

**Supplementary Table 5. Labeling and Consumer Information on Smoking: Package Warnings and Labeling**

Author, y	Design	Population	Intervention/Evaluation	Evidence and Results
Millar, 1996 <sup>139</sup>	Observational, cross-sectional	Adults age $\geq 20$ y in selected health surveys conducted between 1977 and 1994	Differences in rates of smoking were examined by educational attainment and other self-reported characteristics.	<ul style="list-style-type: none"> <li>• Smaller proportions of smokers with lower education recalled printed warnings about heart disease on cigarette packages.</li> <li>• All smokers cited the mass media as their major source of information about smoking, but those with lower education levels reported mass media less often than did smokers with higher education levels and were less likely to obtain information from books, pamphlets, or magazines.</li> <li>• Smokers with lower education levels reported encountering fewer smoking restrictions in their daily activities than did those with higher education levels.</li> </ul>
Borland and Hill, 1997 <sup>132</sup>	Observational, cross-sectional		Following the introduction of new health warnings and content labeling on cigarettes and other tobacco products in Australia in 1995, surveys were conducted to evaluate whether these changes increased the noticeability of the warnings and contributed to an increase in relevant knowledge.	<ul style="list-style-type: none"> <li>• To be effective, health warnings need to be noticed and persuasive and need to provide guidance for appropriate action.</li> <li>• To be noticed, health warnings need to stand out from the surrounding pack design and need to be large enough to be read easily.</li> <li>• To be persuasive, warnings need to be understood, believed, and judged personally relevant by the reader.</li> </ul>
Crawford et al, 2002 <sup>134</sup>	Observational, cross-sectional	N=785 teenagers of white and other races/ethnicities, primarily smokers, from rural, urban, and suburban locations across the United States	The 13-site TCN, sponsored by the CDC, conducted 129 focus groups that were homogeneous for sex and ethnicity to explore adolescents' response to current and potential tobacco control policy issues.	<ul style="list-style-type: none"> <li>• Teenagers were generally familiar with laws and rules about access and possession for minors but believed them ineffective.</li> <li>• They found a list of chemical names of cigarette ingredients largely meaningless but believed that disclosing and publicizing their common uses could be an effective deterrent, especially for those who were not yet smoking.</li> <li>• They were aware of current warning labels but considered them uninformative and irrelevant.</li> <li>• They were knowledgeable about prices and reported that a sharp, sudden (and large) increase could lead them to decrease their smoking patterns; however, a moderate increase would most likely result in unintended negative consequences (eg, stocking up and selling cigarettes at a profit; buying black-market cigarettes; working at a store that sells cigarettes; stealing cigarettes from stores or family members; and using other forms of tobacco or other substances, such as nicotine replacement products, alcohol, or marijuana).</li> </ul>
Guttman and Peleg, 2003 <sup>137</sup>	Observational, cross-sectional	N=1000 adults, and N=200 adult smokers in Israel	The Israel Ministry of Health surveyed 1000 adults by telephone and 200 smokers in face-to-face interviews to guide its decisions about how warnings should be attributed and how to counter	<ul style="list-style-type: none"> <li>• There was little effect from unattributed warnings.</li> <li>• Smokers, when presented with actual warnings, tended to favor those attributed to "medical studies."</li> <li>• Nonsmokers were somewhat more likely to prefer warnings attributed to the Ministry of Health, explaining that it is</li> </ul>

