

# To what extent does time spent on social media influence adolescent use of cigarettes and e-cigarettes: a longitudinal analysis of the UK Millennium Cohort Study

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## Abstract

**Background** We estimated the effect of social media use on adolescents aged 14 years and risk of cigarette, e-cigarette, and dual use when aged 17 years. Data was from the UK Millennium Cohort Study, which followed up approximately 19 000 children born between 2000 and 2002.

**Methods** Representative longitudinal data were collected at ages 14 and 17 years. Directed acyclic graphs identified confounders (eg, demographics, mental health, in-person interactions, cognitive ability, risk-taking, antisocial behaviour, previous or current parental cigarette or e-cigarette use, and socioeconomic circumstances). The relationship between self-reported social media use per weekday (reference category: from 30 min to 1h and cigarette, e-cigarette, and dual use was examined using longitudinal analysis to estimate adjusted odds ratios (OR) or relative risks (RR). A complete case sample was used; weights accounted for sample design and attrition. This study was a secondary data analysis of the UK Millennium Cohort Study (prospective longitudinal study). Ethical approval was received from a Research Ethics Committee at each study sweep.

**Findings** In total, 6234 individuals (168314 observations) were included. 5778 (92.7%) reported social media use, 1730 (27.8%) cigarette use, 1389 (22.3%) e-cigarette use, and 479 (7.68%) dual use. Social media use was associated with all outcomes in a dose-response manner. For cigarette use, ORs increased from 1.67 (95% CI 1.26–2.21) for 30 mins to 1 h, to 3.09 (2.43–3.91) for 2 h or longer of social media use. For e-cigarette use, ORs increased from 1.90 (1.41–2.55) for 30 mins to 1 h, to 3.34 (2.60–4.28) for 2 h or longer of social media use. For dual use, RRs increased from 1.91 (1.16–3.15) for 30 mins to 1 h, to 4.26 (2.81–6.46) for 2 h or longer of social media use. For e-cigarette and dual use, associations were stronger for males than for females; the opposite was found for cigarette use.

**Interpretation** After accounting for observed confounders and reverse causality, our findings suggest social media use, although only measured at one point in time, is associated with increased risk of cigarette, e-cigarette, and dual use. The greatest risk was observed in those who used social media for 2 h or longer. Given the potential health harms of social media use, guidance for parents and caregivers about safe social media use and regulation on time spent on social media is required.

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