The impact of including cessation resource information on health warnings on standardised tobacco packaging on awareness and use: A longitudinal online survey in the United Kingdom

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ABSTRACT

Introduction: Since May 2017, all cigarettes and roll-your-own (RYO) tobacco in the UK must be sold in standardised packs with pictorial warnings displaying, for the first time, a stop-smoking website.

Methods: Data comes from three waves of a longitudinal online survey with smokers and ex-smokers conducted pre- and post-standardised packaging, with Wave 1 (W1) in April-May 2016, Wave 2 (W2) in October-November 2017, and Wave 3 (W3) in May-June 2019. Only smokers are included in the analysis: W1 (N=6233), W2 (N=3629) and W3 (N=2412). We explored any change in citing warnings on packs as a source of information about a stop-smoking website, and whether citing warnings as a source was associated with use of a stop-smoking website. As the warnings, and therefore the stop-smoking website, are larger on RYO packs than on cigarette packs due to the larger pack size, we explored differences in awareness of a stop-smoking website among exclusive cigarette smokers (W1=3142, W2=1884, W3=1247) and exclusive RYO smokers (W1=2046, W2=1119, W3=814).

Results: Among smokers recalling seeing information about a stop-smoking website, citing warnings as a source increased between waves (W1=14.0%, W2=24.2%, W3=25.1%) and was associated with having visited a stop-smoking website (OR=11.81, 95% CI 8.47-16.46). Citing warnings as a source of a stop-smoking website increased among exclusive RYO smokers at each wave (W1=15.5%, W2=26.3%, W3=32.1%), while for exclusive cigarette smokers it only increased at W2 (W1=10.5%, W2=22.4%, W3=19.9%).

Conclusions: Warnings are an important source of cessation resource information. Making this information more prominent may help sustain awareness.

Keywords: Standardised Packaging, Warnings, Policy, Cessation

Implications: The findings support the inclusion of a stop-smoking website on warnings as awareness among smokers increased and citing warnings as a source of information about a stop-smoking website was associated with having visited a stop-smoking website. We also explored whether the stop-smoking website on warnings on RYO packs, which is larger than on cigarette packs as a function of the larger size of RYO packs, would have any impact on awareness of this information. That exclusive RYO smokers were more likely than exclusive cigarette smokers to notice a stop-smoking website on warnings suggests that this information should be more prominent.

INTRODUCTION

People often seek health-related information on the internet,[1] including on how to quit smoking.[2] The internet is a low-cost and high-reach platform for helping smokers to quit, including those who may not otherwise access support or seek traditional methods of smoking treatment.[3] An inexpensive way to remind smokers that online stop-smoking services are available, and prompt them to engage with these services, is by including this information on warnings on tobacco packaging. The impact of doing so is not well understood however. In this study we explore awareness and use of a stop-smoking website on cigarette and RYO packs in the UK.

Following a twelve-month sell-through period, since May 2017 all packs of cigarettes and RYO in the UK are required to come in standardised packs and display pictorial warnings on 65% of the front and back of packs, with a stop-smoking website included on all warnings. Prior to standardised packaging, packs of cigarettes and RYO displayed text warnings on 43% of the pack front and pictorial warnings on 53% of the pack reverse, with no cessation resource information (e.g. a stop-smoking website) required. Standardised packaging also set a minimum pack size of 20 for cigarettes and 30 grams for RYO. Before this the minimum pack size for cigarettes was 10 and there was no minimum pack size for RYO, with packs containing as little as 5 grams on the market.

