



Fibromyalgia Increases the Risk of Coronary Heart Disease: A Population-Based Cohort Study

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Faculty Disclosure

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| Faculty Name: | Pei-Shan Tsai, PhD, Professor & Associate Dean |
| Conflicts of Interest: | None |
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Goals and Objectives

- Session Goal:
 - To present evidence from a cohort study regarding the association of fibromyalgia with risk of coronary heart disease.
- Session Objectives:
 - Objective #1: to present the design of a cohort study using clams data.
 - Objective #2: to discuss the evidence supporting the role of fibromyalgia in predicting future coronary heart disease.

Background (1)

- Increased production of ROS in mitochondria, accumulation of mitochondrial DNA damage, and the resultant mitochondrial dysfunction are associated with atherosclerosis and coronary heart disease (CHD).
- Mitochondrial dysfunction has been implicated in the development and maintenance of fibromyalgia.
- Inflammation has been implicated in the pathogenesis of both CHD and fibromyalgia.

Background (2)

- CHD and fibromyalgia, two seemingly unrelated diseases, may share the same underlying pathophysiological mechanisms, namely mitochondrial dysfunction and inflammation.
- Thus, it is reasonable to infer that an association exists between fibromyalgia and a subsequent CHD event.

Aim & Hypothesis

- To examine whether fibromyalgia patients have an increased risk of coronary heart disease (CHD), compared with age- and sex-matched control patients.
- **Hypothesis:** Fibromyalgia increases the risk of adverse coronary events.

Methods (1)

- **Design:** a matched-cohort study design
- **Data Source:** the Longitudinal Health Insurance Database (LHID) 2000 released by the National Health Research Institutes, Taiwan. The LHID2000 includes medical claims data and registration files for 1 million enrollees randomly selected from the 2000 Registry for Beneficiaries ($n = 23.72$ million) of the National Health Insurance program.

Methods (2)

- **Study Cohort:** Between January 1, 2000, and December 31, 2007, **patients treated for fibromyalgia at least once a month for 3 consecutive months following their initial diagnosis** were enrolled in our study.
- **Comparison Cohort:** Patients with no history of fibromyalgia or cancer-related pain and matched to each fibromyalgia patient based on **age and sex at a frequency of 1:3.**

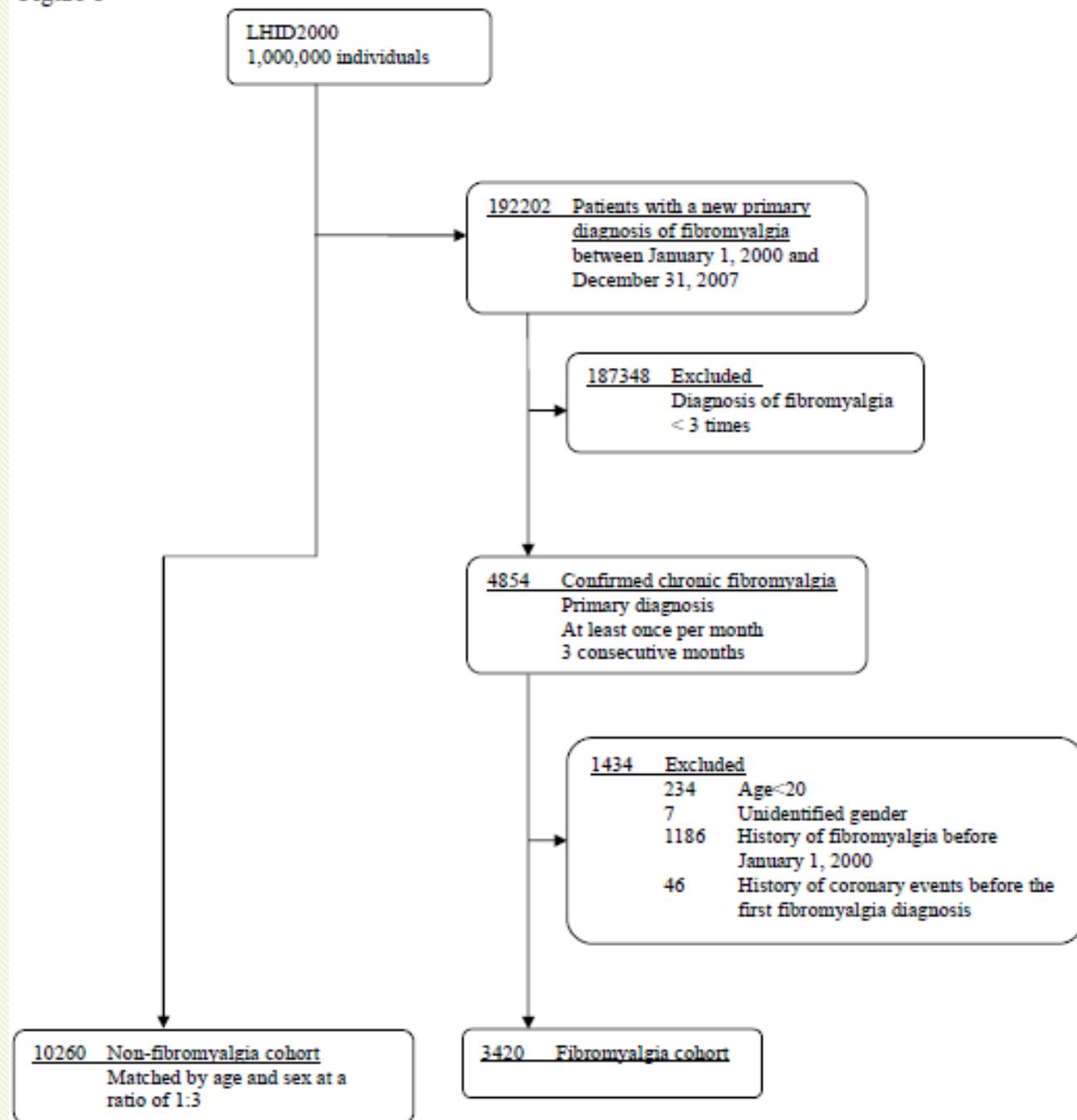
Confounders (3)

