



Asthma and self-harm: A population-based cohort study in Taiwan



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ABSTRACT

Objective: Few studies have investigated the relationship between asthma and suicidality-related outcomes in the world. We sought to investigate the association between asthma and risk of non-fatal self-harm in a large national sample.

Methods: Cases aged 10 years and over were identified from Taiwan's National Health Insurance Research Database with a new primary diagnosis of asthma (ICD-9:493) between 2000 and 2008. Case status required the presence of any inpatient diagnosis of asthma and/or at least two recorded diagnoses and 1 year duration of asthma in outpatient services. These 27,781 cases were compared to 138,905 sex- and age-matched controls and both groups were followed until end of 2008 for instances of self-harm, defined as ICD-9 codes E950–E959 (self-harm causes) and E980–E989 (undetermined causes). Competing risk adjusted Cox regression analyses were applied, adjusting for sex, age, residence (urban/rural), insurance premium, episode of psychiatric disease, montelukast, Charlson comorbidity index and mortality.

Results: Of the 166,686 subjects, 445 carried out self-harm during a mean (SD) follow-up period of 5.84 (2.35) years. Asthma (hazard ratio = 1.70, 95% CI: 1.35–2.14), age, residence, episode of psychiatric disease and Charlson comorbidity index were independent risks on self-harm in the fully adjusted model.

Conclusions: Asthma was associated with increased risk of self-harm in this population, independent of a number of potential confounding factors including montelukast use. This reinforces the need to consider mental health in routine asthma care, and to consider asthma as a potentially important stressor in people with comorbid mental disorder.

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Introduction

Suicide is an important and serious public health issue worldwide, with nearly a million people dying from suicide each year and around one self-harm occurring every 40 seconds [1]. In the Global Burden of Disease (GBD) report, self-inflicted injuries are ranked 13th among leading causes of death (1.5%) and 17th among leading causes of disability adjusted life years [2]. For every suicide death, there are an estimated 6 to 25 self-harm episodes [3,4]. The strongest predictor of completed suicide is self-harm [5], with suicide risk raised over a hundred-fold in people carrying out self-harm acts [6,7]. The lifetime prevalence of self-harm has been found to be high in community samples: for example, 4.6% in the National Comorbidity Survey (NCS) [8], and 4.3% in the

earlier Epidemiologic Catchment Area survey (ECA) [9]. Consequently, self-harm is an important public health issue, and understanding determinants of self-harm is an important step for the prevention of completed suicide. Besides the well-recognized association with mental disorders [10], risk of self-harm is also increased in association with physical illness [10]. For example, the WHO/EURO study found that 50% of self-harm cases suffered from an acute or chronic disorder in relapse at the time of the self-harm act itself [11]. Among physical disorders, asthma has been identified specifically as a risk factor for suicide [12,13].

The prevalence of asthma has risen dramatically in recent years [12], with the WHO estimating around 235 million people affected [14]. Asthma can have adverse effects on quality of life, including sleeplessness, daytime fatigue, reduced activity levels, school and work absenteeism, and mental health problems [15–17]. However, few studies have investigated relationships with self-harm [18–23]. While an association with increased risk of self-harm has been suggested, previous studies have methodological limitations, including restriction to specific populations such as young adults, local and potentially

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unrepresentative samples, reliance on self-reported asthma to define exposure and cross-sectional designs [12,24].

Singular (montelukast) is one of the top selling prescriptions in 2012 in the USA [25]. It is a potent and selective cysteinyl leukotriene (CysLT) receptor antagonist, widely used in the treatment of asthma and allergic rhinitis [26]. FDA in the USA announced leukotriene receptor antagonist may be linked to suicide and psychiatric adverse events [27]. A review concluded that there was no excess suicidality in montelukast-treated groups in placebo controlled studies [28]; however, trial samples may not generalize to clinical settings and the effect of montelukast on suicide related behaviors remains uncertain.

In Taiwan there has been a threefold increase in the incidence of suicide from 6.2/10,000 in 1993 to 18.8/10,000 in 2005, and suicide has become the ninth leading cause of death since 1999. In the study described here, we aimed to investigate associations between asthma, montelukast and risk of self-harm adjusting for socio-demographic

factors and comorbid mental disorders, making use of a national health insurance data set in Taiwan.

