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# [Intervention Review]

# Tobacco packaging design for reducing tobacco use

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# ABSTRACT

### Background

Tobacco use is the largest single preventable cause of death and disease worldwide. Standardised tobacco packaging is an intervention intended to reduce the promotional appeal of packs and can be defined as packaging with a uniform colour (and in some cases shape and size) with no logos or branding, apart from health warnings and other government-mandated information, and the brand name in a prescribed uniform font, colour and size. Australia was the first country to implement standardised tobacco packaging between October and December 2012, France implemented standardised tobacco packaging on 1 January 2017 and several other countries are implementing, or intending to implement, standardised tobacco packaging.

## Objectives

To assess the effect of standardised tobacco packaging on tobacco use uptake, cessation and reduction.

## Search methods

We searched MEDLINE, Embase, PsycINFO and six other databases from 1980 to January 2016. We checked bibliographies and contacted study authors to identify additional peer-reviewed studies.

### Selection criteria

Primary outcomes included changes in tobacco use prevalence incorporating tobacco use uptake, cessation, consumption and relapse prevention. Secondary outcomes covered intermediate outcomes that can be measured and are relevant to tobacco use uptake, cessation or reduction. We considered multiple study designs: randomised controlled trials, quasi-experimental and experimental studies, observational cross-sectional and cohort studies. The review focused on all populations and people of any age; to be included, studies had to be published in peer-reviewed journals. We examined studies that assessed the impact of changes in tobacco packaging such as colour, design, size and type of health warnings on the packs in relation to branded packaging. In experiments, the control condition was branded tobacco packaging but could include variations of standardised packaging.

### Data collection and analysis

Screening and data extraction followed standard Cochrane methods. We used different 'Risk of bias' domains for different study types. We have summarised findings narratively.



## **Main results**

Fifty-one studies met our inclusion criteria, involving approximately 800,000 participants. The studies included were diverse, including observational studies, between- and within-participant experimental studies, cohort and cross-sectional studies, and time-series analyses. Few studies assessed behavioural outcomes in youth and non-smokers. Five studies assessed the primary outcomes: one observational study assessed smoking prevalence among 700,000 participants until one year after standardised packaging in Australia; four studies assessed consumption in 9394 participants, including a series of Australian national cross-sectional surveys of 8811 current smokers, in addition to three smaller studies. No studies assessed uptake, cessation, or relapse prevention. Two studies assessed quit attempts. Twenty studies examined other behavioural outcomes and 45 studies examined non-behavioural outcomes (e.g. appeal, perceptions of harm). In line with the challenges inherent in evaluating standardised tobacco packaging, a number of methodological imitations were apparent in the included studies and overall we judged most studies to be at high or unclear risk of bias in at least one domain. The one included study assessing the impact of standardised tobacco packaging on smoking prevalence in Australia found a 3.7% reduction in odds when comparing before to after the packaging change, or a 0.5 percentage point drop in smoking prevalence, when adjusting for confounders. Confidence in this finding is limited, due to the nature of the evidence available, and is therefore rated low by GRADE standards. Findings were mixed amongst the four studies assessing consumption, with some studies finding no difference and some studies finding evidence of a decrease; certainty in this outcome was rated very low by GRADE standards due to the limitations in study design. One national study of Australian adult smoker cohorts (5441 participants) found that quit attempts increased from 20.2% prior to the introduction of standardised packaging to 26.6% one year post-implementation. A second study of calls to quitlines provides indirect support for this finding, with a 78% increase observed in the number of calls after the implementation of standardised packaging. Here again, certainty is low. Studies of other behavioural outcomes found evidence of increased avoidance behaviours when using standardised packs, reduced demand for standardised packs and reduced craving. Evidence from studies measuring eye-tracking showed increased visual attention to health warnings on standardised compared to branded packs. Corroborative evidence for the latter finding came from studies assessing non-behavioural outcomes, which in general found greater warning salience when viewing standardised, than branded packs. There was mixed evidence for quitting cognitions, whereas findings with youth generally pointed towards standardised packs being less likely to motivate smoking initiation than branded packs. We found the most consistent evidence for appeal, with standardised packs rating lower than branded packs. Tobacco in standardised packs was also generally perceived as worse-tasting and lower quality than tobacco in branded packs. Standardised packaging also appeared to reduce misperceptions that some cigarettes are less harmful than others, but only when dark colours were used for the uniform colour of the pack.