- Age
- Sex
- Comorbidities
 - diabetes mellitus
 - Hypertension
 - Hyperlipidemia
 - alcohol-related illnesses
 - Obesity
 - COPD
 - Depression
- Influenza vaccination
- The number of visits to cardiology clinics
- antidepressants use
- NSAIDs use
- Opioids use
- Cardiovascular medications
 - Nitrates
 - anti-platelet agents
 - angiotensin-converting enzyme inhibitors
 - beta-blockers, calcium channel blockers
 - Diuretics
 - angiotensin-II receptor blockers,

Methods (4)

- **Primary endpoint:** the composite of CHD events, including percutaneous coronary interventions and coronary artery bypass grafting procedures.
- **Statistics:** the hazard ratios (HRs) and the 95% confidence intervals (CIs) were estimated using multivariate Cox proportional-hazards regression models.

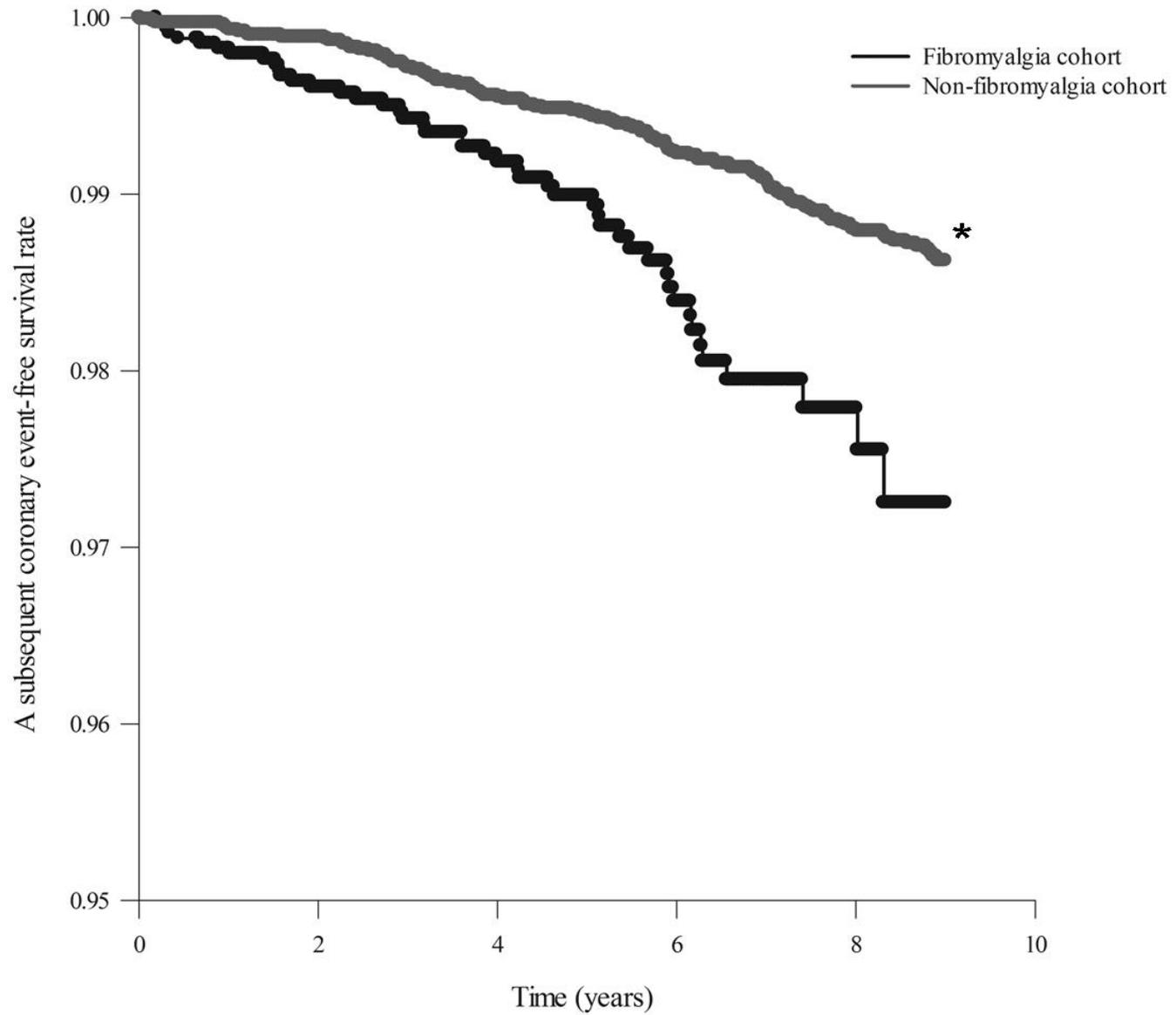
Figure 1



Results

- Patients with fibromyalgia showed a significantly higher subsequent risk of a CHD event (adjusted HR = 2.19, 95% CI = 1.52 - 3.17, $P < 0.001$) than the patients without fibromyalgia.

Figure 2



Conclusion

- Patients with fibromyalgia had at least twice the risk of a subsequent coronary event when compared to those without fibromyalgia.