

A Path Analysis on Prisoners' Health Behavior and Medical Utilization

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In this thesis, Korean prisoners' health behavior and the characteristics of their medical utilization were surveyed and analysed. Because prisoners are inclined to be mediators of communicable diseases or unhealthy behaviors between prison institution and the outside world, health care for prisoners is directly related to the national population. Data were collected through a self-administered survey of 5 Korean prisons out of a total of 38 correctional facilities and analysed in accordance with a causal model based on a path frame, by serial multiple regressions on health behavior, health status, and medical utilization, etc. According to the survey analysis, while prisoners were generally concerned with their health much more than they were before imprisonment, they perceived that their health status had deteriorated after imprisonment, and that their need for health services was increasing gradually during their time in prison. In the path analysis on the causal relations among variables related to the prisoners' health status and medical utilization, the prisoners' characteristics affected their health concern and health behavior, and subsequently affected their health status and medical utilization, respectively. To sum up these exploratory studies on prisoners' health behavior and health service utilization, some efforts to organize a health care system embracing the correctional institution and health care administration should be made on the level of establishing a health care delivery system for special social groups like prisoners.

Key Words: Path analysis, prisoner, health behavior, medical utilization

The purpose of this study was to analyse Korean prisoners' health behavior and medical services utilization. Although prisoners are separated from the society outside their institution, they are considered a high risk group in morbidity and the prevalence of

communicable diseases (Shapiro, *et al.* 1987; Colsher, *et al.* 1992; Glaser, *et al.* 1993). For the reason that they are segregated from the general population outside their institution, health care management in prison is very significant for the national health system. If the prisoners' health status is not managed appropriately, prison could be a social reservoir of diseases. Along with it, the national health condition could be threatened.

While prisoners' health should be paid attention to socially, this has not been the case. This is because prisoners' health problems are managed only in the dimension of correctional affairs, and because the coordination mechanism between the two areas of law and medicine have not been established yet. It

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is desirable that crime as a social pathology be treated on the level of health care as well as prison administration, and it should also be developed as a social service (Weisbuch, 1992).

In this thesis, prisoners' health behavior and the characteristics of their medical utilization was surveyed and analysed. Prisoners' health care has not yet appeared as a social issue, but it should be included as a health problem in correctional administration for healthier society. In this study we researched the health problems in correctional institutes and have suggested a political treatment to improve social health status. Such attempts will contribute to identifying the significance of health care issues in correctional administration. In humanistic terms, they will also provide an opportunity in which the preservation and promotion of prisoners' health will be considered seriously as a social problem awaiting a solution. We hope to raise the ethical problem of the health rights in a particular group such as prisoners to arouse public attention.

This thesis will provide a new perceptual frame for the relationship between the correctional system and national health care. If the results of this study are made available to the correctional administration, the health rights assured in constitutional law will be expanded to include prisoners, and ultimately the national level of health will be improved.

MATERIALS AND METHODS

Theoretical frame and model of analysis

There has been a theoretical framework, the Andersen Model, for the analysis of health behavior and medical service utilization in a causal relation model

(Andersen and Newman, 1973). According to this model, individual health care utilization is determined by or related to individual characteristics and environmental characteristics. Such determining factors can be classified into three categories, i. e. societal factors, individual factors, and the service system. Societal factors are those affecting people universally, such as social values and the technological level at a particular time. They include service system personnel and material resources, service providing system, etc.

Individual characteristics are divided into predisposing factors, enabling factors and need factors. Predisposing factors are the characteristics already possessed by individuals before service need, such as age or education level. Enabling factors are the characteristics which make medical utilization possible, such as service accessibility as well as economic capability. Finally, need factors are determined by individual physical health status. Individual characteristics are affected by social factors and the health care system, with societal factors affecting individual characteristics directly or indirectly through the medical service system.

Although this theoretical frame has been applied in many analyses of health behavior (Berki and Kobashigawa, 1976; Wolinsky, 1978; Yu *et al.* 1987), there have been no cases applied to a particular social group like prisoners. In this study, the analysis was focused on the effects of individual factors to health behavior rather than societal factors or the service system. The determinants of health service utilization among prisoners were analysed in terms of their individual characteristics.

