

RESEARCH LETTER

No Significant Change in Trend of Hospitalizations for Acute Coronary Syndrome in Japan Before and After Introduction of Heated Tobacco Products

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Currently, Japan has the most developed market for heated tobacco products (HTPs) globally; the HTP market share increased from 0.01% in January 2015 to ≈7% in January 2017, with a further rapid increase to 25% at the end of 2019.¹ Therefore, evaluating whether switching from cigarette smoking to HTPs has any benefits in mitigating ischemic heart disease (IHD), including acute coronary syndrome and chronic IHD, in Japan is important. Recently, van der Plas et al² reported a significant reduction in hospitalization trends for IHD after the introduction of HTPs in Japan in 2017, suggesting the presence of harm-reduction effect in HTPs. However, they did not evaluate the impact of HTPs on acute coronary syndrome, including acute myocardial infarction and unstable angina pectoris, which are critical IHDs with a well-established close relationship with the detrimental effects of cigarette smoking.³ Therefore, we analyzed changes in hospitalizations for acute coronary syndrome, acute myocardial infarction, unstable angina pectoris, and chronic IHD using interrupted time series analysis of 1 205 876 records from 372 hospitals in Japan that submitted continuously their DPC data from April 2013 to March 2020. They were registered in the the Japanese registry of all cardiac and vascular diseases-DPC database maintained by the Japanese Circulation Society.⁴

Data underlying this article is owned and provided by the Japanese Circulation Society for research purposes. Data will not be made available to other researchers without permission from Japanese Circulation Society. The present study was conducted following the 1964 Declaration of Helsinki and its later amendments and was also approved

by the Hyogo Prefecture Amagasaki General Medical Center ethics committee (authorization number, 3-39).

The interrupted time series analysis interprets the monthly number of hospitalizations over multiple, equally spaced time periods before and after the introduction of HTPs to interrupt its trend, using ordinary least-squares regression-based approaches. These results revealed no significant changes in the trends of hospitalizations for acute coronary syndrome, acute myocardial infarction, and unstable angina pectoris before and after January 2017 regardless of seasonal adjustment (Figure). However, chronic IHD hospitalization, chiefly due to elective coronary angiography and elective percutaneous coronary intervention (PCI), showed a significant increase and reduction in trends before and after January 2017 (Figure).

The Japanese Ministry of Health, Labor, and Welfare introduced a new reimbursement policy in April 2018, to reduce unnecessary PCIs, in which ischemia assessment is required for elective PCI.⁵ Recently, using the same interrupted time series analysis, we reported a significant increase and reduction in trends of elective PCI hospitalization before and after 2018, as the result of the above policy change.⁵ Therefore, the policy change explains probably the change of the significant increase and reduction in trends of chronic IHD hospitalization before and after 2017 in the present study. The significant reduction in hospitalization trends for IHD after 2017 noted in the study by van der Plas et al² may be related to the policy change for elective PCI in Japan as demonstrated in our study by the significant reduction in hospitalizations for IHD after 2017. Thus, we conclude that the policy change for elective PCI

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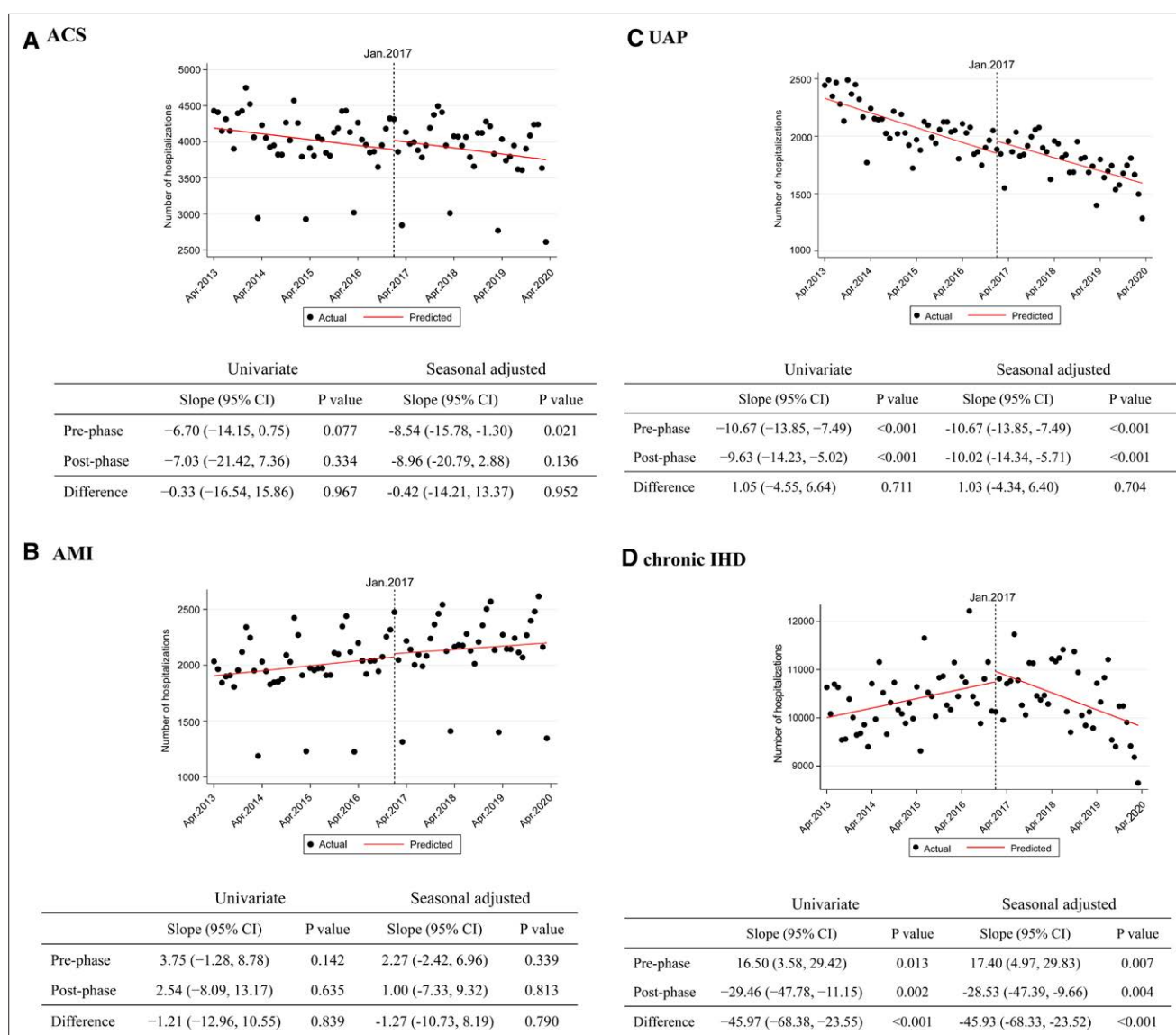


Figure. Number of hospitalizations for acute coronary syndrome (ACS), acute myocardial infarction (AMI), unstable angina pectoris (UAP), and chronic ischemic heart disease (IHD) in Japan between April 2013 and March 2020.

There were no significant changes in the trend of hospitalizations for ACS (A), AMI (B), and UAP (C), but a significant increase and reduction of the trend for chronic IHD (D) was noted before and after January 2017, respectively, even after adjustment of seasonality.

rather than a harm-reduction effect of HTPs likely explains the reduction in hospitalizations for IHD.

ARTICLE INFORMATION

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