The Effects of Injury Experiences (Accidents and Addictions) on Healthcare Use Type

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손상 경험(사고 및 중독)이 의료 이용 형태에 미치는 영향

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Abstract The purpose of this study was to determine the effects of injury experiences (accidents and addictions) on healthcare use type. This study used the KNHANES Ⅷ-2. Of 7,359 respondents, a total of 6,072 were included, with the exception of 1,287 who were in the age groups ⟨20 years, had missing data, or inappropriately completed the questionnaire. Of these 6,072 respondents, data from 5,355 having injury experiences were used. Data were analyzed using an SPSS WIN 20.0 Version program. Younger age groups had injury affected (p⟨.05); poor perceived health status was significantly more likely to affect injury than good perceived health status (approx. 2.0-fold, p⟨.05). As for the number of injuries, emergency rooms were about 4-5 times more frequently used than inpatient or outpatient clinics among the injury treatment centers (p⟨.05). Injury can cause activity restriction and difficulties in daily life and there can be only a few types of healthcare use; therefore, it is necessary to reinforce relevant programs and make relevant policies.

Key Words : Injury, Accidents, Healthcare, Injury experiences, Treatment institution

요 약 본 연구는 손상 경험(사고 및 중독)이 의료 이용 형태에 미치는 영향을 알아보고자 하기 위함이다. 본 연구는 KNHANES Ⅷ-2의 원시자료활 활용하였다. 총 대상자수는 7,359명 중 결측값, 20세 이하 연령층, 부적절한 표기 대상자 1,287명을 제외한 6,072명으로 하였다. 6,072명중 1년간 손상경험 응답자 5,355명을 대상으로 적용하였다. 본 연구의 분석방법은 SPSS WIN 20.0 Version 프로그램으로 분석하였다. 연구결과 젊은 연령층이 손상에 영향을 미쳤고(p⟨.05), 주관적 건강상태는 좋은 집단 보다 나쁨 집단(약 2.0배, p⟨.05)이 손상에 유의한 영향을 미치고 있었다. 손상횟수는 손상치료기관으로 외래와 입원보다 응급실 이용이 약 4-5배 이상 이용하는 것으로 나타났다(p⟨.05). 손상은 활동제한 및 일상생활을 어렵게 하고, 더불어, 의료이용 형태에서도 쏠림현상이 있을 수 있기에 이를 위한 프로그램 강화와 정책마련이 이루어 져야 할 것으로 판단된다.

주제어 : 손상, 사고, 건강관리, 손상경험, 치료기관

1. Introduction

KDCA [1] noted that any disorder caused by injury differed by the economic levels, culture, gender, and age among countries and was not an accident but a health issue, which is preventable. In addition, it contended that injury might result from intentional and unintentional accidents and lead to physical and mental harm.

The World Health Organization (WHO) [2] found that mortality from injury was high in the younger age groups between 15-29 and 33-44 years; Kaufmann et al. [3] showed that repeated injuries were likely to occur in the young male group. Kim et al. [4] contended that injured patients could have lower quality of life.

Song et al. [5] found that the injury mechanism of transportation accidents led to long stay in hospital and that pedestrians' accidents in transportation and pesticides and herbicides among toxic chemicals resulted in long stay in hospital. Yoo and Choi [6] estimated the social costs for each healthcare use type: medical clinics had the highest estimate (76.8%), followed by hospitals (6.9) and specialized general hospitals (1.9%), among medical institutions. The most frequent means of transportation was traveling on foot (47.8%), followed by using a privately-owned car and using public transportation.

CDC and NCHS [7] investigated medical institution use status in the United States: about 71.5% of the patients visited a hospital for chronic and infectious diseases, and 28.5% for injuries. NEMC [8] showed that the frequency of using a medical institution was high in February, April, August, September, and December. Yun et al. [9], who analyzed variation in mortality of elderly emergency patients among regional types, found that emergency room accessibility was a major factor and suggested the need to make efforts to supplement relevant infrastructures and apply new technologies with the objective of making emergency rooms more accessible.

It is therefore necessary to enable individuals to understand prevention and establish a social system in pursuit of higher quality of life without injury. However, multilateral research should be conducted on healthcare use type in case of any injury (accidents and addictions). This study used raw data, which had been poorly utilized in other studies.

