

TOBACCO/NICOTINE-RELATED HEADACHE AS A CANDIDATE PHENOTYPE FOR ICHD-4: INSIGHTS FROM THE JASTIS STUDY, A JAPANESE CROSS-SECTIONAL ANALYSIS

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Background. The International Classification of Headache Disorders (ICHD), 3rd edition, classifies headaches attributed to substance use or withdrawal as secondary headaches. However, headache related to smoking or nicotine has not been sufficiently established as an independent diagnostic entity. (A) Headache during or shortly after smoking, (B) headache worsening on days of smoking reduction, and (C) headache improvement after smoking avoidance are clinically observed, but their frequency and association with migraine remain unclear. This study aimed to examine smoking-related headache symptoms associated with heated tobacco products (HTPs) and conventional cigarettes, and their relationship with migraine.

Methods. We performed a cross-sectional analysis using data from the 2026 Japan Society and New Tobacco Internet Survey (JASTIS), an internet-based cohort survey. Participants were recruited from a nationally representative online panel comprising more than two million individuals. Among 30,000 respondents, 27,486 individuals with valid responses were included. For HTPs and conventional cigarettes, the three smoking-related headache symptoms were assessed separately: (A) headache during or shortly after smoking, (B) headache worsening on days of smoking reduction, and (C) headache improvement after smoking avoidance. Each symptom was evaluated using a four-point frequency scale: 1 = never, 2 = rarely, 3 = sometimes, and 4 = often. In the present analysis, each symptom was dichotomized into positive and negative responses; “sometimes” and “often” were considered positive, whereas “never” and “rarely” were considered negative.

Results. Among 3,889 respondents for HTPs, headache during or shortly after use was reported by 16.3% (632/3,889), headache worsening on days of reduced use by 12.0% (468/3,889), and headache improvement on days of reduced use by 12.7% (493/3,889). Among 9,061 respondents for conventional cigarettes, the corresponding frequencies were 11.2% (1,018/9,061), 7.7% (700/9,061), and 8.1% (733/9,061). Participants with migraine reported smoking-related headache symptoms more frequently than those without migraine.

Conclusions. Smoking-related headache symptoms were observed with both HTPs and conventional cigarettes and were more frequent among individuals with migraine. These findings suggest overlapping phenotypes of exposure-triggered, withdrawal-like, and exposure-sensitive headache, and may inform future classification of tobacco/nicotine-related headache in ICHD-4.