

Price Effect Estimation of Tobacco on Low-wage Male Smokers: A Causal Mediation Analysis

Authors : Kawsar Ahmed, Hong Wang

Abstract : The study's goal was to estimate the causal mediation impact of tobacco tax before and after price hikes among low-income male smokers, with a particular emphasis on the effect estimating pathways framework for continuous and dichotomous variables. From July to December 2021, a cross-sectional investigation of observational data (n=739) was collected from Bangladeshi low-wage smokers. The Quasi-Bayesian technique, binomial probit model, and sensitivity analysis using a simulation of the computational tools R mediation package had been used to estimate the effect. After a price rise for tobacco products, the average number of cigarettes or bidis sticks taken decreased from 6.7 to 4.56. Tobacco product rising prices have a direct effect on low-income people's decisions to quit or lessen their daily smoking habits of Average Causal Mediation Effect (ACME) [effect=2.31, 95 % confidence interval (C.I.) = (4.71-0.00), $p<0.01$], Average Direct Effect (ADE) [effect=8.6, 95 percent (C.I.) = (6.8-0.11), $p<0.001$], and overall significant effects ($p<0.001$). Tobacco smoking choice is described by the mediated proportion of income effect, which is 26.1% less of following price rise. The curve of ACME and ADE is based on observational figures of the coefficients of determination that assesses the model of hypothesis as the substantial consequence after price rises in the sensitivity analysis. To reduce smoking product behaviors, price increases through taxation have a positive causal mediation with income that affects the decision to limit tobacco use and promote low-income men's healthcare policy.

Keywords : causal mediation analysis, directed acyclic graphs, tobacco price policy, sensitivity analysis, pathway estimation

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