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Original Research

Hardcore smoking after comprehensive smoke-free legislation and health warnings on cigarette packets in Hong Kong

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ABSTRACT

Objective: To examine if there were changes in the proportion of hardcore smokers and factors associated with hardcore smoking before and after implementation of smoke-free legislation, and warning labels on cigarette packets in Hong Kong in January 2007.

Study design: Repeated cross-sectional surveys of the general population in Hong Kong.

Methods: Data from all daily smokers aged ≥ 15 years in the population-based Thematic Household Surveys from 2005 ($n = 3740$) and 2008 ($n = 2958$) were used to estimate the prevalence of hardcore smokers before and after implementation of smoke-free legislation. A logistic regression model was used to identify the factors associated with hardcore smoking, and to examine if there were any changes in their associations with the likelihood of hardcore smoking after implementation of smoke-free legislation.

Results: The proportion of hardcore smokers among current daily smokers increased significantly from 22.5% [95% confidence interval (CI) 21.1–23.8%] in 2005 to 28.3% (95% CI 26.7–29.9%) in 2008. Change in the strength of the association of hardcore smoking with three factors was observed. The strength of the association between hardcore smoking and ‘necessity in social functions’ [odds ratio (OR) 0.54, 95% CI 0.31–0.95] and ‘necessity for killing time’ (OR 0.56, 95% CI 0.36–0.89) decreased, while the association between hardcore smoking and ‘necessity as refreshment’ increased (OR 3.02, 95% CI 1.43–6.39) after implementation of smoke-free legislation and warning labels on cigarette packets. ‘Smoking had become a habit’ was the factor associated most strongly with hardcore smoking (OR 4.88, 95% CI 4.02–5.93).

Conclusions: The proportion of hardcore smokers remained stable in Hong Kong from 2005 to 2008. While the implementation of the two tobacco control measures may have provided an environment to reduce social smoking in hardcore smokers, addiction appeared to be the most important factor associated with hardcore smoking. More effective and tailor-made cessation services that target this group of smokers are needed.

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Introduction

Hong Kong has had a history of tobacco control since the early 1980s, including tobacco tax increases, bans on advertisements of tobacco products on broadcast and printed media, and bans on smoking in many public places. The intensity of tobacco control measures increased sharply with comprehensive smoke-free legislation implemented on 1 January 2007. Smoking has been totally prohibited in all indoor workplaces, all public indoor places and some outdoor places, and graphic and text health warnings are required on cigarette packets.¹ Similar to studies in other countries with stringent tobacco control measures,^{2,3} the overall prevalence of smoking in Hong Kong declined gradually from 15.7% (males 28.5%, females 2.6%) in 1990, to 14.0% (males 24.5%, females 4.0%) in 2005, and 11.8% (males 20.5%, females 3.6%) in 2008.^{4,5}

The reduction in the prevalence of smoking may be partially due to increased quitting among adult smokers, as the rate of former smokers increased from 4.5% in 2005 to 5.1% in 2008. However, there were still 679,500 daily smokers aged ≥ 15 years in 2008. Of these, 55.5% had never tried and did not want to give up smoking, and 92.0% of those who did not want to quit would not try any existing cessation service.⁴ Indeed, only approximately 3000 smokers had actively sought smoking cessation counselling provided by Hong Kong Department of Health between September 2003 and March 2009.⁶ These observations suggest that a sizable group of smokers are resistant to giving up smoking, and hardening of the smoking population as a whole could have occurred in Hong Kong.^{7–9}

Although there have been controversies regarding the definition of hardcore smoking,¹⁰ several studies have attempted to quantify the extent of hardcore smoking and to characterize hardcore smokers.^{11–18} While hardcore smokers are usually characterized as regular smokers with heavy nicotine dependence, a lack of recent quit attempts and no intention to quit, some studies have also included the additional criterion of age ≥ 25 years. Among studies that adopted the additional age criterion and used samples of smokers aged ≥ 25 years, recent estimates indicated that 13.7% of smokers were considered hardcore in the USA, 14.3% in Canada, 23% in Norway and 39.9% in Poland.^{11–15} Among studies that did not adopt the age criterion and used samples of daily adult smokers, the proportions of hardcore smokers were estimated as 2% in Australia, 16% in England and $>18\%$ in Asian countries (ranging from 18.3% in Bangladesh to 29.7% in Thailand).^{16–18} In general, hardcore smokers were more likely to be males with low levels of education and income, who started smoking at a younger age and smoked at home.^{15,17–19}

There are currently no estimates of the prevalence of hardcore smoking or its correlates in Hong Kong, which has the lowest smoking rate in the developed world, with a marked difference between sexes, intensive tobacco control and some smoking cessation services. The aims of this study were to examine the impact of the 2007 smoke-free legislation and health warnings on cigarette packets on hardcore smoking. The authors also investigated whether there was an increase in the prevalence of hardcore smokers, and a change in

the factors associated with hardcore smoking in Hong Kong after implementation of the smoking ban and health warning labels on cigarette packets.

Methods

Source of data

This was a secondary data analysis using population data on smoking patterns from the Thematic Household Survey (THS) in 2005 and 2008 obtained from the Hong Kong Census and Statistics Department (C&SD). The THS is a territory-wide representative household survey covering approximately 99% of the residents of Hong Kong, excluding inmates of institutions and individuals living on vessels. Each round of the THS was commissioned to an independent private survey firm, and coordinated and managed by C&SD. The THS serves as a major source of official government statistics on selected social issues. Since 2000, the THS has included measures of several smoking-related topics, and the design of this survey allows for stable estimates of the population smoking rate in Hong Kong. THS2005 and THS2008 included responses from 10,096 individuals aged >11 years and 10,010 individuals aged >9 years, respectively, and the corresponding response rates were 77% and 75%.^{4,5} Only self-reported responses were included in the smoking-related topics.

Current daily smokers aged ≥ 15 years were included in the analysis. The THS reported that the estimates of smoking rate for youngsters (age <15 years) were unreliable because: (1) smoking among youngsters is less socially acceptable in the community; and (2) the corresponding age-specific smoking rate is so low that the survey did not have a sufficiently large sample size to achieve a reliable estimate.^{4,5} In total, 3740 and 2958 current daily smokers responded to THS2005 and THS2008, respectively. As most of the variables, including the three major variables [age, age when started smoking and daily cigarette consumption (see below in the 'Measured variables' section)], were collected in categorical formats in THS2005, hardcore smokers were defined using five criteria: (1) daily smokers; (2) smoking history of ≥ 6 years; (3) no history of quit attempts in the past; (4) did not want to give up smoking; and (5) smoked at least 11 cigarettes per day on average. There are two discrepancies regarding smoking history and daily cigarette consumption in the study definition of hardcore smoking compared with definitions reported in the literature. As this study calculated smoking history as the difference between age and age when started smoking, for some smokers, it was only possible to determine that they had been smoking for 1–9 years, and this group of smokers was not classified as hardcore (THS2005 $n = 60$, THS2008 $n = 44$).

Measured variables

Demographics, socio-economic-related, work environment, smoking-related and cessation-related variables were collected in both THS2005 and THS2008. In total, 35 categorical variables were used in the present analysis.

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