Predisposing factors include socio-demographic characteristics, such as age, sex, etc. They also incorporate correctional characteristics, such as penal

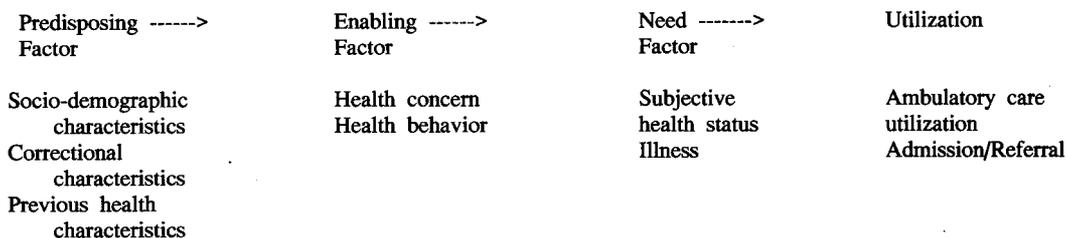


Fig. 1. Framework for analysis of prisoners' health care utilization.

servitude, criminal record, etc. Enabling factors, which apply mostly to the economic accessibility of health care services, such as income or medical insurance, are not available to prisoners. In this study we substituted these factors with health concerns and health behavior, which are regarded as a group's subjective behaviors. Need factors include subjective health status and disease incidence. Integrating these factors, the framework for the analysis of health service utilization constitutes causal relations in order (Fig. 1).

Data and analysis

To grasp the real aspect of prisoners' health and medical service utilization, the total population of prisoners in all correctional facilities should be surveyed. However, due to time and financial limitations, the sampling procedure was simplified. Five correctional institutions were selected in accordance with facility size and prisoners' characteristics. Then, in each institution, 100~120 prisoners were evenly

distributed according to penal servitude and the kind of crime. A self-administered survey using a standardized questionnaire was provided to these samples.

Surveyed contents contained socio-demographic factors, correctional life factors, and previous health behavior, present health behavior, health status, medical utilization etc. Explaining variables of this thesis are socio-demographic characteristics, correctional characteristics and previous health behavior; explained variables are health concern, health behavior, health status and medical utilization (Table 1).

There were variables such as sex, age, education and previous socio-economic status in socio-demographic characteristics; penal servitude, criminal record and prison term in correctional characteristics; health status, health concern, smoking and alcohol in previous health behavior.

Prisoners' health concerns were measured on a five-point scale for each item. Health behavior was measured on a three-point scale for such items as regular exercise and eating habits. Health status was

Table 1. Analysed variables and their contents

Var. Category	Var. Name	Measure
Socio-demographic characteristics	Sex	1. male 0. female
	Age	years
	Education	1. elementary 2. middle 3. high 4. college and above
	Socio-economic status	1. lower 2. lower middle 3. upper middle 4. higher
Correctional life characteristics	Penal servitude	months
	Criminal record	numbers
	Prison term	months
Previous health behavior	Health status	1. very poor - 5. very healthy
	Health concern	1. never - 5. very much
	Smoking	1. smoking 0. not smoking
	Drinking	1. drinking 0. not drinking
Health concern	Health concern	1. never concerned - 5. very much concerned
Health behavior	Health behavior	1. bad 2. medium 3. good (regular exercise/eating habit)
Health status	Health perception Morbidity	1. very poor - 5. very good recent one month morbidity
Medical utilization	Ambulatory visit Admission/Referral	no. of visit no. of admission or referral

measured by the health status perception and morbidity for the previous one month. Medical utilization was measured by the ambulatory care utilization of a clinic in prison during the previous one month, admission of patient care room in prison through correctional life, and by the experiences of referring to an outside clinic.

Collected data are analysed in the frame Fig. 1. The figure is a kind of path model in which health concern, health behavior and health status are affected by prisoners' characteristics, and finally related to their medical utilization. According to this model, descriptive aspects of prisoners' health behavior, health status, medical utilization, and correlations among the variables were first analysed; secondly, a serial (hierarchical) multiple regression analysis on enabling factors, need factors, and utilization in the model were conducted; and thirdly, a simpler path model was extracted by reanalysing with significant variables at .10 level.