A longitudinal online survey with smokers in Canada and Australia between 2012 and 2013 found that citing warnings on packs as a source of information about cessation websites at baseline was higher in Canada (14%), where a cessation website was displayed on the front and back of packs, than in Australia (6%), where a cessation website was only displayed on the back of packs.[4] While no significant changes were observed over time, in Australia citing warnings on packs as a source of information about cessation websites increased to approximately 10% at waves 2 and 3, after standardised packaging was implemented. In both

Canada and Australia citing warnings as a source of information about cessation websites was significantly associated with having visited a website.[4] An online survey with smokers in the United Kingdom (UK) between February and April 2017, during the transition period for standardised packaging when both fully-branded packs (which did not display a cessation website) and standardised packs (which display a cessation website) were on sale, found that those currently using standardised packs were more likely to cite the warnings on packs as a source of information about a stop-smoking website than those using fully-branded packs (4.9% vs 0.3%). Those using standardised packs were also more likely to have visited a stop-smoking website than those using fully-branded packs (4.6% vs 1.0%),[5] but the small sample sizes precluded statistical comparison between the groups.

Aside from a dearth of research exploring the impact of including a stop-smoking website address on warnings on awareness and use of this resource, no study has compared differences between cigarette and RYO smokers. This merits investigation given the growing popularity of RYO and because in many countries RYO packs are larger than cigarette packs, thus allowing an insight into whether pack size has any impact on awareness of information on warnings. While Western Europe and North America remain the largest global markets for RYO,[6] increased sales are reported in Central and Eastern Europe, South America, Asia, Oceania, the Middle East and Africa.[7] As sales have increased so too has exclusive use of RYO,[8] e.g. in the UK the proportion of smokers using RYO exclusively increased between 2002 and 2014 from 17.5% to 30.3%.[9] Exclusive RYO smokers have been found to be less confident that they can quit and less likely to report planning on quitting.[10,11] Alongside the growing popularity of RYO and trend towards exclusive use, the size of RYO packs has increased in many countries. Like the UK, all European Union countries packs of RYO are now required to contain a minimum of 30 grams of tobacco,[12] and consequently the size of packs, and therefore the size of the warnings on packs and the cessation resource information

shown on the warnings, is larger than for cigarette packs (see Figure 1). Understanding whether this enhanced size influences awareness of the stop-smoking website may be informative for warning design.

We build on existing research by examining awareness of cessation website information on packaging pre- and post-standardised packaging in the UK. We also examine any differences in awareness of this information between exclusive cigarette and exclusive RYO smokers.

Insert Figure 1 here

METHODS

Design and sample

Data come from the 'Adult Tobacco Policy Survey', a longitudinal online survey with a cohort of smokers and ex-smokers in the UK recruited by YouGov, a market research and data insight company, from their online panel. The survey has been conducted pre- and post-standardised packaging. There have been three waves, with W1 (April-May 2016) conducted just prior to the start of the one-year transition period, on May 20th 2016; W2 (October-November 2017) conducted 5-6 months after standardised packaging became mandatory, on May 20th 2017; and W3 (May-June 2019) conducted 24-25 months post-standardised packaging. At W1 the entire sample was current smokers (n=6233). The W2 sample (n=4293) included 3629 smokers (84.5% of W2 sample), with the W3 sample (n=3175) including 2412 smokers (76.0% of W3 sample); for more information on the study see Moodie et al.[13] Participants were included in the analysis if they reported being current cigarette and/or RYO smokers.

Measures

Sociodemographics

Information was captured on gender, age, social grade, household income and highest educational qualification (see Table 1).

Smoking status

Participants were asked 'Which one of the following best describes your current smoking status?' with the response options 'I smoke cigarettes (including hand-rolled) every day', 'I smoke cigarettes (including hand-rolled), but not every day', 'I do not smoke cigarettes at all, but I do smoke tobacco of some kind (e.g. Pipe, cigar or shisha)', 'I have stopped smoking completely in the last year', 'I stopped smoking completely more than a year ago' or 'Don't know'.

Types of cigarettes consumed

Participants were asked how many cigarettes they usually smoked per day. They were then asked how many of these were rolling tobacco, allowing us to categorise participants as dual users, exclusive RYO smokers or exclusive cigarette smokers.

Noticing information about a stop-smoking website

Participants were asked 'In the last six months, have you noticed any information about a stop-smoking website?' with response options ('Yes', 'No', or 'Don't know/Can't remember') dichotomised to 'Yes' vs 'No or Don't know/Can't remember'.

