Leading causes of death among decedents with mention of schizophrenia on the death certificates in the United States

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ABSTRACT

Background: Little is known about the changes in the ranking of leading cause of death (COD) among people died with schizophrenia across years in the United States (U.S.). This study aims to determine the ranking of leading COD among U.S. decedents with mention of schizophrenia by age from 2000 to 2015.
Methods: The mortality multiple COD files maintained by the National Center for Health Statistics were used to identify decedents aged 15 years old and above with mention of schizophrenia anywhere on the death certificates to determine the number and proportion of deaths attributed to various underlying CODs.
Results: Of 13,289, 13,655, 14,135, and 15,033 people who died in 2000–2003, 2004–2007, 2008–2011and 2012–2015 with mention of schizophrenia, similar to all decedents, heart disease and cancer was the first and the second leading COD throughout the study years. Schizophrenia ranked the third in most years except in 2004–2007. The first leading COD for decedents with mention of schizophrenia aged 15–24, 25–44, 45–64, 65–74, and 75+ years old in 2012–2015 was suicide, accidents, heart disease, heart disease, and Alzheimer's disease and related dementia, respectively. Nevertheless, it was accidents, accidents, cancer, cancer, and heart disease, respectively for all decedents.
Conclusion: The ranking of leading CODs among U.S. decedents with mention of schizophrenia changed across years and differed from all decedents by age, which suggest that different interventions should be designed accordingly.

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1. Introduction

Systematic reviews (Saha et al., 2007; Laursen et al., 2014; Walker et al., 2015) and population-based cohort studies (Osby et al., 2000a, 2000b; Miller et al., 2006; Laursen et al., 2007; Capasso et al., 2008; Piatt et al., 2010; Hoang et al., 2011; Partti and Perala, 2013; Nielsen et al., 2013; Lawrence et al., 2013; Sherman et al., 2013; Dickerson et al., 2014; Fazel et al., 2014; Olfson et al., 2015) have indicated that people with schizophrenia have excess mortality compared with general population or people without schizophrenia. With regard to the causes of death (CODs), people with schizophrenia have higher risk of dying from some unnatural CODs (suicide and violence) and some natural CODs (cardiovascular disease, diabetes mellitus, and smoking-related

respiratory diseases). However, most of these cohort studies have small number of deaths and cannot further analyze the CODs by year and age.

Another approach, although can explore only the tip of iceberg, is to use of multiple COD mortality file to examine the changes in ranking of leading CODs among decedents with mention of schizophrenia by year and age. The file include all diagnoses (up to a maximum of 20) reported on the death certificate of all U.S. decedent persons and standardize the assignment of underlying COD (National Center for Health Statistics, 2016). The multiple COD data can provide complement information in addition to underlying COD and could investigate the associations between diseases (Redelings et al., 2006; Redelings et al., 2007) and have been used in comparison of schizophrenia mortality between countries (Lu and Lin, 2010) and across years in the U.S. (Polednak, 2014), but not on the ranking of leading COD. This study sought to determine whether the ranking of leading CODs among U.S. decedents with mention of schizophrenia anywhere on the death certificate changed by age from 2000 to 2015 and differed from that among all decedents.

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2. Methods

2.1. Data source

The mortality multiple COD files are maintained by the National Center for Health Statistics for more than 40 years and are released yearly for research. The data of years 2000 through 2015 were used to identify decedent people aged 15 years old or above with mention of schizophrenia anywhere on the death certificates.

2.2. Measures

The International Classification of Diseases, Tenth Revision (ICD-10) codes for leading CODs (simplified term used in Tables and Figure) were C00-C97 for malignant neoplasms (cancer); E10-E14 for diabetes mellitus (diabetes); F20 for schizophrenia; F01, F03, and G30 and for Alzheimer's disease and related dementia (ADRD); I00–I09, I11, I13, and I20–I51 for disease of heart (heart disease); I60–I69 for cerebrovascular diseases (stroke); J09-J18 for influenza and pneumonia (pneumonia); J40-J47 for chronic lower respiratory diseases (CLRD); K70, K73-K74 for chronic liver disease and cirrhosis (CLDC); V01-X59, Y85-Y86 for unintentional injuries (accidents); X60-X84, Y87.0 for intentional self-harm (suicide); X85-Y09, Y87.1 for assault (homicide) (Heron, 2016).

2.3. Analysis

We calculated number and percentage of deaths of various leading CODs among people who died with mention of schizophrenia and among all decedents by age group (15–24, 25–44, 45–64, 65–74, and 75+ years old) and ranked the leading COD according to number of deaths.