RESULTS

Variable distribution and correlations

The respondents' characteristics and the distri-

bution of dependent variables are noted in Table 2. The majority, 82% of the respondents, were male, while female prisoners were no more than 2~3% of convicted prisoners, and 3~5% of unconvicted prisoners. The age distribution ranged from 19 to 75 years old. The mean age was 35.6. The mean educational level was 2.46, between middle school and high school. The mean socio-economic status was 2.30, which is the lower middle level. The mean penal servitude was 46.15 months, criminal record was 2.23, the highest being 11. The mean prison term was 49.63 months.

The previous health perception was 3.47, and the previous health concern was 3.64. Eighty percent of respondents were previous smokers while 78% of the respondents were previous drinkers(smoking and drinking are strictly prohibited in prison.)

While concern with their health during the correctional term was 4.32, which was higher than the previous concern of 3.64, health behavior related to exercise and eating habits was considerably positive, 2.41, and health perception was 2.85, lower than the previous 3.47. Thus, it was thought to imply that prisoners took their health more seriously and tried not to become unhealthy while in prison. The final month morbidity rate was at a very high level of 71%, and the frequency of medical utilization was

Table 2. Variable distribution

Variable	Mean	Std. Dev.	Cases
Sex(male)	.82	.39	511
Age	35.60	10.79	495
Education	2.46	.92	501
Socio-economic status	2.30	.78	503
Penal servitude	46.15	42.21	486
Criminal record	2.23	1.76	479
Prison term	49.63	40.90	468
Previous health perception	3.47	1.02	507
Previous health concern	3.64	1.05	500
Previous smoking*	.80	.40	511
Previous drinking*	.78	.41	511
Health concern	4.32	.90	508
Health behavior	2.41	.46	502
Health perception	2.85	.95	507
Morbidity*	.71	.45	511
Ambulatory visit	1.20	2.43	511
Admission/referral*	.28	.45	511

*: dummy variable, thus mean is the % of the characteristic.

1.20 per prisoner during the same period, the most frequent being 30 times. This means that most prisoners visited the clinic one or more times a month. That is a very high utilization of the health care system compared to the general population.

In terms of correlation coefficients among variables (Table 3), male prisoners were younger, of lower socio-economic status, had a higher criminal record, and had a higher smoking and drinking rate than females. In the correlation between age and other variables, older prisoners had more penal servitude, had a more negative health perception, had more health concern, and had a lower experience rate. The more educated the prisoners were, the higher their socio-economic status was; the less criminal record they had, the shorter their penal servitude was. The more penal servitude the prisoners had, the less criminal record and the longer prison term they had. The correlation coefficient

between criminal record and prison term was .720. In other words, the higher the criminal record, the longer prison term. The more positive the previous health perception, the higher the health concern. The correlation coefficient between previous smoking and drinking was .373.

The correlation coefficients among prisoners' health concerns, health behavior, health status and medical utilization are seen in Table 4. The more concern the prisoners had toward their health, the more positive health behavior they showed (.159); the lower perception of health they had (-.168); the more likely they were morbid (.210). The more positive health behavior prisoners had, the more optimistically they perceived their health status (.274) and the less morbid they were (-.116). The more optimistically prisoners perceived their health status, the less morbid they were (-.369); and they visited the prison clinic less frequently (-.145). The

Table 3. Correlations among variables

	A	B	C	D	E	F	G	H	I	J	K
Sex(A)	1.000	-.214**	-.031	-.144*	-.008	.178**	.202**	.094	-.006	.515**	.323**
Age(B)		1.000**	-.035	-.086	.023	.055	.125*	-.176**	.123*	-.208**	-.221**
Education(C)			1.000	.345**	.041	-.315**	-.272**	.043	.086	-.074	-.110
Socio-economic status(D)				1.000	-.039	-.201**	-.225**	.174**	.167**	-.117*	-.036
Penal servitude(E)					1.000	-.172**	.278**	.101	.017	-.017	-.024
Criminal record(F)						1.000	.720**	-.083	-.056	.155**	.131*
Prison term(G)							1.000	-.001	-.031	.140*	.092
Previous health perception(H)								1.000	.115*	.069	.082
Previous health concern(I)									1.000	-.099	-.058
Smoking(J)										1.000	.373**
Drinking(K)											1.000

