

Short Report

Consumer understanding of cigarette emission labelling

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The optimal way to display constituent levels (e.g. tar) on tobacco packaging has not received adequate attention but has important policy implications. Adult smokers and non-smokers ($n=836$) were surveyed in France using Computer Assisted Personal Interviewing to assess perceptions of constituent levels displayed numerically (brand-specific tar and nicotine numbers from smoking machines and the current format in European Union), descriptively (a short sentence describing chemicals and their health effects but without any brand-specific numbers) or as a pack insert (a card placed on the inside of the pack describing the presence of chemicals and their health effects in more detail, as well as information on cessation). We also assessed perceptions of identically packaged cigarettes differing only on nicotine levels. Displaying information regarding ingredients either descriptively or on pack inserts was perceived as more comprehensible and informative than displaying them numerically. Numeric yields were associated with false beliefs: almost half the sample perceived packs with lower nicotine levels (0.8 mg vs. 0.9 mg) to be safer.

Keywords: product labelling, tobacco control, tobacco ingredients, tobacco packaging

Introduction

Cigarette smoke contains approximately 4000 chemicals, including over 60 carcinogens and toxins. Despite the general consensus that cigarette packs should include information on chemical constituents in tobacco smoke, regulators continue to struggle with how best to communicate this information in a meaningful way to consumers. Cigarette packs sold in the European Union (EU) are required to display numerical yields for tar, nicotine and carbon monoxide on the side of packs. Previous research has shown that consumers interpret tar and nicotine numbers as indicators of risk, such that brands with lower tar numbers are less harmful.^{1,2} This belief has been reinforced by the use of brand descriptors, such as 'light' and 'mild'. In contrast to popular belief, there is no association between the tar and nicotine printed on packages and the health risk of different brands. Tar and nicotine are generated numbers for each brand by a machine that 'smokes' cigarettes according to a standard set of puffing parameters. These puffing parameters are not consistent with human patterns of smoking; nor does the machine testing account for important cigarette design elements such as 'filter ventilation'—tiny holes poked in the filter that yield lower tar and nicotine levels under machine smoking, but much higher levels under human smoking.³

Indeed, smokers who switch to lower tar cigarettes are likely to inhale the same amount of hazardous chemicals, and they remain at high risk for developing smoking-related cancers and other diseases.³ Overall, the numbers are not a reliable indicator of risk and the World Health Organization and other leading scientific bodies have recommended the removal of tar and nicotine numbers from packages.^{4,5}

Several countries have recently removed tar and nicotine numbers from packages and replaced this information with descriptive statements about chemical constituents in tobacco smoke, including Australia, Thailand and Venezuela. To date, however, there is no published research on the effectiveness of descriptive information on tobacco packs.⁶ The current study sought to examine perceptions of different types of constituent information among adult smokers and non-smokers in France.

Methods

Sample and design

A national survey was conducted with a representative sample of 836 adults (≥ 18 years) smokers and non-smokers in France.

Sampling involved random selection of respondents in 40 wards of France stratified by geographic area and city size. Within each ward, a quota sample balanced across gender, age group and socio-economic status was sought, following national percentages of the National Institute of Statistics and Economics Studies (INSEE). The fieldwork comprised in-home face-to-face structured interviews conducted by 70 professional interviewers, using Computer-Assisted Personal Interviewing (CAPI). The interviewers' role was to read out the questionnaire on the computer screen, inform of the response options and record the responses of each participant; meaning that although interviewer led our study generated only quantitative data. One of the primary benefits of CAPI is that it makes it easier for those with literacy problems to respond.

Measures

Demographics and smoking status

Smoking status, gender and socio-economic status (based upon occupation and defined by INSEE) was assessed. Two-third of the sample were 'non-smokers' (66.8%), defined as those who do not currently smoke, and a third were 'smokers' (33.2%), those who do smoke cigarettes (either regularly or occasionally).