The purpose of this study was to determine the effects of injury experiences (accidents and addictions) on healthcare use type and allow individuals to lead a daily life without inconvenience. It intended to provide basic data that could help develop programs aimed at allowing individuals to improve the quality of their life and at protecting them from any accident or addiction.

2. Methods

2.1 Instruments and Variable Composition

This study used the raw data from the Korea National Health and Nutrition Examination Survey (KNHANES) VIII-2, as disclosed by KDCA [10]. KNHANES used the recent data from the Population and Housing Census as a sampling frame at the time of sample design. Two-stage stratified cluster sampling was employed. The sampling unit ranged from constituency to household. The research was conducted for 12 months from January to December. The survey was based on rolling sampling.

The questionnaire developed by KDCA [10] consisted of four items based on the raw data from KNHANES Ⅷ-2: household identification, health, physical examination, and nutrition. To meet the theme of this study, only such items as household identification and health were selected.

Household identification forms a basic survey and determines the current status of households within the regions selected through sample design. Health surveys can be divided into household surveys, health-related interviews, and health behavior surveys according to survey methods. Of these, health-related interviews are performed for morbidity, healthcare use, restraints on activity, education and economic activity, physical activity, and so on.

The variables for the health survey in this study were the socio-demographic characteristics and injury (accidents and addictions), healthcare use, and activity restriction. The instruments are as presented in Table 1.

Table 1. Instrument

Division		Description
Health survey	Household survey	– Socio-demographic characteristics
	Health-related interview	– Hypertension, healthcare use, restraint on activity, education and economic activity, physical activity, etc.
	Health behavior survey	– Smoking, alcohol intake, sense of safety, stress, depressive symptom, mental health, quality of life, etc.
Instrument		Socio-demographic characteristics, injury characteristics (accidents and addictions), healthcare use, activity restriction

2.2 Subjects

The raw data from a total of 7,359 respondents in KNHANES Ⅷ-2, as disclosed by KDCA [10], were used. Coding for the number of household members was reviewed

to determine the agreement between "injury (accidents and addictions) and medical institution use". In this study, only the data for those aged ≥20 were used to meet its purpose. A total of 6,072 were included in practice, with the exception of 1,287 who were in the age groups ⟨20 years, had missing data, or inappropriately completed the questionnaire. Of these 6,072 respondents, data from 5,355 having injury experiences were used. The respondents are as presented in Table 2.

Table 2. Subjects

		Injury experiences for past year[#]		total	x^2	p
		Yes	No			
Gender	Male	150(2.8)	2,266(42.3)	2,416(45.1)	.053	.817
	Female	178(3.3)	2,761(51.6)	2,939(54.9)		
Age	20s	51(1.0)	670(12.5)	721(13.5)	11.037	.051
	30s	50(0.9)	683(12.8)	733(13.7)		
	40s	41(0.8)	875(16.3)	916(17.1)		
	50s	70(1.3)	942(17.6)	1,012(18.9)		
	60s	72(1.3)	980(18.3)	1,052(19.6)		
	70s≤	44(0.8)	877(16.4)	921(17.2)		
Household income	Low	61(1.1)	865(16.2)	926(17.3)	.546	.909
	below –average	78(1.5)	1,178(22.1)	1,256 (23.5)		
	above –average	91(1.7)	1,417(26.5)	1,508(28.3)		
	high	97(1.8)	1,551(29.1)	1,648(30.9)		
Perceived health status	Very good	18(0.3)	227(4.2)	245(4.6)	18.000	.001***
	good	68(1.3)	1,230(23.0)	1,298(24.2)		
	average	151(2.8)	2,624(49.0)	2,775(51.8)		
	poor	73(1.4)	786(14.7)	859(16.0)		
	very poor	18(0.3)	160(3.0)	178(3.3)		

[#]Of 6,072 respondents, 5,355 experienced injury for the past yea
***p⟨.001

2.3 Analysis

The data were analyzed using an SPSS WIN 20.0 Version program. Specifically, frequency analysis, x^2, dichotomous logistic regression, and multiple regression analysis were performed. The significance level was set at p⟨.05.

2.4 Ethical consideration

This study used the raw data from KNHANES Ⅷ-2, as disclosed by KDCA [10]. It was conducted with review exemption (E-2nd-2022-001) in the Institutional Review Board (IRB) of C University.