			tobacco lobby opposition.	“responsible for the topic” or “has the authority.”
Health Canada 2005a; Health Canada 2005b	Observational, cross-sectional	Canadian surveys	National surveys conducted on behalf of Health Canada	<ul style="list-style-type: none"> <li>• ≈95% of youth smokers and 75% of adult smokers reported that pictorial warnings on cigarette packs have been effective in providing important health information.</li> </ul>
Willemsen, 2005 <sup>141</sup>	Observational, cross-sectional	N=3937 Dutch adult smokers	The Dutch Continuous Survey of Smoking Habits examined the self-perceived impact of new health warnings on the attractiveness of cigarettes, smokers’ motivations to quit, and smoking behavior.	<ul style="list-style-type: none"> <li>• 32% said they preferred to purchase a pack without the new warning labels.</li> <li>• 18% reported that warning labels increased their motivation to quit.</li> <li>• 14% became less inclined to purchase cigarettes because of the new warning labels</li> <li>• 10% said they smoked less.</li> <li>• Those who intended to quit within 6 mo were 5-6 times as likely to report smoking less due to the warnings than those who did not plan to quit.</li> <li>• A strong dose-response relation was observed between these effects and intention to quit.</li> </ul>
Hammond et al, 2006 <sup>140</sup>	Observational, cross-sectional	N=9058 adult smokers from the ITC-4, including nationally representative surveys in the United States, United Kingdom, Canada, and Australia	A telephone survey was conducted to examine variations in smokers' knowledge about tobacco risks and the impact of package warnings. Respondents were asked to state whether they believed smoking caused heart disease, stroke, impotence, lung cancer in smokers, and lung cancer in nonsmokers. Respondents were also asked whether the following chemicals are found in cigarette smoke: cyanide, arsenic, and carbon monoxide.	<ul style="list-style-type: none"> <li>• Smokers in the 4 countries exhibited significant gaps in their knowledge of the risks of smoking.</li> <li>• Smokers who noticed the warnings were significantly more likely to endorse health risks, including lung cancer and heart disease.</li> <li>• In each instance where labeling policies differed between countries, smokers living in countries with government-mandated warnings reported greater health knowledge. For example, in Canada, where package warnings include information about the risks of impotence, smokers were 2.68 (2.41-2.97) times more likely to agree that smoking causes impotence compared with smokers from the other 3 countries.</li> <li>• Similarly, respondents living in countries with more comprehensive warnings were more likely to cite packages as a source of health information. For example, 85% of Canadian respondents cited packages as a source of health information, in contrast to only 47% of US smokers.</li> </ul>
Fathelrahman et al, 2009 <sup>142</sup>	Observational, cross-sectional	N=1919 adult male smokers in Malaysia	This study examined whether different responses among smokers toward cigarette pack warning labels could predict quit intentions and self-efficacy in quitting. Face-to-face interviews were conducted using a standardized questionnaire.	<ul style="list-style-type: none"> <li>• The responses “more likely to quit because of the warning labels” and “stopped from having a cigarette when about to smoke one” significantly predicted all stages of change and self-efficacy independent of the other measures.</li> <li>• In addition, thinking about the health risks and reading the warnings more often added extra predictive capacity but only in the early stages of contemplating change.</li> </ul>
Pollay and Dewhirst 2002 <sup>144</sup>	Observational, retrospective	Trade sources and internal US tobacco	This study evaluated the development, intent, and consequences of US tobacco industry advertising for low machine	<ul style="list-style-type: none"> <li>• Several tactics were used by cigarette manufacturers, leading consumers to perceive filtered and low machine yield brands as safer relative to other brands.</li> </ul>

