

A tool for communication with decision-makers: limitations and utilization of studies on cost of illness

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Studies on burden of disease and cost of illness investigate life loss and economic loss caused by a disease.¹ They determine the degree of economic loss following a disease, to establish governmental policies and to identify research topics in a new area.

Comparison the studies among the cost of illness, burden of disease, and economic evaluation clarifies their characteristics. They use similar terms and methodologies. Studies of cost of illness should be differentiated from those of burden of disease. While burden of disease is presented with disability adjusted life year (DALY) and quality adjusted life year (QALY), cost of illness is expressed with financial terms. In short, studies on cost of illness measure the degree of diseases or risk factors in terms of economic burden.²⁻⁵ They show the problems with a currency unit, provide a basis for plans and policies for its prevention and control, justify intervention programs, and promote the allocation of resources and research funds in its area. Economic evaluation is the extension of cost of illness. It contains both parts of costs and outcomes. However, cost of illness and burden of disease only focus on the costs.

To conduct studies on cost of disease; 1) The definition of the disease should be clear and its complications also should be included. It is important because the scope of diseases influence on the costs incurred. 2) Epidemiological characteristics of the diseases should be exact and updated. The

more prevalent diseases may cause the more burden on the society. 3) Social point of view is recommended usually and 4) The data for the use of resources and their unit cost should be collected and calculated to evaluate the use of resources monetarily. Because studies on cost of disease aim to estimate its burden, the data for cost should be accurate.

Some published articles could be useful for the cost of liver diseases. Many epidemiological results may be use to estimate the prevalence of acute hepatitis, chronic hepatitis and liver cancer.⁶⁻¹² In a study estimated socioeconomic costs of five death causes as diseases, in which included liver disease, the cost of cancer recorded the highest cost burden 7735.8 billion won and liver disease followed and recorded 2620.1 billion won.¹³ A cost-effectiveness study of antiviral therapy for chronic hepatitis B patients could be nice source for cost of liver disease, that included the costs of chronic hepatitis, hepatic cirrhosis and liver cancer.¹⁴ However, none of them was used in the study for the cost of liver diseases.¹⁵

In a study on cost of diseases, assuming the prevalence of an illness is an important starting point. Determining the prevalence before estimating its costs following treatments for it is also critical from medical and epidemiological aspects. The study of Lee et al¹⁵ used national health insurance data to estimate cost of liver. It is inevitable to use available existing data for estimation prevalence and incidence of diseases. However, it may cause some problems to use the national health insurance data, so that efforts to prove the

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reliability of these data are critical in the cost of illness studies.¹⁶ It is more appropriate to calculate costs based on cases episode rather than cases claimed.

It has been already known that health insurance statistics has many limitations in studies on burden of disease or economic evaluation.⁵ To cope with them, studies conducted in the U.S. utilized costs-to-charge ratio by using charges which hospitals imposed on patients, and those in England and the Netherlands used standard unit costs data.^{17,18} Lee et al¹⁵ also pointed out these problems in calculating costs. 'Medical care expenses' determined by Health Insurance Review and Assessment Service (HIRA) are not actual medical costs but the price of health care services determined by Government.

Studies estimating costs of chronic diseases also have tried to overcome these problems. By considering that the rate of uninsured out-of-pocket payments in 2008 was 15.2%, direct medical costs were calculated by applying the rate for uninsured medical service. Health utilization patterns of acute and chronic hepatitis, hepatic cirrhosis and liver cancer have great variances, and each uninsured out-of-pocket payments may be different. It should be considered the different pattern of utilization to estimate the uninsured out-of-pocket payments.

To estimate direct non-medical costs like time costs and traffic costs, previous data are used. These data can be important sources to presume costs in economic evaluation. Time valuation or national averages which are hard to be determined in individual studies can increase the comparability with other studies. This study estimating the cost of liver disease assumes the average round-trip traffic cost to be 1475 won in 2008 based on the results of 2008 Korea Health Panel Survey. However, it is necessary to verify whether estimating the cost with the average visit days of outpatients is well-grounded.

For disease such as liver cirrhosis provoking hospitalization, long-term care and disability in daily life, it is especially important to consider informal care. Costs of informal care also should be included. The period of informal care is assumed to be same with the length of hospital stay in the study of Lee et al,¹⁵ and the mean length of hospital stay by disease used the National Health Insurance Statistics data. In the view of patients, the need for actual informal care may be greater before and after the hospitalization rather than the period of in-hospital care. In addition, to estimate the

productivity loss for liver disease, it is used data for hospitalization days and visit days from the National Health Insurance Statistical Yearbook. It may be ease to underestimate the productivity loss. To evaluation time value such as informal care, most studies conducted with a conventional human capital method, but the method has a high possibility of overestimating the costs of decreased productivity following absenteeism, disability and premature death. Friction cost methods suggested to overcome it, has been applied currently more and more in Europe. When a person quits his or her job due to disability or death, his or her position is generally supplemented through promotion or employment. Therefore, friction cost method calculates productivity loss of the total society with the time from a point of stopping work to 'supplementation' rather than the time to 'retirement' in the conventional human capital method.¹⁹ The lost earnings following liver disease related premature death accounts for the highest portion or 73.9-86.1% of the total socioeconomic cost. While the weight of direct medical cost can be low because of relatively a low insurance conversion factor, the cost calculated with human capital method shows a high weight.

Studies on cost of disease aim to support decision-making. So, they demand methodological validity and soundness. In particular, rational data supporting for decision-making on national health policies will facilitate evidence based health policies. However, most studies on cost of liver disease use the same previous methodologies even there were other epidemiologic researches results and other methodological recommendations, so efforts to improve methodology are needed in the future. There is still a gap between political demand for decision-making and the level of study to provide information for it. But, this problem should be recognized very importantly as a good starting point. Systematic improvement and supports for studies on cost of illness are necessary.²⁰

Although a study on cost of liver disease in 2001 insisted that its cost was 2620.1 billion won, that of Lee et al¹⁵ reports its socioeconomic loss was maximally 8104.3 billion won in 2006 to show a significant difference between both studies. Because the difference is too large even after considering the difference in methodology and price rises, its causes need to be determined.

Liver disease is not completely cured, continuous management and preventing complications will increase.

Therefore, comparing change in the proportion of cost components as well as the gross costs of illness should be considered. It should be prepared to increase access to health insurance benefits for managing chronic conditions and preventing complications for liver disease patients in the future. The change in the proportion of cost of liver diseases can be used for the communication tool for expanding health care benefits for chronic care.

Not only decision-makers but also decision-making processes are critical for sound in policy decision. Rational and open decision-making process will raise the demand for evidences and information. In other words, the situational context leads to the rational content. From this aspect, it should be more open and clear process for health policy. Study on cost of illness must be the essential example to be utilized for communication among an academic society, Ministry of Health, patient associations and the public opinion leaders. It has larger political importance compared to other studies because it presents the result as costs, which is a universal and popular form.

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