## **Authors' conclusions**

The available evidence suggests that standardised packaging may reduce smoking prevalence. Only one country had implemented standardised packaging at the time of this review, so evidence comes from one large observational study that provides evidence for this effect. A reduction in smoking behaviour is supported by routinely collected data by the Australian government. Data on the effects of standardised packaging on non-behavioural outcomes (e.g. appeal) are clearer and provide plausible mechanisms of effect consistent with the observed decline in prevalence. As standardised packaging is implemented in different countries, research programmes should be initiated to capture long term effects on tobacco use prevalence, behaviour, and uptake. We did not find any evidence suggesting standardised packaging may increase tobacco use.

# PLAIN LANGUAGE SUMMARY

# Can the use of standardised packaging for tobacco products reduce the use of tobacco?

### Background

Tobacco use kills more people worldwide than any other preventable cause of death. The best way to reduce tobacco use is by stopping people from starting to use tobacco and encouraging and helping existing users to stop. This can be done by introducing policies that can reach a wide number of people in a country, together with offering individual treatment and support to individuals who are already using tobacco to help them to stop. Many countries have introduced bans on tobacco advertising but have not controlled the look of the tobacco pack itself. Tobacco packs can be colourful and attractive, with exciting new shapes and sizes. Standardised tobacco packaging is a government policy which removes these bright designs by, for example, only allowing tobacco packs to be in one colour, shape or size. Standardised packaging generally involves the use of the same uniform colour on all tobacco packs, with no brand imagery, and the brand name written in a specified font, colour and size. Health warnings and other information that governments wish to put on the packs can remain. Australia was the first country to introduce standardised tobacco packaging by December 2012. France was the second by January 2017. Several other countries are introducing standardised packaging or planning to do so. We examined whether standardised packaging reduces tobacco use.

# **Study characteristics**

We searched nine databases for articles evaluating standardised packaging that had been already reviewed by academics and published before January 2016. We also checked references in those papers to other studies and contacted the authors where necessary.

## **Key results**

We found 51 studies involving approximately 800,000 participants. These studies varied considerably. Some studies focused on the effect of standardised packaging in Australia, and included looking at overall smoking levels, whether smokers altered their behaviour such as by cutting down the number of cigarettes they smoked, and whether smokers were making more quit attempts. We also included experiments in which people used or viewed standardised tobacco packs and examined their responses, compared to when they were viewing branded packs. We also included studies that assessed people's eye movements when they looked at different packs and how willing people were to buy, and how much they were willing to pay for, standardised compared to branded packs.

Only five studies looked at our key outcomes. One study in Australia looked at data from 700,000 people before and after standardised packaging was introduced. This study found that there was a half a percentage point drop in the proportion of people who used tobacco after the introduction of standardised packaging, compared to before, when adjusting for other factors which could affect this. Four other studies looked at whether current smokers changed the number of cigarettes they smoked. Two studies from Australia looked at this, one using surveys which included 8811 current smokers, and found no change in the number of cigarettes smoked. The three smaller studies found mixed results. Two further studies looked at quit attempts and observed increases in these in Australia after standardised packaging was introduced. The remainder of the studies looked at other outcomes, and the most consistent finding was that standardised packaging reduced how appealing people found the packs compared with branded packs. No studies reported the number of people who quit using tobacco, the number of people who started using tobacco, or the number of people who returned to using tobacco after quitting.

# **Quality of the evidence**

Certainty in these findings is limited for several reasons, including the difficulties involved in studying national policies like standardised packaging. However, findings suggesting standardised packaging may decrease tobacco use are supported by routine data from the Australian government and studies looking at other outcomes. For example, in our included studies people consistently found standardised packs less appealing than branded packs. We did not find any evidence suggesting standardised packaging may increase tobacco use.