Display of tobacco ingredients

Respondents were shown pictures on a computer screen depicting tobacco ingredients, displayed either as numbers, descriptive information or as pack inserts (figure 1). The picture showing numerical yields, which are required by EU law, displayed levels of tar (10 mg), nicotine (0.8 mg) and carbon monoxide (10 mg). The picture showing information of tobacco ingredients presented descriptively, read: 'tar includes hundred chemical substances that cause cancer'. Finally, the picture showing more detailed descriptive information in the form of a pack insert, read: 'tar includes hundreds of chemical substances that cause cancer. They hurt smokers' lungs and bronchial tubes. They cause emphysema and chronic bronchitis. Ask your doctor for help to quit smoking. Call the quit line 0825309310 or consult the web site: www.tabac-infos-serveice.fr'. For each presentation, respondents were asked if they find such information useful for informing of health risks and easy to understand. For pack inserts, respondents were also asked if they were previously aware of the information on the insert about tobacco ingredients and whether it made them want to know more about tobacco ingredients. All responses were measured on a 4-point scale ranging from strongly disagree (1), slightly disagree (2), slightly agree (3)

to strongly agree (4), which was collapsed into either 'agree' or 'disagree'.

Packs showing different levels of nicotine (0.8 mg vs. 0.9 mg)

Respondents were also shown a fourth picture of a pack displaying numerical yields that was identical to the picture shown in figure 1 but with one very slight difference, nicotine levels were displayed as 0.8 mg rather than 0.9 mg. Respondents were asked to judge which pack, if any, was perceived as the safest in terms of health, with the response categories pack A (showing nicotine to be 0.9 mg), pack B (showing nicotine to be 0.8 mg) or none.

Statistical analysis

All analyses were conducted on weighted data using SPSS version 17. To compare responses between the different displays of tobacco ingredients, Wilcoxon signed-rank tests were used; a non-parametric test suitable for repeated measurements on a single sample,⁷ with significance set at $P < 0.05$.

Results

Display of ingredients

After viewing the numerical display on the pack (figure 1), 80.4% of the sample agreed that this information is useful for informing of health risks of smoking and 59.3% that it is visible on packs. For the pack with the descriptive information, 88.7% agreed that this information is useful for informing of health risks and 91.1% thought that it is easy to understand. For pack inserts, 89.8% agreed that this information is useful for informing people of the health risks and 90.7% agreed that it is easy to understand. Comparative analyses shows that the descriptive information was perceived as significantly more useful than the numerical display in informing of health risks ($Z = -5.35$, $P < 0.001$) and easier to understand ($Z = -8.14$, $P < 0.001$). Pack inserts were also perceived as significantly more useful than the numerical display in informing of health risks of smoking ($Z = -6.48$, $P < 0.01$) and easier to understand ($Z = -8.66$, $P < 0.01$). No differences were found between descriptive display and pack inserts. For the two additional items concerning pack inserts, 43.5% of the sample indicated that they were not aware of this information and 64.4% that it made them want to know more about the ingredients of tobacco.



Figure 1 Tobacco ingredients displayed numerically, descriptively or as a pack insert

Packs showing different levels of nicotine (0.8 mg vs. 0.9 mg)

After viewing the two packs that differed only on nicotine levels, almost half of respondents (45.9%) thought that the pack with lower nicotine levels (0.8 mg) was a healthier alternative than pack with higher nicotine levels (0.9 mg)—43.1% said neither packs was healthier.

Discussion

The findings indicate that the vast majority of individuals consider numerical and descriptive information on tobacco constituents helpful and easy to understand, with a slight preference for descriptive information and pack inserts. However, the findings also highlight the misleading nature of numerical information: approximately half of participants falsely believed that brands with lower nicotine numbers indicated less harmful brands. Therefore, while consumers believe numerical information to be helpful, many use this information to draw false—and potentially deadly—conclusions about differences in risk between brands³. The current findings are consistent with other research indicating that consumers have an interest in product constituents, but struggle to use numerical and technical information in a meaningful way.^{8,9} Given the health implications of this misunderstanding the current EC Tobacco Products Directive should be revised to ensure that numeric information on tar and nicotine are removed from tobacco packages and replaced with more comprehensible and useful information displayed descriptively, and preferably with pack inserts, given that both were considered by almost all respondents to complement each other and each would likely have a reinforcing effect on the other; thus strengthening the message.

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Conflicts of interest: None declared.

Key points

- Numerical reporting of emissions on cigarette packs are perceived as less informative than having emissions reported descriptively on the outside of the pack or as a pack insert.
- Even marginal differences in displayed nicotine levels are sufficient to mislead smokers about the safety of cigarettes.
- The current EC Tobacco Products Directive should be revised and replaced with more comprehensible and useful information displayed descriptively.

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