*: $p < .01$, **: $p < .001$

Table 4. Correlations among health concern, health behavior, health status, and medical utilization

	L	M	N	O	P	Q
Health concern(L)	1.000	.159**	-.168*	.210**	.079	.052
Health Behavior(M)		1.000	.274**	-.065	.009	-.116*
Health Status			1.000	-.369**	-.145*	.082
Health perception(N)				1.000	.163**	.185**
Morbidity(O)					1.000	.123*
Medical Utilization						1.000
Ambulatory visit(P)						
Admission/referral(Q)						

*: $p < .01$, **: $p < .001$

more morbid the prisoners were, the more frequently they visited the prison clinic (.163) and were admitted or referred to outside clinic more often (.185). The correlation coefficient between clinic visits and admission/referral to outside clinic was significant at 0.123.

To analyse the affecting factors of prisoners' health concern and health behavior, multiple regression analyses on each variable, including their characteristic variables as explaining variables, were conducted (Table 5).

The regression equation on health concern was statistically significant ($R^2=.1876$, $F=8.8800$). The significant explaining variables on prisoners' health concern were sex, previous health concern and previous drinking. Male prisoners rather than females were more concerned about health. Present health concerns were also high among the most concerned group. In addition, previous drinking prisoners were less concerned about health.

Related factors of health concern and health behavior

The regression equation on health behavior was

also significant ($R^2=.0758$, $F=2.8821$), but the explained variances by included variables was only 7.58%. There was only one significant variable on health behavior, health concern; the more concerns prisoners had, the more positive health behavior they had. Enlarging the significant level to .10, education level could be the significant explaining variable on health behavior; the more prisoners were educated, the more negative health behavior they had.

Related factors on health status

The results of regression analysis showed that factors related to health status were as seen in Table 6. The regression equation on health perception was significant ($R^2=.1783$, $F=7.0288$) and statistically significant explaining variables on health status were previous health perception, health concern and health behavior. The more optimistically prisoners perceived themselves, the more positively they perceived their health status; the more they were concerned about health, the more negatively they perceived their health status; the more positive health behavior they had, the more positive they perceived their health status. Enlarging the significant level to .10, the

Table 5. Multiple regression of health concern and health behavior

	Health concern		Health behavior	
	B	β	B	β
Sex(male)	.3059*	.1296	.0727	.0585
Age	.0062	.0725	-.0017	-.0377
Education	.0438	.0453	-.0501+	-.0984
Socio-economic status	.0758	.0670	.0144	.0242
Penal servitude	-.0008	-.0367	.0010	.0851
Criminal record	-.0449	-.0934	-.0004	-.0017
Prison term	.0017	.0819	.0012	.1054
Previous health perception	-.0413	-.0463	.0288	.0615
Previous health concern	.3055***	.3661	.0363	.0827
Smoking	.0899	.0406	.0083	.0071
Drinking	-.2348*	-.1034	.0182	.0152
Health concern	---	---	.0593*	.1127
(Constant)	2.7911***		1.8965***	
R Square	.1876		.0758	
Adj. R Square	.1665		.0495	
F	8.8800***		2.8821***	

B: regression coefficient; β : standardized regression coefficient
 +: $p<.10$, *: $p<.05$, **: $p<.01$, ***: $p<.001$

Table 6. Multiple regression on health status

	Health concern		Health behavior	
	B	β	B	β
Sex(male)	.0062	.0024	-.1386+	-.1103
Age	-.0078+	-.0848	.0062**	.1373
Education	.0397	.0378	.0244	.0474
Socio-economic status	-.0513	-.0418	-.0006	-.0010
Penal servitude	-.0004	-.0179	.0007	.0600
Criminal record	.0557	.1068	.0153	.0598
Prison term	-.0021	-.0914	.0007	.0621
Previous health perception	.1519***	.1574	-.0509*	-.1075
Previous health concern	.0862+	.0953	-.0418+	-.0942
Smoking	-.1144	-.0477	.0587	.0498
Drinking	-.0507	-.0206	.1851**	.1532
Health concern	-.2677***	-.2470	.1451***	.2728
Health behavior	.6222***	.3023	-.0790+	.2728
(Constant)	2.1266		.1305	
R Square	.1783		.1367	
Adj. R Square	.1530		.1100	
F	7.0288***		5.1279***	