		company documents	yield (“light”) cigarettes. Data were collected via analysis of trade sources and internal US tobacco company documents now available on various web sites created by corporations, litigation, or public health bodies.	<ul style="list-style-type: none"> <li>• Tactics include using cosmetic (that is, ineffective) filters, loosening filters over time, using medicinal menthol, using high-tech imagery, using virtuous brand names and descriptors, adding a virtuous variant to a brand’s product line, and generating misleading data on tar and nicotine yields.</li> <li>• The ads were intended to reassure smokers concerned about the health risks of smoking and to present the respective products as an alternative to quitting.</li> <li>• Such promotional efforts were successful in getting smokers to adopt filtered and low-yield cigarette brands.</li> </ul>
Hammond et al, 2004 <sup>136</sup>	Observational, longitudinal	N=616 adult smokers in Canada	The impact of graphic Canadian cigarette warning labels was assessed using a longitudinal telephone survey.	<ul style="list-style-type: none"> <li>• Participants reported negative emotional responses to the warnings, including fear (44%) and disgust (58%).</li> <li>• Smokers who reported greater negative emotion were more likely to have quit, tried to quit, or reduced their smoking 3 mo later (OR=1.37; 95% CI, 1.15, 1.64).</li> <li>• Participants who tried to avoid the warnings (30%) were no less likely to think about the warnings or engage in cessation behavior at follow-up.</li> </ul>
Portillo and Antonanzas, 2002 <sup>143</sup>	Quasi-experimental comparison (pre- vs postintervention)	N=435 students at the University of La Rioja, Spain	A questionnaire was administered both before and after students were presented with a demonstration of the health warnings on cigarette packets based on the new European Union directive. Students were surveyed on their perceptions of the principal health risks attributable to the consumption of tobacco, ie, lung cancer, respiratory diseases, and CVD.	<ul style="list-style-type: none"> <li>• Perceptions changed significantly after exposure to the content and type of information presented on the new packaging. In general, students attributed a higher health risk to smoking after the presentation.</li> </ul>
Hammond et al, 2007 <sup>133</sup>	Quasi-experimental comparison (pre- vs postintervention)	N=14,975 adult smokers from the ITC-4, including nationally representative surveys in the United States, United Kingdom, Canada, and Australia	The current study examined the effectiveness of health warnings on cigarette packages in 4 countries. Telephone surveys were conducted in representative cohorts of adult smokers between 2002 and 2005, before and at 3 time points after implementation of new package warnings in the United Kingdom.	<ul style="list-style-type: none"> <li>• Large, comprehensive warnings on cigarette packages are more likely to be noticed and rated as effective by smokers.</li> <li>• Changes in health warnings are also associated with increased effectiveness.</li> <li>• Health warnings on US packages, which were last updated in 1984, were associated with the least effectiveness.</li> </ul>
Loken and Howard-Pitney, 1988 <sup>135</sup>	RCT, short-term (1 session)	115 college women, including smokers and nonsmokers	This study evaluated factors that could influence subjects’ reactions to print ads for cigarettes. Subjects were shown cigarette ads that varied in 2 dimensions: showing or not showing an	<ul style="list-style-type: none"> <li>• Ads were rated as more attractive, more persuasive, and more credible when they showed an attractive model than when they did not.</li> <li>• Compared with general warnings, specific warnings on ads acted as a counterinfluence to their appeal, making the ads</li> </ul>

			attractive model and showing a general or specific warning label. Subjects were evaluated on each ad, with ratings combined into 3 dimensions: (1) attractiveness (good-bad, clever-stupid, well designed-not well designed, attractive-unattractive), (2) persuasiveness (persuasive-unpersuasive, makes me-does not make me want to buy the product), and (3) credibility (informative-uninformative, honest-dishonest).	appear less attractive and less persuasive.
Malouff et al, 1992 <sup>138</sup>	RCT, short-term (1 session)		The readability of label warnings was assessed with 3 standard tests. The tests focused on length of sentences, average number of syllables per word, and unfamiliarity of the words.	<ul style="list-style-type: none"> <li>Literacy levels of the warning labels affected their readability</li> </ul>

TCN indicates Tobacco Control Network; CDC, Centers for Disease Control and Prevention; ITC4, International Tobacco Control Four-Country Survey; OR, odds ratio; CI, confidence interval; CVD, cardiovascular disease; and RCT, randomized controlled trial.

Note: Reference numbers (eg, Seymour et al, 2004<sup>110</sup>) appearing in this supplementary table correspond with those listed in the reference section of the statement. For the purposes of this supplementary table, these meta-analyses or systematic reviews (see "Author, y" column) are considered the primary citation. Additional studies mentioned in the primary citation may be included in the "Intervention/Exposure" and "Findings" columns. The additional studies can be accessed through the primary citation.