

Population awareness of tobacco-related harms: implications for refreshing graphic health warnings in Australia

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Tobacco harms most organs,¹ and is the leading single cause of preventable deaths in Australia.² Graphic health warnings (GHWs) on tobacco products are a critical component of comprehensive tobacco control programs,³ and highly cost-effective for increasing knowledge about the harms of tobacco.⁴ GHWs require updating regularly to maintain salience and impact.⁵ As attendees of the 2017 Oceania Tobacco Control Conference learned, the Australian government is therefore reviewing the GHWs that have been on packs since 2012.⁵ Central to GHW policies is the question of which harms should be

highlighted. One important factor in this decision is population awareness of tobacco-related harms, and identifying those with the greatest potential for knowledge gains.

In September 2017, we surveyed awareness of 23 health conditions causally associated with tobacco use.¹ We recruited a representative sample of Australians aged 18–69 years (1806 participants after sample weighting by sex, age by highest educational attainment, state by part of state, country of birth, telephone status [number of landlines in household, number of mobile phones

Awareness of Australian adults of health conditions caused by smoking: number who responded “very likely” or “likely” for each condition

	Total	Smoking status*		
		Never smokers	Former smokers	Current smokers
Number of respondents	1806	958	471	363
Lung cancer	1646 (91.2%)	897 (93.6%)	432 (91.8%)	304 (83.9%)
Throat cancer	1615 (89.4%)	885 (92.4%)	423 (90.4%)	295 (81.4%)
Mouth cancer	1586 (87.8%)	870 (90.8%)	419 (88.9%)	286 (78.8%)
Disease of the teeth and gums	1574 (87.1%)	862 (90.0%)	411 (87.2%)	291 (80.2%)
Heart disease	1549 (85.8%)	834 (87.0%)	418 (88.8%)	288 (79.3%)
Emphysema	1546 (85.6%)	820 (85.7%)	421 (89.5%)	294 (81.0%)
Stroke	1490 (82.5%)	799 (83.5%)	411 (87.4%)	271 (74.7%)
Oesophageal cancer	1391 (77.0%)	778 (81.2%)	365 (77.5%)	243 (66.9%)
Poor outcomes after surgery	1341 (74.3%)	769 (80.3%)	359 (76.2%)	207 (57.0%)
Peripheral vascular disease	1162 (64.4%)	626 (65.3%)	330 (70.1%)	202 (55.6%)
Stomach cancer	1021 (56.5%)	577 (60.2%)	271 (57.6%)	167 (46.2%)
Pancreatic cancer	921 (51.0%)	529 (55.2%)	222 (47.1%)	164 (45.3%)
Liver cancer	912 (50.5%)	535 (55.8%)	226 (47.9%)	146 (40.1%)
Infertility in women [†]	899 (49.8%)	548 (57.3%)	212 (45.0%)	135 (37.2%)
Kidney cancer	864 (47.8%)	478 (49.9%)	229 (48.5%)	151 (41.6%)
Peptic ulcer	859 (47.6%)	489 (51.0%)	222 (47.0%)	143 (39.4%)
Erectile dysfunction in men [†]	808 (44.7%)	494 (51.6%)	189 (40.2%)	120 (33.1%)
Blindness	786 (43.5%)	395 (41.3%)	229 (48.6%)	159 (44.0%)
Bladder cancer	750 (41.5%)	404 (42.2%)	192 (40.8%)	151 (41.6%)
Diabetes	726 (40.2%)	412 (43.0%)	192 (40.8%)	118 (32.4%)
Ectopic pregnancy [†]	655 (36.3%)	402 (43.0%)	140 (29.7%)	101 (27.7%)
Acute leukaemia	562 (31.1%)	326 (34.1%)	141 (29.9%)	93 (25.6%)
Rheumatoid arthritis	489 (27.1%)	290 (30.2%)	109 (23.2%)	88 (24.2%)

* Never smokers have not smoked 100 cigarettes in their lifetime, former smokers have smoked 100 cigarettes but do not currently smoke, and current smokers said that they currently smoked daily, weekly, or less than weekly. Smoking status was missing for 15 participants. † Respondents were asked, “How likely do you think it is that smoking increases the risk of...?” Bold: Harms featured on graphic health warnings in Australia in the 5 years before the survey; in September 2017, any of 14 designated GHWs could be displayed on cigarette packs. All raw numbers are weighted as described in the text. ♦

owned by respondent], internet usage and frequency, number of adults in household, and an enrolment weight) from a probability-based online panel (2578 eligible members; survey completion rate, 70.1%).⁶ The population covered by the panel included all Australian adults contactable by landline or mobile phones, including those without internet access.⁶ Participants completed the survey online (92%) or by telephone (8%). The cumulative response rate was 10.3%, incorporating the response rate from the recruitment phase (15.5%), unavailability in the survey month, and attrition after establishment of the panel.⁶ Weights were calculated for each respondent and applied to all analyses. The Institutional Research Review Committee of Cancer Council Victoria provided ethics approval (reference, IER 1609); participant consent was obtained at survey commencement.

Participants were asked, "If you smoke, how likely is it that you will increase your risk of ...". Responses of "very likely" and "likely" were combined and compared with the combined responses of "neither likely nor unlikely", "unlikely", "very unlikely", "not sure", and "prefer not to say". We report awareness overall, and for current, former and never smokers; the effectiveness of GHWs may be increased if these messages encourage never smokers to initiate conversations with family and friends.⁷

The proportion of respondents aware that smoking increases risk ranged between 27.1% for rheumatoid arthritis and 91.2% for lung cancer (Box). Only nine of the 23 conditions were endorsed by more than two-thirds of the sample; six cancers were endorsed by fewer than two-thirds. Endorsement of harms

featured in GHWs in Australia during the preceding 5 years under the *Competition and Consumer (Tobacco) Information Standard 2011*⁸ was significantly higher than for those that were not, both overall (73.5% *v* 48.9%; $P < 0.001$) and among smokers (67.5% *v* 39.5%; $P < 0.001$).

Awareness was generally highest among never smokers, but the relative ordering of the 23 conditions from highest to lowest awareness was similar for all groups (Spearman rank order correlation for each comparison, > 0.90 ; $P < 0.001$), indicating that the conditions with greatest potential for knowledge gains are the same for never, former, and current smokers.

These findings reveal the limited awareness of many serious harms of tobacco, and the considerable potential for further educating Australians. Our findings can assist policy makers identify harms for which the potential for knowledge gains is greatest. While we did not define or explain harms, and low awareness may in some cases reflect a lack of understanding, well designed GHWs can include images and texts that increase both the awareness and understanding of specific harms.

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Competing interests: We are employed by the non-government organisation, Cancer Council Victoria, which has a charter for conducting science-based cancer control.

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