3. Results & Discussion

3.1. Effects of general characteristics on injury experiences (accidents and addictions)

Dichotomous logistic regression was used to determine the effects of the general characteristics on injury experiences (accidents and addictions) [Table 3]. The dependent variable was "injury (accidents and addictions) for the past year". When the dependent variable is binary, dichotomous logistic regression analysis is used. The independent variables were gender, age, household income, and self-perceived health status.

Men were more likely to be affected by injury experiences than women, which was not statistically significant. Those in their thirties, forties, sixties, and seventies were significantly affected by injury experiences, which involved accidents and addictions ($p < .05$, $p < .01$). This result indicates that the younger age groups are about 0.2- to 0.5-fold more likely to be affected by injury.

Household income had no significant effect. Average (approx. 2.1-fold, $p < .05$) and poor perceived health status (approx. 2.0-fold, $p < .05$) had a stronger impact on injury experiences than "very good" perceived health status.

Lee et al. [11] found that the group with injury experiences was at higher risk of motor ability, self-management, and daily activities than the group without injury experiences.

They also noted that motor ability, self-management, and daily activities were negatively correlated with injury experiences.

Generally, younger age groups and poor perceived health status tended to affect injury experiences.

Table 3. Effects of general characteristics on injury experiences (accidents and addictions)

		B	Wald	Odds Ratio	p	95% Confidence interval	
						lower	upper
Gender	Male			1.00			
	Female	-0.047	0.162	0.954	0.687	0.761	1.198
Age	20s			1.00			
	30s	-0.591	6.720	0.554	0.010*	0.354	0.866
	40s	-0.554	5.834	0.574	0.016*	0.366	0.901
	50s	-0.110	0.213	0.896	0.644	0.563	1.427
	60s	-0.546	6.527	0.579	0.011*	0.381	0.881
	70s ≤	-0.456	4.930	0.634	0.026*	0.424	0.948
Household income	Low			1.00			
	below-average	-0.184	0.947	0.832	0.331	0.574	1.205
	above-average	-0.084	0.268	0.920	0.605	0.670	1.262
	high	-0.042	0.075	0.959	0.784	0.713	1.291
Perceived health status	Very good			1			
	good	0.375	1.101	1.456	0.294	0.722	2.936
	average	0.769	7.160	2.157	0.007*	1.228	3.787
	poor	0.706	6.868	2.025	0.009**	1.195	3.432
	very poor	0.239	0.726	1.270	0.394	0.733	2.202

*$p < .05$, **$p < .01$

3.2 Variation in number of injuries by time for occurrence and medical institution use

Variation in the number of injuries by time for occurrence and medical institution use is as presented in Table 4. Injuries (1) were likely to occur in summer (24.5%) and autumn (26.1%). Outpatient clinics (48.8%) were most frequently used in case of a single injury.

Activity restriction was at a low level in case of a single injury. Restriction due to being bed-ridden was also at a low level in

case of a single injury. The rate of absence from work was low in case of a single injury.

Kim [12] found that the first priority was given to clinical competence, followed by kindness, rapidity, and accessibility, in case of mild cases and to clinical competence, followed by facilities and reputation, in case of severe cases. Park [13] found that diseases (71.1%) were a more frequent cause of visit to medical institutions than accidents (28.9%). There was no significant seasonal difference in the use of emergency medical centers: it was highest in summer (25.8%), followed by autumn (25.2%), winter (24.7%), and spring (24.3%).

To put these results together, outpatient clinics were more frequently used with a small number of injuries and emergency rooms were more frequently used with a larger number of injuries.

Table 4. Variation in number of injuries by time for occurrence and medical institution use

| | | Number of injuries | | x^2 | p |
		1time	2≤		
Time when injury occurred	Spring	76(23.2)	5(1.5)	3.695	.296
	Summer	80(24.5)	7(2.1)		
	Autumn	85(26.0)	4(1.2)		
	Winter	69(21.1)	1(0.3)		
	subtotal	310(94.8)	17(5.2)		
Treatment institution for injury (outpatient, inpatient)	Emergency room	46(14.0)	6(1.8)	5.196	.0.74
	outpatient	160(48.8)	6((1.8)		
	inpatient	105(32.0)	5(1.5)		
	subtota	311(94.8)	17(5.2)		
Activity restriction status	Yes	36(11.0)	4(1.2)	2.151	.142
	No	275(83.8)	13(4.0)		
	subtota	311(94.8)	17(5.2)		
Bed-ridden	Yes	42(12.8)	5(1.5)	3.322	.068
	No	269(82.0)	12(3.7)		
	subtota	311(94.8)	17(5.2)		
Absence from work	Yes	16(7.3)	2(0.9)	3.100	.078
	No	195(89.7)	6(2.7)		
	subtota	211(95.3)	8(3.7)		