3. Results

The number of decedents aged 15 years old and above with mention of schizophrenia anywhere on the death certificates was 13,289, 13,655, 14,135, and 15,033 in 2000–2003, 2004–2007, 2008–2011 and
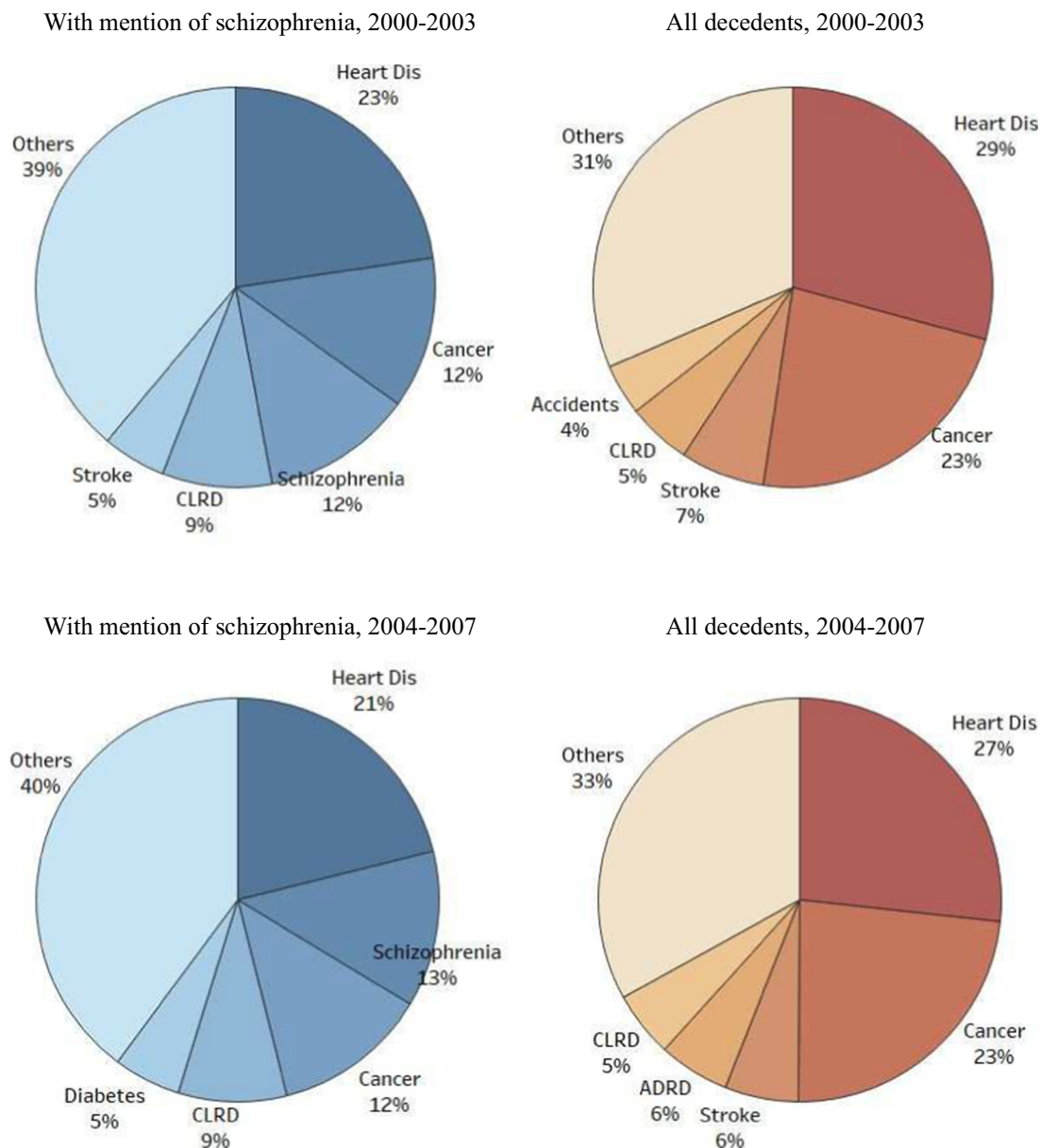
Fig. 1. Distribution of leading causes of death among all decedents aged 15 years old and above and decedents with mention of schizophrenia in the United States. (CLRD = Chronic lower respiratory disease; ADRD = Alzheimer's disease and related dementia).