher for twice or more, but there was no statistically significant difference. The high school graduate group had the least accident experience, followed by the group with less than middle school graduation, followed by the group with more than a junior college graduate, whose results are consistent with many studies domestic and overseas (Butterworth et al., 2004; Chin et al., 2001).

In this study, regions and administrative districts were derived as significant related variables, that is, the region was 0.81 times lower in special and metropolitan cities compared to rural and fishing villages, and 0.70 times lower in two or more times, which were statistically significant. As for the administrative districts, compared to Eup and Myeon, Dong was 1.06 times higher in 1 or more cases, and 1.32 times higher for twice or more, which was statistically significant. Depending on the administrative district, the closer to the city than the countryside, the higher the accident and addiction. In a 2006 research report by Myeongseon Lee et al. (Lee et al., 2006), it was reported

that accidents and addiction were lower in metropolitan areas, but the difference according to regional characteristics are to demonstrate different characteristics depending on the characteristics of accidents and addiction. These are the characteristics that occur in rural areas, for example, agricultural damages and pesticide addiction.

As for annual drinking, people who drank a lot in the past year and the frequency of drinking per year were higher, and the experience of accident and addiction was higher. was 1.36 times higher, and all of these results were statistically significant. It is well known that drinking is a cause of many different diseases, is recognized as a risk factor for accidents and addiction, is related to the occurrence of violence and accidents, and points out that drunken drinking is a major risk factor leading to accidents in accident people (Bellis et al., 2004). Drinking is known not only as a disease but also as a cause of accidents, and if you drink less, there may be no problem, but if you drink too much, your behavior, emotional control, judgment, and executive coping ability will deteriorate, and your ability to control your driving or operation and coping skills will decrease. In particular, 44% of accidents and injuries related to drinking and accidents occur within 1 hour after the last drinking, and 30% of accident victims are reported to have been drunk at the time of the accident, indicating that frequent drinking is related to accidents, whose results (Savola et al., 2005) are determined to show consistent direction with the results of this study.

Furthermore, in this study, driving together under the influence of alcohol was derived as an important contributing variable, which was 1.17 times higher for those who drunk driving than those who did not drink and drive, and 1.17 times higher for more than one accident and addiction, and 1.31 times higher for two or more accidents, which was statistically significant. It has been reported that the passengers who do not wear a seatbelt when driving together are 3 times more likely to be hospitalized, 2.7 times more likely to have a fracture, 8.4 times more unconscious, and 2.6 times more hospitalized than passengers who wear a seatbelt. However, it may be seen that seat belts are the simplest and most effective safety equipment that contributes to reducing the degree of physical damage and mortality due to accidents when driving together while drunk (Wilson et al., 2003). It may be claimed that such research results indirectly explain the relationship between drunk driving and the occurrence of accidents.

Falls were derived as a significant variable in this study, and compared to those without falls, they were 4.83 times higher among those who experienced falling more than once, and 3.42 times higher among those who experienced falling more than twice, which was statistically significant. In the domestic studies, the types of accidents that frequently occur due to falls are reported in the order of traffic accidents, falls, falls, and object falls. As this increases, the incidence tends to increase (Statistics Korea, 2018; Ham & Lee, 2007). In a foreign case, it was reported that one out of three community-dwelling seniors aged 65 or older experience a fall every year (Menz et al., 2007), and that the prevalence of falls in rural areas in Korea is about 20-40% (Kim et al., 2008). Based on such reports, it is confirmed that falls are an important cause of accidents both domestically and internationally, and their importance is expected to increase with the increase in the elderly population and population aging.

Depression and suicidal ideation were also derived as significant variables, and those with depression were 1.36 times more likely to have accidents and addictions more than once than those without

depression, and 1.84 times more likely to have more than two times of accident and addiction, which was statistically significant and also suicidal ideation. Those with suicidal ideation were 1.07 times more likely to have accidents and addiction more than once than those without suicide, and 1.81 times more if more than twice, and there was a statistically significant difference. This is a result consistent with a previous study that found that people with depression and people with suicidal thoughts have a high impact on thinking and addiction (Ham & Lee, 2007), and a logical explanation is considered to be possible.

This study was analyzed using the Community Health Survey Data, and it should be noted that there are limitations in analysis due to the limitations of various studies. First, this study utilized existing survey data and did not plan to collect data in advance, so various social, cultural and environmental factors related to accidents and addiction could not be considered. Second, a lot of information loss would have inevitably occurred in the process of categorizing or grouping variables and reducing them. Among the variables, only the presence or absence of economic activity was presented, but it is difficult to grasp the degree of economic activity because details are not described. It is also not possible to grasp specific details such as the amount of alcohol consumed and the period, etc., since only the presence or absence of drinking or strength exercise is presented annually, and only the presence or absence of hypertension, diabetes, dyslipidemia, arthritis, etc., which also is a limitation of this study. Third, it is considered that continuous data collection is necessary in the future because it is limited to draw accurate conclusions such as causal relevance of the results due to the limitations of the cross-sectional study design.

