The Effect of Sugar-sweetened Beverage Consumption on Incidence of Cardiovascular Disease in Thai Adults

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Background: Excess consumption of sugar becomes the global health concern and leads to the non-communicable diseases (NCDs); for example, obesity, metabolic syndrome, and type 2 diabetes. The major dietary source of added sugar is sugar-sweetened beverage (SSB). In the meantime, the incidence of cardiovascular disease is increasing and remains the leading cause of mortality, long-term disability, and economic burden worldwide. The association between SSB consumption and cardiovascular disease has been identified in previous studies among western population, but still inconclusive. Therefore, the evidence in Thais is still warranted.

Objective: This study aimed to examine the effect of SSB consumption on cardiovascular disease and mortality, and to investigate factors related to SSB consumption and cardiovascular disease.

Methods: This retrospective cohort study was conducted in 4,545 subjects, aged 35 years or more, from population-based cohort study: the Electricity Generating Authority of Thailand study (EGAT) from 1985 to 2015. The participants with previous history of myocardial infarction and cerebrovascular disease were excluded. The amount of both carbonated and non-carbonated SSB consumption was assessed by self-recorded food frequency questionnaire at baseline and categorized into three groups: < 2, 2-6 and > 6 portions/week. Multivariable logistic regression was used to analyze the association between SSB consumption. The incidence of cardiovascular events and mortality was also analyzed.

Results: A number of 457 events of cardiovascular disease, including 284 of ischemic heart disease and 173 of stroke, were reported during 30-year follow-up. The amount of non-carbonated SSB consumption had a trend on increased death from ischemic heart disease (p for trend =0.035). More than 6 times weekly of non-carbonated SSB consumption was significantly associated with higher mortality risk from ischemic heart disease (HR 1.84; 95%CI 1.01 to 3.36; p =0.049). Nevertheless, the amount of carbonated SSB consumption had a trend on decreased death from stroke (p for trend =0.045). The 2-6 times weekly of carbonated SSB consumption was also significantly related to declined mortality risk from stroke (HR 0.6; 95%CI 0.38 to 0.97; p =0.038).

Conclusion: Higher consumption of non-carbonated SSB significantly is associated with increased mortality risk related ischemic heart disease; whereas, higher consumption of carbonated SSB yields the protective effect on reduced mortality risk from stroke.

Keywords: Sugar-sweetened beverages, Cardiovascular disease, Mortality