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An international comparison study indicated physicians' habits in reporting diabetes in part I of death certificate affected reported national diabetes mortality

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Abstract

Background and Objective: Physicians may find it confusing to decide whether to report diagnoses in part I or part II of the death certificate. The aim of this study was to contrast differences in diabetes mortality through a comparison of physicians' habits in reporting diabetes in part I of death certification among Taiwan, Australia, and Sweden.

Methods: A cross-sectional, intercountry comparison study. We calculated the proportion of deaths with mention of diabetes in which diabetes was reported in part I of the death certificate and the proportion of deaths with mention of diabetes in which diabetes was selected as underlying cause of death.

Results: We found that half of the differences in reported diabetes mortality among Taiwan, Australia, and Sweden were due to differences in reporting deaths with mention of diabetes anywhere on the certificate, and half due to differences in proportion of deaths with mention of diabetes in which diabetes was reported in part I of the death certificate.

Conclusion: Differences in the reporting of diabetes in part I of the death certificate among physicians in Taiwan, Australia, and Sweden was one of the factors that affected differing reported diabetes mortality in Taiwan, Australia, and Sweden.

Keywords: Death certificate; Diabetes mellitus, Mortality; Cause of death; Epidemiology

1. Introduction

Health researchers and epidemiologists often compare mortality rates among countries to identify health problems and formulate epidemiological hypotheses. Reid and Rose [1] have indicated, however, that reported differences in mortality from specific causes across different countries might be attributable to differences in physicians' death certification practices. They submitted 10 case histories to physicians in London (UK), Boston (USA), and Bergen (Norway) and asked each physician to write a death certificate for each case as if the patient had been under their care. The results showed that British doctors were more likely to use the term ''bronchitis'' than American and Norwegian doctors, who preferred to use ''emphysema'' or ''bronchiectasis,'' even through the same patients were being certified. This difference in the terminology used might be one explanation why reported bronchitis mortality in England and Wales in 1959 was much higher (87/100,000) than in the United States (2/100,000) [1]. Similar studies have been conducted examining reporting practices for cancer [2,3], chronic obstructive pulmonary disease [3], and diabetes [4].

One important limitation of these case history studies is the choice and content of the case histories and the influence these have on respondents' behavior. The case histories do not necessarily represent real life circumstances [3]. In addition, these studies also suffered from small samples of physicians participating and could not separate the effects of differences in coding behavior in different countries from differences in physicians' certification practices.

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In addition to reported differences in choice of diagnostic terms and determination of causal sequences among physicians in different countries, there might also be differences in decisions about reporting certain diagnoses in either part I or part II of the death certificate (Fig. 1). This may be due to the somewhat vague definition provided by the World Health Organization for part II of death certificate, namely, ''other significant conditions contributing to the death, but not related to the disease or condition causing it'' [5]. Previous studies have already indicated that physicians confuse ''contributing to'' and ''related to'' in the WHO definition [3,6].

Diabetes is a disease which has been reported as providing difficulties in certification and consequently, coding problems [4,7–9]. When a diabetic patient dies from renal failure, one physician might consider the diabetes as the cause of renal failure and therefore report diabetes in part I of the death certificate. Another physician, in contrast, might judge that the diabetes coexisted with the patient's renal failure and was not part of the sequence of morbid events leading to the death, and thus record diabetes in part II of the death certificate. If physicians in different countries have different views regarding the role of diabetes in the dying process, death certification practices will certainly be dissimilar.

Deaths due to diabetes in Taiwan were reported to be relatively high compared with other countries in a recent study. The study revealed that the reported high Taiwanese diabetes mortality rates were not due to national coders' preferences in assigning diabetes as the underlying cause of death (UCD) [10]. According to the *International Selection Rules* set by World Health Organization [5], if the diabetes was reported in part I of the death certificate, the diabetes is more likely to be selected as the UCD. When reported in part II of the certificate, diabetes is less likely to be selected as the UCD, although use of the WHO selection rules (specifically, Rule 3) does make this possible. The author therefore hypothesized that high diabetes mortality in Taiwan was due to the inclination of Taiwanese physicians to report diabetes in part I of the death certificate compared to physicians of other countries [10]. Our objective for the present study was to contrast differences in reported diabetes mortality statistics and examine the differences according to physicians' death certification patterns when reporting deaths of patients with diabetes in Taiwan, Australia, and Sweden.

2. Methods

2.1. ACME system

As we have noted, the published case history studies suffer from small physician sample sizes and the fact that

Cause of death		Approximate interval between onset and death
Part I		
Disease or condition directly leading to death*	*(a)* ..... due to (or as a consequence of)	.....
Antecedent causes Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last	*(b)* ..... due to (or as a consequence of)	.....
	(c) ..... due to (or as a consequence of)	.....
	(d)	.....
Part II		
Other significant conditions contributing to the death, but not related to the disease or condition causing it	.....	.....
	.....	.....
* This does not mean the mode of dying, e.g., heart failure, respiratory failure. It means the disease, injury, or complication that caused death.		

Fig. 1. International standard form of medical certificate of cause of death.