A study on health harms of smoking and its burden of medical costs : using national health insurance big data

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Abstract

Purpose
It presents 35 smoking-related diseases' relative risks and attributable risks, respectively according to smoking status and calculates the total medical costs by smoking. Analysis materials are long-term follow-up cohort data targeted Koreans. We also analyzed the long-term benefits of quit smoking through current smokers' smoking cessation period which has been biennially checked.

Results
Total medical expenses related to smoking were 1691.3 billion KRW in 2011. More than 1 trillion KRW have been spent for 5 tobacco related-diseases; cerebrovascular disease, ischemic heart disease, diabetes, lung cancer, hypertension in sequence of highest medical costs. Those account for more than 50% of total medical expenses.

When a person has quitted smoking for 8 years, his or her risk of cancer and cardiovascular disease are reduced 0.5 and 0.74 compared with current smoker, respectively. However, it is still higher than non-smoker′s incidence rates. Therefore, in order to reduce current smoker′s cancer or cardiovascular disease risk same as non-smoker, it would be look like longer period.

Conclusion
As a result the negative effects of smoking are expected to be increased for a while in Korea. In order to reduce the total medical cost attributed to smoking, disease incidence rate has continuously decreased by enhancing tobacco control policy.

Measures to impose health care contribution on health risk factors for securing financial resources

Sun Mi Lee, Youngduk Yoon, Kyungrae Hyun and Eunmi Lee
Health Insurance Policy Institute of National Health Insurance Service, 2012

*The following table is excerpted from p.28 and translated.

Trend of total medical cost for past and current smoking attributable diseases

(1 million KRW)

Category	2007	2008	2009	2010	2011 (%)
Respiratory Tuberculosis	6,789	6,458	6,698	7,618	8,049 (0.51)
Oropharynheal cancer	756	757	734	800	907 (0.06)
Esophageal cancer	11,156	13,326	13,730	15,937	16,203 (1.04)
Stomach cancer	81,295	89,419	96,073	103,061	104,868 (6.71)
Colorectal cancer	38,158	43,949	50,118	54,817	58,097 (3.72)
Rectal cancer	7,661	8,594	9,685	10,448	10,758 (0.69)
Liver cancer	6,814	7,977	8,811	9,918	10,649 (0.68)
Pancreatic cancer	10,515	11,818	12,563	14,784	16,848 (1.08)
Laryngeal cancer	7,077	7,278	8,806	9,606	9,732 (0.62)
Bronchial lung cancer	129,676	152,196	164,731	186,860	198,797 (12.72)
Prostate cancer	22,386	26,012	30,337	34,567	41,660 (2.66)
Renal cancer	5,317	6,539	7,458	8,396	9,328 (0.60)
Bladder cancer	10,332	12,302	13,586	14,878	16,431 (1.05)
Leukemia	6,257	9,054	9,815	11,027	11,854 (0.76)
Other neoplasms	6,481	7,240	8,272	9,138	9,984 (0.64)
Mental and hebavioural disorders due to psychoactive substance use	29,623	33,854	38,918	43,366	47,439 (3.03)
Parkinsonism	20,223	27,351	32,770	42,374	50,084 (3.20)
Rheumatic carditis	896	876	906	951	888 (0.06)
Hypertension	255,196	288,987	316,055	338,405	347,047 (22.20)
Ischaemic heart diseases	105,435	112,724	121,972	130,961	136,855 (8.75)
Corpulmonale	3,075	4,141	5,033	6,199	7,137 (0.46)
Cardian arrhythmia	5,769	6,331	7,343	8,154	9,352 (0.60)
Cerebrovascular disease	233,129	276,135	304,688	344,968	377,116 (24.12)
Atheriosclerosis	12,351	14,671	17,009	19,028	21,360 (1.37)
Pneumonia and influenza	4,380	4,723	7,014	6,441	7,560 (0.48)
Chronic obstructive pulmonary disease	2,948	3,387	3,658	3,770	4,060 (0.26)
Asthma	2,354	2,484	2,574	2,558	2,505 (0.16)
Ulcerous	12,861	13,440	13,888	13,802	13,053 (0.84)
Liver cirrhosis	12,318	13,124	12,769	13,391	14,622 (0.94)
Tobacco and nicotine poisoning	6	9	14	19	15 (0.00)
TOTAL	1,051,232	1,205,155	1,326,028	1,466,242	1,563,260 (100.0)

* 7 irrelative diseases are not included in this table

Lifetime cost of obesity and smoking and long-term effectiveness of health promotion

Young-ho Jeong
The Korea Institute for Health and Social Affairs (KIHASA)
and Korea Management Centre for Health Promotion, 2010

☐ The Socioeconomic Cost of illness in Korea

We estimate both direct and indirect costs of diseases in Korea in 2007 using a prevalence-based approach. The cost of diseases in Korea in 2007 is 56,063 billion Won based on 0% discount rate. The estimate represents approximately 6.28% of GDP.

☐ The Socioeconomic Cost of Smoking and Obesity

The estimated economic cost of diseases due to smoking in Korea in 2007 is 5,460 billion Won at 0% discount rate. The cost of lung cancer caused by smoking is 1,210 billion Won; the cost of stroke caused by smoking is 1,146 billion Won.

Direct medical cost of obesity is 994 billion Won and medical costs related to obesity are 3,527 billion Won. The socioeconomic cost of adolescent obesity is about 1,363,800 million Won. We provide the estimates by sex: 867,783 million Won for male 496,023 million Won for female.

☐ Stroke Lifetime Cost and Life Expectancy of Obesity and Smoking

We have performed simulations 100,000 hypothetical cohort of men to estimate lifetime medical cost from 40-year to death in case of stroke. The results show that lifetime medical cost of stroke due to obesity and smoking.

This study has been to estimate lifetime medical cost of smokers, non-smokers and ex-smokers focusing on stroke. We find that lifetime medical costs for stroke would be 35,280 thousands Won, 24,060 thousands Won and 27,330 thousands Won for smokers, never-smokers and ex-smokers.

Lifetime medical cost of stroke due to obesity would amount to about 34,100 thousands Won for a 40-year man. And lifetime medical cost for stroke treatment would amount to about 28,240 thousands Won for a non-obesity 40-year man.

☐ Policy Directions for Health Promotion

- Price regulation and sin tax for smoking
- Access of healthy food
- Incentive development for healthy regional community
- Healthy environmental support using health promotion financing