Methods

Study design

A retrospective cohort study was assembled using data from the Taiwan National Health Insurance Research Database (NHIRD) provided by that country's National Health Research Institute (NHRI) which included outpatient, ambulatory, hospital inpatient care, as well as dental services. The National Health Insurance (NHI) program provides compulsory universal health insurance, implemented from March 1995, covering all delivery of health care in 98% of the national population. In cooperation with the Bureau of NHI, the NHRI extracted a randomly sampled representative database of 1,000,000 people from the year

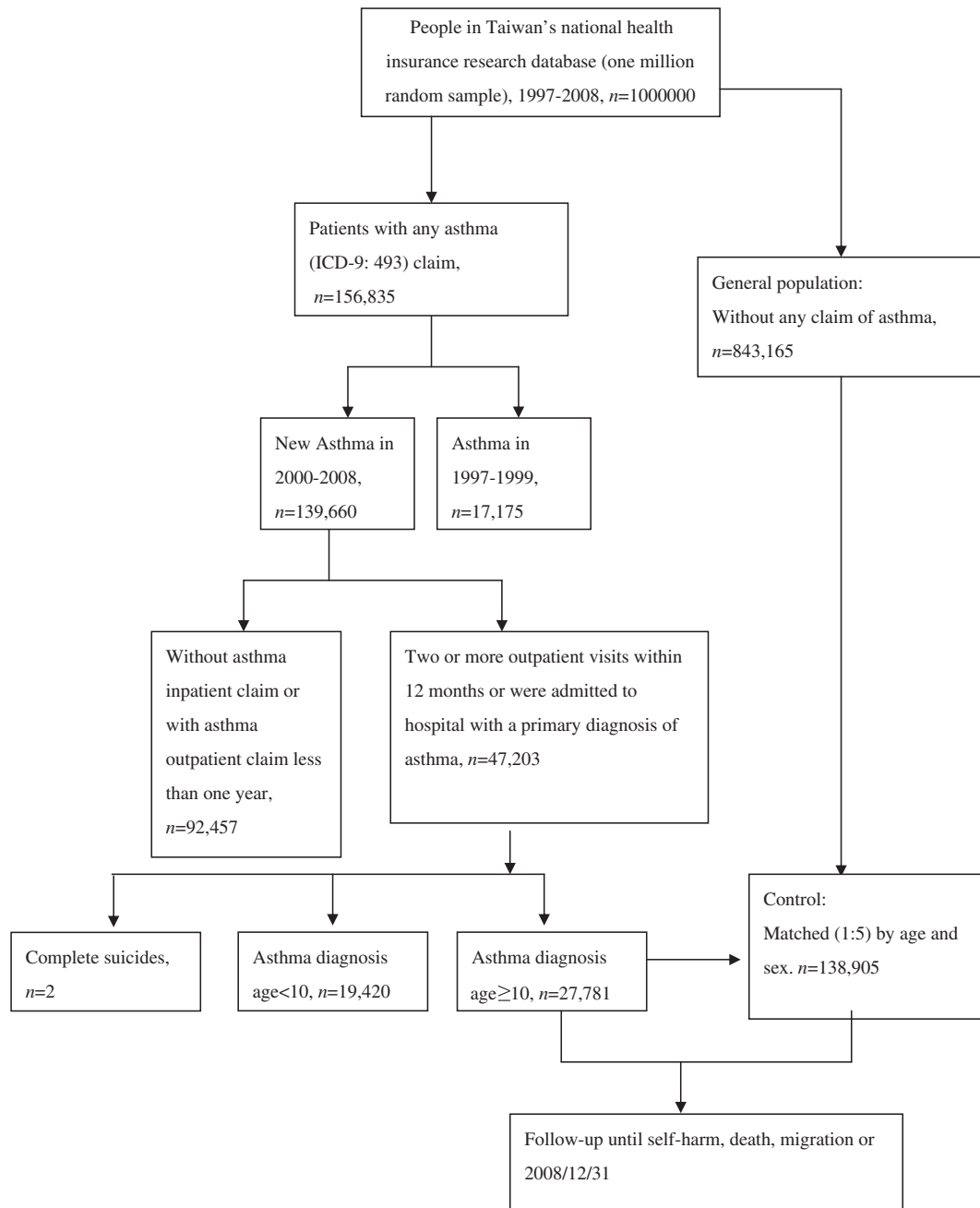


Fig. 1. Flow chart of selection subjects.

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