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## Epidemiology and comorbidities of patients with chronic urticaria in Taiwan: A nationwide population-based study

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### ABSTRACT

**Background:** Comprehensive data regarding the epidemiology of chronic urticaria (CU) in general populations are scant.

**Objectives:** To investigate the prevalence, incidence, and comorbidities of CU in general population.

**Methods:** The data were sourced from the National Health Insurance Research Database (NHIRD) for 2009–2012. Patients who had a primary/secondary ICD-9-CM diagnosis code of 708.1, 708.8, or 708.9 during the year with at least two outpatient visits and an antihistamine prescription, were identified as the cases of CU for each year. The incidence, persistence and comorbidities of CU were examined.

**Results:** The prevalence of CU ranged from 0.69% to 0.79% for each year from 2009 to 2012, and the incidence was around 0.50% per year from 2010 to 2012. Comparing to the Standard Population, the standardized prevalence ratios (SPRs) for the rheumatic diseases, thyroid disorders, inflammatory diseases, and psychiatric disorders among CU patients were 2.74, 1.81, 1.57 and 1.87, respectively.

**Conclusion:** The prevalence of CU in Taiwan is about 0.69–0.79%. CU is associated with a significantly increased risk of psychiatric disorders, inflammatory diseases, thyroid disorders, and rheumatic diseases. Except for thyroid disorders, the prevalence of these comorbidities tends to increase the longer CU persists.

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## 1. Introduction

Chronic urticaria (CU) is defined by the repeated occurrence of itchy hives, angioedema, or both, for 6 weeks or more. It is further classified into chronic inducible urticaria and chronic spontaneous (or idiopathic) urticaria (CSU/CIU), depending on whether a specific trigger can be identified or not [1–3]. Although urticaria is one of the most common skin conditions, only a few studies investigating the prevalence of CU have been published [4]. Most data have involved selected patient populations, usually patients attending special clinics [4,5]. In addition, previous inconsistencies in the classification of CU present further difficulties when

comparing past studies [4]. A 1-year period prevalence for CU of 0.8% was reported in a German study [5], while Gaig et al. reported a point prevalence of 0.6% in the Spanish population [6]. However, the prevalence and incidence of CU in Asian populations are largely unknown.

It has been suggested that CU might be related to other autoimmune processes, rheumatic diseases, or chronic inflammation [7–9]. The association of CU with rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), ankylosing spondylitis (AS), psoriatic arthritis/psoriasis (PsA/PsO), thyroid disorders, inflammatory diseases, and psychiatric disorders has been reported before [7–17]. However, there is limited information on how prevalent they are. In this study, we aimed to investigate the prevalence, incidence, and comorbidities of CU in the general population of Taiwan.

## 2. Methods

### 2.1. Setting

The National Health Insurance (NHI) program in Taiwan was put into effect in March of 1995, and is primarily funded by payroll tax

**Abbreviations:** AS, ankylosing spondylitis; CIU, chronic idiopathic urticaria; CSU, chronic spontaneous urticaria; CU, chronic urticaria; *H. pylori*, *Helicobacter pylori*; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; NHI, National Health Insurance; NHIRD, National Health Insurance Research Database; PsA/PsO, psoriatic arthritis/psoriasis; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; SPR, standardized prevalence ratio.

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premiums with additional subsidies from the general government revenues. The system covers 99.9% of the total population of Taiwan with a comprehensive benefits package (including preventive medicine, dental care services, outpatient and inpatient services, prescription drugs, and Chinese herbal remedies). Health care providers are reimbursed by the NHI for their services. Patients are free to select the healthcare providers of their choice, although they are required to make co-payments for outpatient/inpatient services and drugs consumed.

2.2. Data sources and study subjects

The National Health Insurance Research Database (NHIRD) was established by the National Health Research Institute, in cooperation with the National Health Insurance Administration, with the

aim of promoting research into current and emerging medical issues in Taiwan. The data for this study were sourced from the NHIRD for 2009–2012.

