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Comprehensive measurement of the burden of disease due to adverse events: a new analysis of the cross-sectional patient safety incident inquiry

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INTRODUCTION & AIM

Introduction

Measures of the burden of disease are commonly used to prioritize services and research in healthcare sectors. Although disease burdens for various diseases and injuries have been measured, measurement of the disease burden due to adverse events are not often undertaken. In addition, the methodology for measuring the disease burden due to adverse events comprehensively and reasonably has not been established.

Aim

this study aimed to develop a standard methodology that can more systematically measure the burden of disease due to adverse events. It used the results of medical record reviews, which is a representative method of identifying the status of patient safety, and is commonly used as a gold standard. Specifically, this study utilized the scale and characteristics of preventable adverse events identified in the Patient Safety Incidents Inquiry (PSII), conducted to accurately monitor patient safety at the national level [1, 2] and estimated disability-adjusted life years (DALYs) and economic cost.

METHOD

Sources

In this study, preventable adverse events identified in the PSII, or the patients who experienced them, were the units of analysis.

DALY Calculation

The years lived with a disability calculation was based on patients who suffered harm to a degree of permanent disability (other than death) and more due to preventable adverse events. The years of life lost due to premature mortality calculation was based on patients who died from preventable adverse events. The DALY calculated from 7,500 patients from PSII was extrapolated to the entire Korean population as of 2016, converted to DALYs per 100,000 population, and compared with the results of previous study [3].

Estimation of economic costs

By using the information on the number of hospital discharges by disease categories in the 2016 medical service usage data, information on the occurrence of adverse events by primary diagnosis identified in PSII, and the total economic cost due to adverse events by patients, the economic cost due to adverse events within the entire population was extrapolated.

RESULTS

DALYs

When estimating the DALYs due to preventable adverse events across the whole of Korea, the estimated DALY per 100,000 population was 1,114.4 at the minimum standard and 1,658.5 at the maximum standard. This ranks it third behind back pain and diabetes for maximum criteria compared to results from the same study (Figure 1).

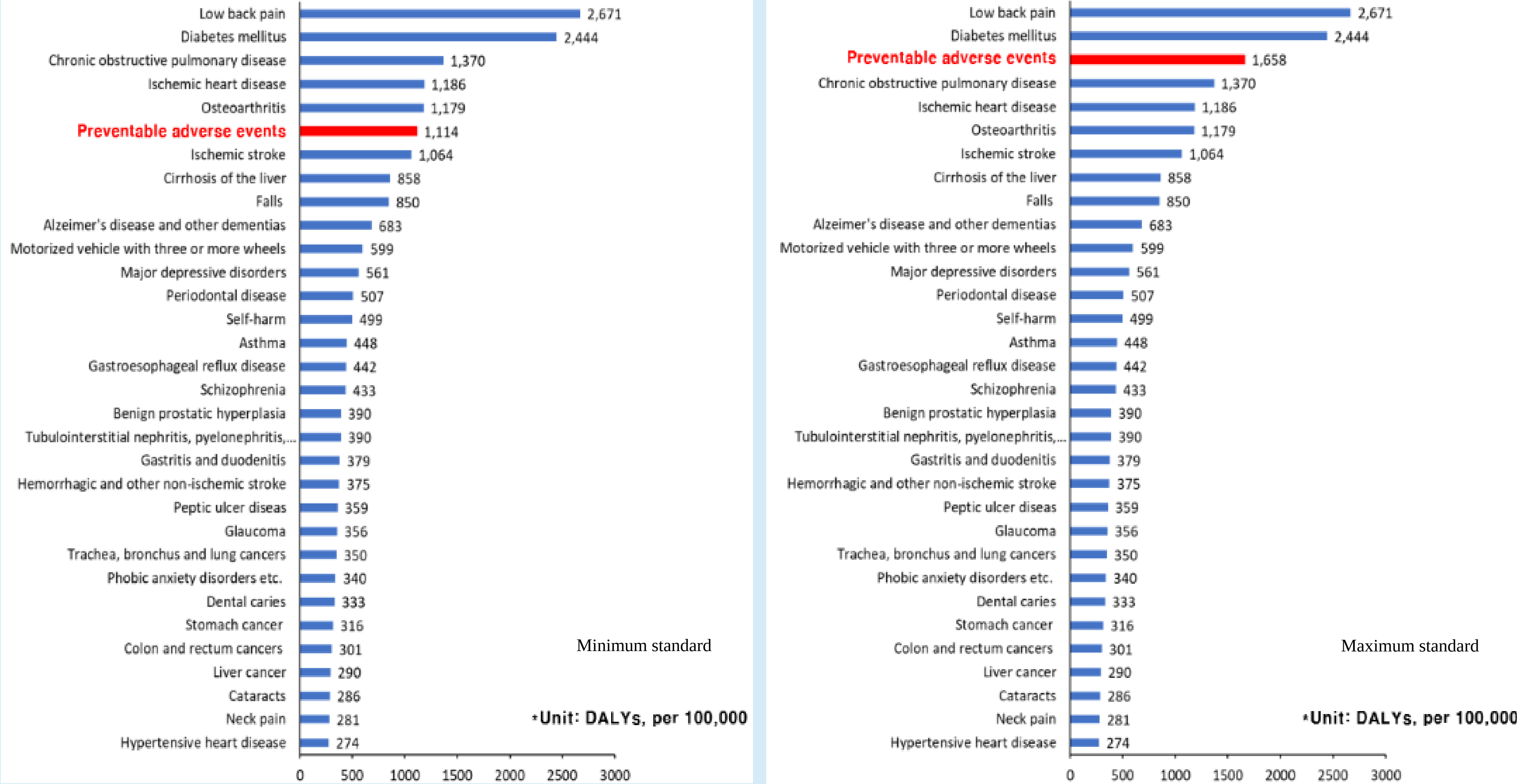


Figure 1. Ranking of disability-adjusted life years due to preventable adverse events

Economic costs

The medical expenses due to preventable adverse events were approximately KRW 150 billion (120 million US dollars) by a minimum standard and approximately KRW 300 billion (240 million US dollars) by a maximum standard (Table 1).

Category	Prolonged hospitalization due to adverse events (days)	Increased medical costs due to adverse events (1,000 KRW)
Adverse events	3,885,907	867,900,000
Preventable adverse events (Minimum standard)	732,273	155,000,000
Preventable adverse events (Maximum standard)	1,442,037	308,000,000

CONCLUSIONS

Preventable adverse events and economic costs were estimated using the results of medical record reviews, which is the most representative and standardized method for estimating the scale of adverse events at the national level. The results of this study indicate that we need to pay more attention to the issue of patient safety. If the more standard method of systematically calculating the burden of disease due to patient safety proposed in this study is used, it is possible to compare the burden of disease due to patient safety adverse events among different countries and to demonstrate the importance of patient safety globally. Since PSII is scheduled to be conducted repeatedly in Korea, it is necessary to continuously calculate the burden of disease due to adverse events by using the PSII to be repeated.

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