+: p<.10, *: p<.05, **: p<.01, ***: p<.001

Table 7. Multiple regression of medical utilization

	Health concern		Health behavior	
	B	β	B	β
Sex(male)	1.5187***	.2258	-.1428*	-.1167
Age	-.0131	-.0539	.0005	.0118
Education	-.0107	-.0039	-.0575*	-.1146
Socio-economic status	.2123	.0658	-.0075	-.0128
Penal servitude	.0051	.0834	.0002	.0198
Criminal record	.2111+	.1540	-.0200	-.0803
Prison term	-.0073	-.1228	.0016+	.1466
Previous health perception	-.3681**	-.1451	-.0448*	-.0971
Previous health concern	.3379**	.1421	.0249	.0576
Smoking	-.7527*	-.1193	-.0005	-.0005
Drinking	-.0694	-.0107	-.0442	-.0376
Health concern	-.1080	-.0379	.0154	.0296
Health behavior	.2597	.0480	-.1424**	-.1447
Health perception	-.2609+	-.0992	.0235	.0491
Morbidity	.7196*	.1343	.1670**	.1714
(Constant)	.4061		.6960**	
R Square	.1156		.1080	
Adj. R Square	.0839		.0761	
F	3.6494***		3.3818***	

+: p<.10, *: p<.05, **: p<.01, ***: p<.001

older the prisoners were, the more pessimistically they perceived their health status; the more concerned they were with their health, the more pessimistically they perceived their health status.

The regression equation on morbidity was significant ($R^2=.1367$, $F=5.1279$), statistically significant explaining variables were age, previous health perception, drinking and previous health concern. The older prisoners were, the more optimistically they perceived health status; the more they experienced drinking and the more they were concerned with health, the more morbid they were. At the significance level .10, male morbidity was lower than female; the more they were concerned with health, the less morbid they were.

Related factors on medical utilization

Medical utilization was analysed in two aspects, clinical visits and admission/referral to outside clinics (Table 7). The regression equation on prison clinic visits was significant ($R^2=.1156$, $F=3.6494$), the statistically significant explaining variables were sex, previous health perception, previous health concern, smoking and morbidity. Male prisoners visited the prison clinic more frequently than female prisoners.

The more negatively the prisoners perceived their health status, the more they were concerned with their health. The less they smoked and the more morbid they were, the more frequently they visited the prison clinic. At the significance level .10, the more extensive the criminal record the prisoner had, the more negatively they perceived their own health status and more frequently they made visits to the prison clinic.

The regression equation on admission/referrals to outside clinics was significant ($R^2=.1080$, $F=3.3818$). Statistically significant explaining variables of admission/referrals to outside clinics were sex, education level, previous health perception, health behavior and morbidity. Male prisoners were admitted or referred to outside clinic treatment less frequently than female prisoners. The more they were educated, the less frequently they were admitted or referred. The more negatively they behaved and the more morbid they were, the more frequently they were admitted or referred. At the significance level .10,

the longer prisoners were incarcerated, the more frequently they were admitted or referred to outside clinics.

Path analysis on the prisoners' health behavior and medical utilization

To understand factors affecting the prisoners' health status and medical utilization in a causal model, a hierarchical multiple regression was conducted with significant variables at .10 level (Table 8). Explaining variables affecting the prisoners' health concern were sex, previous health concern and previous drinking. Male prisoners were more concerned with their health than female and the prisoners who were more concerned with health previously or were not exposed to drinking were more concerned with health than the others. Variables related to health behavior were the prisoners' educational level and health concern. The less prisoners were educated or the more concerned they were about health, the more positively they behaved.