Patients who had at least two outpatient visits and a primary or secondary International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of 708.1 (idiopathic urticaria), 708.8 (other specified urticaria), or 708.9 (urticaria unspecified) and an H1 anti-histamine prescription were identified as the cases of CU for each year from 2009 to 2012. The first outpatient visit in the year was defined as the index date of the given case in that year. Patients who met either of the following two criteria were excluded. First, if the interval between the index date and the date of the last CU outpatient visit in the same year was less than 6 weeks. Second, any patient who had at least two outpatient visits with a primary or secondary ICD-9-CM

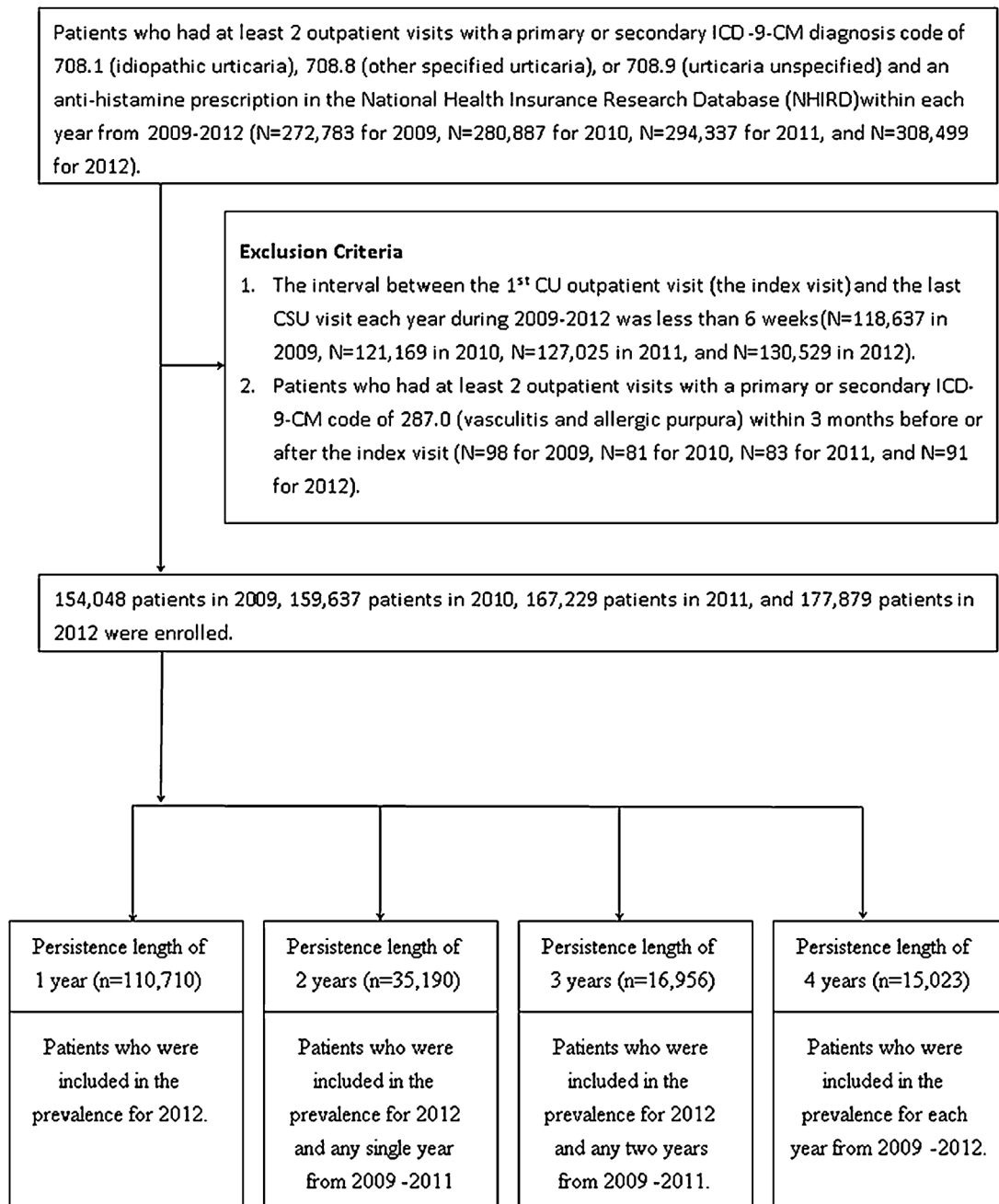


Fig. 1. Selection process for cases of CU from 2009 to 2012.

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