Source of information

Participants who reported noticing a stop-smoking website were asked 'Where did you notice information about a stop-smoking website? With the response options 'Warnings on packs of cigarettes or rolling tobacco', 'Media campaign on TV or radio', 'Newspapers or magazines', 'Posters or billboards', 'Brochure, newsletter or flyer', 'Within the workplace', 'On the internet', 'Doctor or other health professional' or 'Other'.

Visiting a stop-smoking website

Participants who reported noticing a stop-smoking website were asked 'In the last six months, have you visited a stop-smoking website to get advice about quitting?' with response options ('Yes', 'No', or 'Don't know/Can't remember') dichotomised to 'Yes' vs 'No or Don't know/Can't remember'.

Analysis

Data were analysed using Stata version 15. Categorical outcomes are reported as numbers and unweighted percentages. Comparison of characteristics of exclusive cigarette and exclusive RYO smokers at W1 was examined with chi square tests of independence for categorical variables and independent samples t test for continuous variables. Generalised estimating equations (GEE) were used to examine the proportion of all smokers who reported noticing information about a stop-smoking website over time. The dependent variables for the GEE were binary so were specified as a binomial distribution, with exchangeable correlation structure and robust standard errors. We included noticing information about a website as the dependent variable, and survey wave as the independent variable. The working correlation structure accounts for correlation among repeated measurements on individuals over time. The analyses were adjusted for gender, age, household income, social grade and

education. We then examined, by GEE, the change in the proportion of smokers reporting warnings on packs as a source of a stop-smoking website over time. Additionally, we conducted a GEE analysis of the relationship between noticing information about websites and visiting a website across all survey waves combined. Finally, the difference between the proportion of exclusive cigarette and exclusive RYO smokers who reported warnings on packs as a source of awareness of a stop-smoking website at W3 was examined by chi square test. We did not include dual smokers in this analysis as our interest was exclusive cigarette and exclusive RYO smokers, given the differences in pack size, and for dual users it would be challenging to interpret the findings.

RESULTS

The sociodemographic characteristics of participants, and smoking status, at each wave are shown in Table 1.

Insert Table 1 here.

Awareness and use of a stop-smoking website and source of awareness among all smokers

The proportion of all smokers reporting noticing any information about a stop-smoking website in the last six months declined from 14.1% at W1 to 13.9% at W2 and 11.9% at W3. This change was not statistically significant. The most common sources of information about a stop-smoking website were the internet (40.4% W1, 33.7% W2, 38.1% W3), doctors or other health professionals (28.8% W1, 25.7% W2, 31.3% W3), media campaigns on the television or radio (32.9% W1, 29.9% W2, 21.7% W3) and posters (20.9% W1, 15.3% W2, 19.2% W3). Less common sources were newspapers or magazines (14.8% W1, 9.9% W2, 10.0% W3), brochures, newsletters or flyers (10.3% W1, 7.3% W2, 5.2% W3) and within the

workplace (9.3% W1, 6.1% W2, 5.2% W3). With respect to citing warnings on packs as a source of information about a stop-smoking website, this increased at each wave (14.0% at W1, 24.2% at W2, 25.1% at W3), with the difference between W1 and W3 significant (AOR=2.18; 95% CI 1.59-2.98).

Across all waves combined, noticing information about a stop-smoking website on warnings was significantly associated with having visited a stop-smoking website (AOR=11.81, 95% CI 8.47-16.46); visiting a stop-smoking website was also associated with age, with those over 55 years of age having lower odds of visiting a stop-smoking website than those under 24 (AOR=0.45, 95% CI 0.26-0.76).

Characteristics of exclusive cigarette and exclusive RYO smokers at W1

At W1, exclusive RYO smokers were significantly more likely than exclusive cigarette smokers to be male, younger, daily smokers, have lower social grade and household income, and significantly less likely to intend to quit (see Table 2).