The subjective perception of one's health, an indicator in assessing health status, was affected by previous health perception and health concern, present health concern and health behavior. The more positively prisoners perceived their health, or the more they were concerned with health, or the more positively they behaved, the more positively they perceived their present health status. But the more prisoners were concerned with their health, the more negatively they perceived their health. These phenomena were thought to be the result in so-called health anxiety syndrome.

The significant variables related to prisoners' morbidity were age, previous health perception, previous health concern, previous drinking and present health concern. The older the prisoners were, the more morbid they were; the more negatively they perceived their health, the less concerned they were about health; the more they experienced alcohol and the more they were concerned with health in prison, the more morbid they were inclined to be.

Variables affecting prison clinic visits in terms of medical utilization behavior, were sex, previous health perception, previous health concern, smoking and morbidity. Male prisoners made visits more frequently than females. The more negatively pris-

Table 8. Summary of multiple regression for path analysis

Dependent variable	Independent variables	β	Significance
Health Concern	Sex(male)	.1242	.0078
	Previous health behavior	.3817	.0000
	Drinking	-.1168	.0125
Health Behavior	Education	-.1132	.0179
	Health Concern	.1494	.0018
Health Perception	Age	-.0795	.0803
	Previous health perception	.1383	.0024
	Previous health concern	.0989	.0426
	Health concern	-.2511	.0000
	Health behavior	.2895	.0000
Morbidity	Sex(male)	-.0650	.1897
	Age	.1529	.0016
	Previous health perception	-.1054	.0250
	Previous health concern	-.1012	.0442
	Drinking	.1652	.0008
	Health concern	.2714	.0000
	Health behavior	-.0623	.1803
Ambulatory Visit	Sex(male)	.2167	.0001
	Criminal record	.0426	.3700
	Previous health perception	-.1272	.0080
	Previous health concern	.1347	.0041
	Smoking	-.1155	.0340
	Health perception	-.0761	.1331
	Morbidity	.1227	.0152
Admission/Referral	Sex(male)	-.1365	.0042
	Education	-.0926	.0550
	Prison term	.1008	.0432
	Previous health perception	-.0820	.0809
	Health behavior	-.1168	.0134
	Morbidity	.1593	.0008

oners had perceived health, the more they were concerned with health; the less they smoked, the more frequently they visited the prison clinic; and the more morbid prisoners were, the more frequently they visited the clinic.

Admission/referral to the outside clinics were affected by sex, prison term, health behavior and morbidity. Male prisoners were less inclined to be admitted or referred to outside clinics. Long prison terms, negative health behavior and more morbidity were facilitating factors in being admitted or referred to outside clinics.

From the above results, a path model was derived as Fig. 2, which showed that the prisoners' charac-

teristics affect their health concerns and health behavior and these in turn affect health status. In the end, these all affect medical utilization. According to this model, socio-demographic variables such as sex, age, education etc. as well as correctional characteristics and previous characteristics related to health behavior do affect health concern or behavior. These all affected subjective health status or morbidity, and medical utilization including prison clinic visits or admission/referrals to the outside clinics. In this model, it was noteworthy that the prisoners' subjective health status was not the significant factor for medical utilization. It was affected by antecedent factors such as health concern or health behavior.