3.3 Effects of the number of injuries on time for occurrence and medical institution use

The effects of the number of injuries on time for occurrence and medical institution use are as presented in Table 5. Dichotomous logistic regression was used to determine the effects of the number of injuries on time for occurrence and medical institution use. The dependent variable was "the number of injuries". Dichotomous logistic regression analysis is used when a dependent variable is binary. The independent variables were time when injury occurred, injury treatment institution, activity restriction status, bed-ridden status, absence from work and the number of days of the absence.

Injury was more than twice as likely to occur in summer than in spring, which was not statistically significant. Emergency rooms were about 4-5 times more frequently used than inpatient or outpatient clinics among the injury treatment centers, which was statistically significant (p<.05).

You and Kwon [14] indicated that those with disabilities preferred high-ranking medical institutions to medical clinics. As for the determinants of medical institution type selection, men were more likely to prefer to use general hospital- and hospital-level medical institutions than women. The middle-aged and elderly were more likely to prefer medical institutions at the level of general hospital than the young adults. Kim [12] noted that importance was placed on size, facilities, reputation, and clinical competence than on accessibility in choosing a hospital in case of severe cases.

No statistical significance was found for the other items: activity restriction status,

bed-ridden status, and absence from work. Taken together, the larger number of injuries were, the more relevant the injuries were to emergency room use.

Table 5. Effects of the number of injuries on time for occurrence and medical institution use

		B	Wald	Odds Ratio	p	95% Confidence interval	
						lower	upper
Time when injury occurred	Spring			1			
	Summer	0.799	0.755	2.223	0.385	0.367	13.469
	Autumn	-0.651	0.263	0.522	0.608	0.043	6.283
	Winter	-0.722	0.317	0.486	0.573	0.039	5.994
Treatment institution for injury	Emergency room			1			
	outpatient	-1.901	3.849	0.149	0.050*	0.022	0.998
	inpatient	-1.267	1.849	0.282	0.174	0.045	1.750
Activity restriction status	Yes			1			
	No	0.288	0.049	1.333	0.825	0.105	16.965
Bed-ridden	Yes			1			
	No	-0.117	0.008	0.890	0.930	0.066	11.989
Absence from work	Yes			1			
	No	-1.269	0.872	0.281	0.350	0.020	4.031

*p<.05

3.4 Effects of perceived health status on injury characteristics

Multiple regression analysis was performed to determine the effects of perceived health status on the injury characteristics. The results are as presented in Table 6. The regression model showed that R had explanatory power of 40.4% and R2 had explanatory power of 16.3%.

Neither the number of injuries nor injury treatment institution had any significant effect on perceived health status. In contrast, activity restriction status significantly affected perceived health status (t=-4.611, p<.001).

Bed-ridden status for the past month also significantly affected perceived health status (t=-4.848, p<.001).

Kim et al. [15] found that self-perceived health status significantly affected the frequency of using medical institutions: the more likely individuals were to consider themselves to be healthy, the less frequently they used medical institutions. You and Kwon [14] suggested that the better self-rated health, the lower preference to high-ranking medical institutions.

Taken together, perceived health status significantly affected the injury characteristics.

Table 6. Effects of perceived health status on injury characteristics

	B	S.D	β	t	p
Number of injuries	-0.074	0.217	-0.018	-0.339	0.734
Time when injury occurred	0.060	0.045	0.070	1.345	0.180
Treatment institution for injury	-0.061	0.070	-0.045	-0.865	0.388
Activity restriction status	-0.706	0.153	-0.248	-4.611	0.000***
Absence from work	-0.697	0.144	-0.262	-4.848	0.000***
R=.404, R^2=.163, F=12.521, P=.000					

***p<.001

4. Conclusion

The purpose of this study was to determine the effects of injury experiences (accidents and addictions) on healthcare use type. Those who were in younger age groups and had poorer perceived health status had injury significantly affected. The number of injuries was more likely to affect emergency room use than outpatient or inpatient clinic use. On this basis, injury can cause activity restriction

and difficulties in daily life and there can be only a few types of healthcare use; therefore, it is necessary to reinforce relevant programs and make relevant policies.

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