Insert Table 2 here

Awareness and use of a stop-smoking website on packs among exclusive cigarette and exclusive RYO smokers

There was a higher number of exclusive cigarette smokers than exclusive RYO smokers at each wave. Citing warnings as a source of information about a stop-smoking website increased among exclusive RYO smokers from 15.5% at W1 to 26.3% at W2 and 32.1% at W3. The difference between W1 and W3 was significant (AOR=2.72, 95% CI 1.54-4.81). For exclusive cigarette smokers, citing warnings as a source of information about a stop-smoking website increased from 10.5% at W1 to 22.4% at W2 but declined to 19.9% at W3.

The difference between W1 and W3 was significant (AOR=2.39, 95% CI 1.44-3.97). The difference in citing warnings as a source of information about a stop-smoking website at W3 between exclusive cigarette smokers (19.9%) and exclusive RYO smokers (32.1%) was statistically significant (Chi Square=4.37 p=0.037).

In terms of whether noticing information about a stop-smoking website on warnings was significantly associated with having visited a stop-smoking website among exclusive cigarette and exclusive RYO smokers, statistical comparison of the interaction between survey wave and product type was not possible because of the low proportion of exclusive cigarette and exclusive RYO smokers reporting having visited a stop-smoking website (e.g. 1.8% of exclusive cigarette smokers and 1.6% of exclusive RYO smokers at W1).

DISCUSSION

The inclusion of cessation resource information on warnings may motivate people to seek help and provides the opportunity to link those interested in quitting smoking with resources to help them do so.[14] We found that the proportion of smokers citing warnings as a source of information about stop-smoking websites increased following their inclusion on standardised packs, with citing warnings associated with having visited a stop-smoking website.

While the findings provide support for including a stop-smoking website on warnings, only a small proportion of the sample reported noticing this information. Exclusive RYO smokers were more likely than exclusive cigarette smokers to do so, and it was only among exclusive RYO smokers that citing warnings on packs as a source of information about a stop-smoking website increased at each wave. That exclusive RYO smokers were significantly less likely than exclusive cigarette smokers to intend to quit, and therefore less likely to be actively looking for information about cessation, suggests that the larger warnings on RYO packs than on cigarette packs is likely a contributory factor, particularly given that

the size of warnings and the size of information included in warnings is linked to salience.[15,16] An experimental study with smokers in New Zealand, which explored the impact of making the quitline on warnings on cigarette packs more prominent (e.g. by increasing the font size and space dedicated to the message), found that by doing so smokers were more likely to indicate that information about the quitline was more salient and easier to read, and more likely to encourage them and others to consider quitting.[17] Additional research exploring the potential impact of doing so, on both cigarette and RYO packs, would be of value.

That the proportion of recent (past three month) internet users in the UK is high (91% in 2019)[18] suggests that an online survey is an appropriate means of data collection, and that online smoking cessation services have potentially high reach. However, for populations that are more likely to lack internet access (the elderly, homeless, travellers and those in some rural communities) this is a limitation of both, as is the fact that internet access is lower for those on lower incomes, ranging from 79% for those earning less than £10,400 to 99% for those earning over £31,199.[19] Unlike previous research that has assessed the number of people that access cessation resource information (a quitline) pre- and post-standardised packaging,[20] our findings are reliant on self-report.

The inclusion of a stop-smoking website on warnings on tobacco packaging serves as a reminder to smokers that they should quit and offers them a convenient mechanism to seek further information.[21] Our findings support including a stop-smoking website on warnings, but as a key means of signalling available help, increasing the prominence of cessation resource information on warnings (whether a stop-smoking website, quitline, or both) may help increase awareness and engagement. Research exploring the optimal way of making the cessation resource information on the warning more conspicuous would be of value.

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Declaration of Interests

None declared.