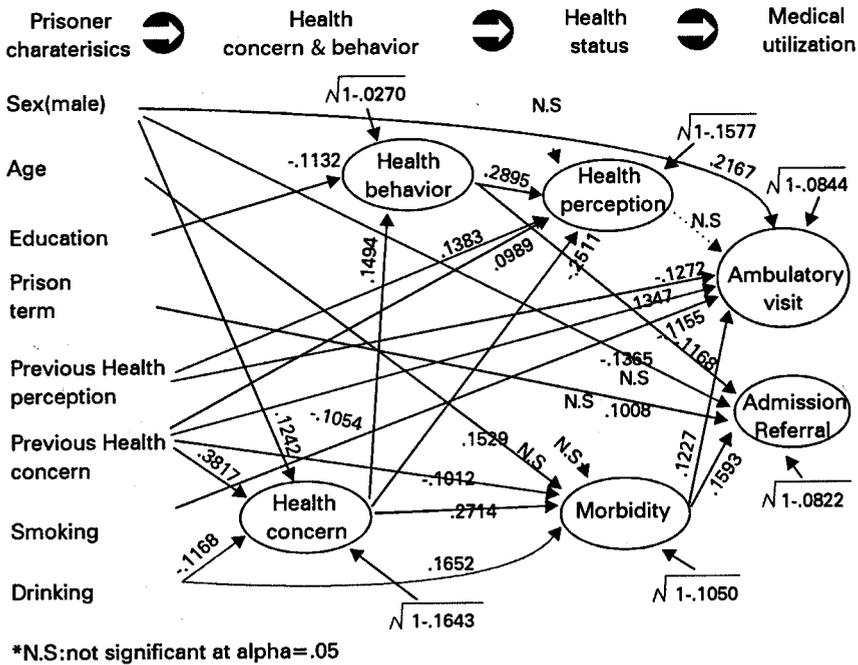


Fig. 2. Path diagram of prisoners' health status and medical utilization.

Using this path model, causal relations among variables were as seen in Table 9. The direct effect on prisoners' previous health concern was .3817, and the effect of sex was .1242, which means male prisoners were more concerned with their health than females. There was an indirect effect on health behavior of sex, a .0186 via health concern, and previous health concern and drinking also had little indirect effects. But, the educational level had a -.1132 direct effect on health behavior, and health concern had a .1494 direct effect. Regarding subjective health status, there was a .1383 direct effect of previous health perception, a .0989 direct and a -.0793 indirect, making a total .0196 effect of previous health concern. There was little effect from previous drinking and education, a -.2511 direct and a .0433 indirect effect of health concern, and a .2895 direct effect of health behavior on subjective health status.

On the prisoners' morbidity, there was a .2714 effect of health concern and a .1529 effect of age. Previous health behavior, such as health perception and health concern had a negative effect. There was

a .1335 effect of previous drinking, a .1652 direct and a -.0317 indirect. On the prison clinic visits, there was a .2208 effect of sex, a .1227 effect of morbidity, a .1143 of previous health perception, and a .1350 of previous health concern. There was a -.1155 effect of previous smoking and smoking prisoners visited the prison clinic more frequently than non-smokers. On admission and referrals to an outside clinic, morbidity had a .1593 direct causal effect and sex had a -.1333 total effect. The more positive health behavior the prisoners had, the less they were likely to be admitted or referred to an outside clinic.

DISCUSSION

This study was made to analyse prisoners' health state and to devise a health management scheme for them. In the aspect that the health perception and medical utilization of a special social group, e.g., prisoners, be approached, this is a unique work to improve the national health status. Major limitations

Table 9. Effects of each variable on the health behavior and medical utilization

	Direct effect	Indirect effect	Total effect
Health Concern			
Sex(male)	.1242	---	.1242
Previous health concern	.3817	---	.3817
Drinking	-.1168	---	-.1168
Health Behavior			
Sex(male)	---	.0186	.0186
Education	-.1132	---	-.1132
Previous health concern	---	.0570	.0570
Drinking	---	-.0175	-.0175
Health concern	.1494	---	.1494
Health Perception			
Sex(male)	---	-.0258	-.0258
Education	---	-.0328	-.0328
Previous health perception	.1383	---	.1383
Previous health concern	.0989	-.0793	.0196
Drinking	---	.0243	.0243
Health concern	-.2511	.0433	-.2078
Health behavior	.2895	---	.2895
Morbidity			
Sex(male)	---	.0337	.0337
Age	.1529	---	.1529
Previous health perception	-.1054	---	-.1054
Previous health concern	-.1012	---	-.1012
Drinking	.1652	-.0317	.1335
Health concern	.2714	---	.2714
Ambulatory Visit			
Sex(male)	.2167	.0041	.2208
Age	---	.0188	.0188
Previous health perception	.1272	-.0129	.1143
Previous health concern	.1347	.0003	.1350
Smoking	-.1155	---	-.1155
Drinking	---	.0203	.0203
Health concern	---	.0333	.0333
Morbidity	.1227	---	.1227
Admission/referral			
Sex(male)	-.1365	.0032	-.1333
Education	---	.0132	.0132
Prison term	.1008	---	.1008
Previous health perception	---	-.0168	-.0168
Previous health concern	---	-.0063	-.0063
Drinking	---	.0233	.0233
Health concern	---	.0258	.0258
Health behavior	-.1168	---	-.1168
Morbidity	.1593	---	.1593

of this thesis were that there were few referable antecedent studies and appropriate theoretical models, data, etc. And, the subject were not easily approachable. They also were a socially-labelled group, and this drawback presented a unique dilemma, not likely to be approved ethically. These problems were thought, in part, to be the result of deficient-social attention.