Despite the limitations of this study, as a result of the analysis of this study, the significant contributing variables with more than one accident and addiction were education, region, administrative district, household type, marital status, number of days of flexibility exercise, annual drinking, health level, driving status, drunk driving, motorbike drinking, seatbelt in the back seat, safety level, dyslipidemia, fall, depression, suicidal ideation, drunk driving companion, and two or more accidents and addiction were significant contributors to gender, region, economic activity, administrative district, health level, driving status, front seat belt, arthritis, falls, Internet, depression, suicidal ideation, and drunk driving were derived. Gathering which, the above study results demonstrate that the accidents and addictions are caused by women, relatively low level of educations, administrative districts in urban areas, annual drinking status, people who have experienced falls, depression and suicidal ideation, and whether they are driving while drunk, it was confirmed that the occurrence was high.

This study prepared the basic data on the factors related to accidents and addiction among the Korean adults, and it is desired that such related factors will be actively considered and utilized for the public health intervention projects.

5. Summary and Conclusion

This study was conducted to investigate the factors related to accidents and addiction among the adults aged 19 and older in Korea using the 2017 Community Health Survey data. Towards this end, a chi-square test and multiple logistic regression analysis were performed.

As for the significantly contributing variables with more than one accident and addiction, education, region, administrative district, household type, marital status, number of days of flexible exercise, annual drinking, health level, driving status, drunk driving, motorcycle drinking, rear seat's seat belt, safety level, dyslipidemia, fall, depression, suicidal ideation, and driving together under the influence are included ($p<0.05$). As for the significantly contributing variables for accidents and addiction more than twice, gender, region, economic activity, administrative district, health level, driving status, front seat belt, arthritis, fall, Internet, depression, suicidal ideation, and driving together under the influence were included ($p<0.05$). Many factors related to accidents and addiction among the Korean adults have been confirmed, and it seems necessary to consider such various variables for the public health intervention projects.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

Bellis, M. A., Hughes, K., & Hughes, S. (2006). World Health Organization. Interpersonal violence and alcohol: WHO Policy Briefing, Geneva: World Health Organization. 1.

Butterworth, P., Anstey, K., Jorm, A. F., & Rogers B. (2004). A community survey demonstrated cohort differences in the lifetime prevalence of self-reported head injury. *Journal of Clinical Epidemiology, 57*, 742-748.

Chin, K. N., Chin, J. H., & Song, H. J. (2001). Home injury pattern in one small city: structure and action. *Korean Journal of Health Education and Promotion, 18*(1), 127-137.

Ham, O. K., & Lee, E. J. (2007). Incidence and types of unintentional injuries among Koreans based on the 2001 National Health and Nutrition Survey. *Journal of Korean Public Health Nursing, 21*(1), 95-101.

Kim, J. M.. Lee, M. S., & Song, H. J. (2008). An analysis of risk factors for falls in the elderly by gender. *Korean Journal of Health Education and Promotion, 25*(2), 1-18.

Lee, H. K. (2003). The study on the characteristics of death due to injury in Korea. *J of the Korean Society of Health Statistics, 28*(1), 3-18.

Lee, M. S., Chung, S. H., Wang, S. J., Park, K. O., & Lee, J. S. (2006). Injury problems and the risk factors by injury-based life cycle for public health promotion, Korea Health Promotion Institute.

Menz, H. B., Lord, S. R., & Fitzpatrick, R. C. (2007). A structural equation model relating impaired sensorimotor function, fear of falling and gait patterns in older people. *Gait Posture, 25*(2), 243-249.

National Health Insurance Service. (2014). Analysis of socioeconomic cost of major diseases for prioritization of health insurance policies.

Ramstad, S., Russo, J., & Zatzick, D. F. (2004). Is it an accident? Recurrent traumatic life event in level 1 trauma center people compared to the general population. *Journal of Traumatic Stress, 17*(6), 529-534.

Savola, O., Niemela, O., & Hillbom, M. M. (2005). Alcohol intake and the pattern of trauma in young adults and working aged people admitted after trauma. *Alcohol, 40*(4) 269-273.

Statistics Korea. (2018). Vital Statistics in 2017.

Statistics Korea. (2019). Korean Social Trend, 2019.

Statistics Korea. (2021). Causes of Death Statistics in 2020.

Stephens, C. J.. (1987). Alcohol consumption and casualties: drinking in the event. *Drug and Alcohol Dependence, 20*(3), 115-127.

Wilson, A. G., Lange, J. L., Brundage, J. F., & Frommelt, R. A. (2003). Behavioral, demographic and prior morbidity risk factors for accidental death among men: A case-control study of soldiers. *Preventive Medicine, 36*(1), 124-130.