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Table 1: Sociodemographic status and smoking characteristics of the sample

Variable	Value	W1	W2	W3
Total response	n	6233	4293	3175
Gender	Male	2,889 (46.34%)	2,006 (46.73%)	1,519 (47.84%)
	Female	3,344 (53.65%)	2,287 (53.27%)	1,656 (52.16%)
Age	Mean (sd)	44.85 (15.06)	48.74 (14.41)	51.09 (14.20)
	Range	16-87	17-89	19-91
Education	School level or less	2,032 (32.60%)	1,465 (34.13%)	1,096 (34.52%)
	A level or college	1,610 (25.83%)	991 (23.08%)	720 (22.68%)
	Degree or above	2,396 (38.43%)	1,693 (39.44%)	1,270 (40.00%)
	Prefer not to say / Don't know / missing	195 (3.13%)	144 (3.35%)	89 (2.80%)
Social grade	ABC1	3,583 (57.48%)	2,407 (56.07%)	1,815 (57.17%)
	C2DE	2,472 (39.66%)	1,771 (41.25%)	1,314 (41.39%)
	Refused or unknown	178 (2.86%)	115 (2.68%)	46 (1.45%)
Household Income	Under £30,000	2,840 (45.56%)	1,909 (44.47%)	1,359 (42.80%)
	£30,000-£44,999	1,294 (20.76%)	894 (20.82%)	664 (20.91%)
	£45,000 and over	969 (15.55%)	665 (15.49%)	563 (17.73%)
	Don't know / Prefer not to say	1,130 (18.13%)	825 (19.22%)	589 (18.55%)
Smoking status	Daily smoker	4,469 (71.70%)	2,816 (65.60%)	1,905 (60.00%)
	Non-daily smoker	1,764 (28.30%)	813 (18.94%)	507 (15.97%)
	Non-cigarette smoker	0	36 (0. 84%)	44 (1.39%)
	Ex-smoker	0	607 (14.14%)	700 (22.05%)
	Missing	0	21 (0.49%)	19 (0.60%)
Product type	Dual smokers	900	451	272

	(14.44%)	(10.51%)	(8.57%)
Exclusive RYO	2046 (32.83%)	1199 (27.93%)	814 (25.64%)
Exclusive cigarettes	3142 (50.41%)	1884 (43.89%)	1247 (39.28%)
Ex-smokers	0	607 (14.14%)	700 (22.05%)
Missing	145 (2.33%)	152 (3.54%)	142 (4.47%)

Table 2: Sociodemographic and smoking characteristics of exclusive cigarette and exclusive RYO smokers at Wave 1

Variable	Value	Exclusive cigarette	Exclusive RYO	p
Gender	Male	1340 (42.65%)	1046 (51.12%)	<0.001
	Female	1802 (57.35%)	1000 (48.88%)	
Age	Mean (sd)	46.96 (14.97)	43.95 (14.75)	<0.001
	Range	16-86	16-87	
Education	School level or less	997 (31.73%)	692 (33.82%)	0.237
	A level or college	834 (26.54%)	496 (24.24%)	
	Degree or above	1215 (38.67%)	795 (38.86%)	
	Prefer not to say / Don't know / missing	96 (3.06%)	63 (3.08%)	
Social grade	ABC1	1948 (62.00%)	1042 (50.93%)	<0.001
	C2DE	1106 (35.20%)	940 (45.94%)	
	Refused or unknown	88 (2.80%)	64 (3.13%)	
Household Income	Under £30,000	1243 (39.56%)	1,902 (53.37%)	<0.001
	£30,000-£44,999	704 (22.41%)	381 (18.62%)	
	£45,000 and over	592 (18.84%)	214 (10.46%)	
	Don't know / Prefer not to say	603 (19.19%)	359 (17.55%)	
Smoking status	Daily smoker	2222 (70.72%)	1592 (77.81%)	<0.001
	Non-daily smoker	920 (29.28%)	454 (22.19%)	
Quit intentions	Intention	2335 (74.32%)	1429 (69.84%)	<0.001

	No intention / Don't know	807 (25.68%)	617 (30.16%)	
Noticed stop-smoking website	Yes	402 (12.79%)	278 (13.59%)	0.408
	No / Don't know	2740 (87.21%)	1768 (86.41%)	
Visited a stop-smoking website	Yes	55 (1.75%)	33 (1.61%)	0.708
	No / Don't know	3087 (98.25%)	2013 (98.39%)	

p values are from chi square tests of independence for categorical variables and independent samples t test for continuous variables.

Figure 1