Collected data were analysed, in accordance with a causal model consisting in path frame, by serial multiple regressions on health behavior, health status, and medical utilization, etc. Because prisoners are segregated from general society, a completely random sample survey was nearly impossible, and thus this study was an exploratory study on a case group. The prisoners' health care is a significant task for the national health administration on a long-term scale and wide scope, in that it is necessary to study the social reservoir of diseases and protect the prisoners' human rights. Because prisoners are inclined to be mediators of communicable diseases or unhealthy behaviors between the prison institution and the outside world, health care for prisoners is directly related to the national population. Administration of health care for prisoners must be extended from the correctional institution to rehabilitation. To examine the present state and to suggest political alternatives would lead to positive effects on the overall correctional administration and ultimately contribute to a more stable social order.

According to survey analysis, while prisoners were generally concerned with health much more than they were before imprisonment, they perceived that their health status deteriorated after imprisonment, and their need for health services was increasing gradually during their correctional life. In the analysis results, the prisoners' health concern was a very high 4.32 on a five-point scale, and the perception of their health status was lower at 2.85 on the same scale. During the last month, 71% of respondents answered that they had experienced one or more diseases. Seen as an exaggeration by prisoners in part, it implied prison health care is in difficulty. The frequency in visiting the prison clinic was 1.2 times per prisoner per month. This means that a prisoner visits the clinic 14.4 times a year. This visiting rate showed a very high level compared to a yearly medical utilization rate in a rural area after

medical insurance, of 3.9 visits (Yu, *et al.* 1988), and another national rate of 7.6 visits in an urban area and 6.7 in a rural area (Yu, *et al.* 1986). The fact that 28% of the prisoners had been admitted or referred to an outside clinic showed the necessity of an organic health care system between correctional and medical institutions.

In the path analysis on the causal relations among variables related to the prisoners' health status and medical utilization, the prisoners' characteristics affected their health concern and health behavior, and subsequently affected their health status and medical utilization, respectively. Specifically, socio-demographic variables and correctional life affect previous health perception or health behavior, and subsequently affect subjective health status and morbidity.

A remarkable result in this analysis was that the effect of need factors was relatively weaker than previous studies. Namely, factors other than direct need were related to the prisoners' health behavior; prisoners, because of their environment, are inclined to utilize health services precipitated by health concerns, etc., rather than actual conditions. This was supported by the fact that the more the prisoners perceived their health positively or concerned health previously, the more frequently they visited the clinic.

On the admission/referral to outside clinics, there was more need from females than males. This implied that the female prisoners had more complicated services which required care outside of prison. And some health programs for long-term prisoners are needed because imprisonment itself can be an unhealthy environment. Some special health care system is necessary. In view of the fact that the negative health behavior group experienced more admissions or referrals to the outside clinics, it would be worthy to note the necessity of programs for prisoners' everyday health care or health education, health promotion etc.

To sum up this exploratory study on prisoners' health behavior and health service utilization, some efforts to organize a health care system embracing the correctional institution and the health care administration have been made on the level of establishing a health care delivery system for special social groups like prisoners. To consider the effect of health care problems in correctional institutions on a national level, appropriate clinic facilities for

primary health care should be equipped at every prison site, and a referral system with outside secondary or tertiary health institutions should be required. In other words, the correctional system related to the prisoners' health care, such as parole, bail, etc., should be improved. Also, in the process of improving the correctional health care administration, a systematic framework should be useful, which consists of the concepts such as health needs, resources, management, economic support, organization, service delivery and health results in a national health system.

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