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UK smokers' and ex-smokers' reactions to cigarettes promising reduced risk

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ABSTRACT

Aims This study evaluated the impact of exposure to information about a novel cigarette claiming to reduce exposure to tobacco toxins ('potential reduced exposure product' cigarette or PREP-C) on smokers' and ex-smokers' perceptions of PREP-C, on quit interest among smokers and on interest in resuming smoking among ex-smokers. **Design and Participants** A random digit-dialed telephone survey was conducted in the United Kingdom with 500 current smokers and 106 ex-smokers who had quit within the last 2 years. **Intervention** The interviewer described a novel cigarette that claimed to significantly reduce exposure to smoke toxins. **Measurements** Respondents' interest in purchasing the PREP-C, beliefs about its safety and risk reduction and smokers' quit interest, as measured by stage of change, before and after exposure to PREP-C information. **Findings** Among smokers, 76.5% were interested in purchasing PREP-C; interest did not vary by stage of change. Almost all smokers (90.6%) thought PREP-C was safer than regular cigarettes, with 5.4% indicating that the health risks were equivalent to not smoking at all. Exposure to PREP-C description did not change quit interest. Among ex-smokers, 5.6% believed PREP-C carried no health risk and 7.1% expressed purchase interest. **Conclusions** Smokers and ex-smokers interpreted claims of reduced toxin exposure as reduced health risk and responded positively towards PREP-Cs. With the increasing introduction of PREP-Cs world-wide, evaluation of these products and their claims on quitting among smokers and on relapse among ex-smokers is a matter of public health urgency.

Keywords Harm reduction, reduced risk, smoking, smoking cessation, tobacco, tobacco marketing.

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INTRODUCTION

Although 70% of UK smokers say they would like to stop smoking [1], many are unwilling or unable to do so; however, these smokers might be open to products that reduce the risks of smoking. To address these health-concerned smokers, the tobacco industry is introducing products that are positioned as safer. Besides controversy about whether a product that reduced delivery of some constituents would actually be any safer, there has been concern that such products might divert smokers from quitting or lure ex-smokers back to smoking [2,3]. The cautionary analogy is the tobacco industry's introduction of 'light' cigarettes, which proved to offer no health benefit [4,5], but did divert smokers from quitting [6,7]. Several 'potential reduced exposure products' or PREPs [3] have been test-marketed in the United States, but have not yet been introduced in the United Kingdom.

In a previous US survey [2], we evaluated smokers' and ex-smokers' reactions to Eclipse, a cigarette-like PREP. Eclipse made direct claims of reduced risk (e.g. 'less risk of cancer'). Almost all smokers who heard Eclipse claims (91%) thought Eclipse would be safer than conventional cigarettes and one-quarter thought Eclipse was completely safe. Exposure to Eclipse claims reduced quit interest. Further, 15% of young adults who had quit smoking within the last 2 years expressed interest in Eclipse.

Eclipse is a novel product quite unlike a cigarette. However, the tobacco industry is also pursuing modification of more conventional cigarettes which might be more appealing to smokers, especially if offered in the

same brand that they now smoke [8,9]. We evaluated UK smokers' and ex-smokers' response to such PREP-cigarette (PREP-C) products, offered under the name of their current cigarette brand.

METHODS

Participants

Through random-digit dialing of households in the United Kingdom (England, Scotland, Wales and Northern Ireland) in October/November 2003, we ascertained a sample of 462 daily smokers (38 non-daily smokers were excluded) and 106 ex-smokers who had quit within the last 2 years (Table 1). Refusals were not recorded. The data were weighted to match UK demographics [10]. After asking about smoking history and quit interest (current smokers), the interviewer described the PREP-C product concept, using language based on statements by Philip Morris regarding plans to develop a PREP-C [8,9]. The interviewer described it as follows:

> By using new technology in cigarette manufacturing, it is possible to significantly reduce most of the toxins in cigarette smoke thought to cause disease. This new design can be applied to < *respondent's brand name* > cigarettes, with minimal impact on flavor and the smoking experience. Although the flavor will change a bit, it will be similar to the experience from the cigarettes you currently smoke.

The interviewer then asked about the following: purchase interest in PREP-C (four-point scale from 'very likely' to 'not at all likely'); perceived health risks of the PREP-C (rated on a 0–10 scale, 0 = 'not smoking—all health risks eliminated' and 10 = 'health risks of smoking regular cigarettes'); perceived risk reduction afforded by the PREP-C in comparison to continued smoking of the smokers' usual cigarette brand (five-point scale from 'reduce the risk a lot—75% or more' to 'reduce the risk not at all—0%'); reasons for trying the PREP-C and the main reason it would be used (response options included 'reduce some of the risks of smoking', 'to give up smoking completely', to reduce the number of cigarettes smoked without giving up smoking completely' and 'to reduce dependency on nicotine'); and perceived health risks of the nicotine patch compared to the PREP-C (five-point scale ranging from 'a lot more dangerous' to 'a lot safer'). For current smokers, interest in quitting was reassessed. We also assessed stages of readiness to quit: precontemplation (not planning to quit in the next 6 months), contemplation (planning to quit within 6 months) and preparation (planning to quit in 30 days).

Table 1 Demographic and smoking characteristics of the sample.

Demographics	*Daily smokers*	*Ex-smokers*
Gender	(n = 462)[a]	(n = 106)[a]
Male	44.9	46.8
Female	55.1	53.2
Age (SD)	(n = 462)	(n = 106)
	43.1 (15.4)	42.5 (16.3)
Race	(n = 456)	(n = 106)
White	95.4	97.2
Mixed	1.1	2.3
Asian or Asian British	2.9	0.0
Black or black British	0.6	0.5
Education	(n = 448)	(n = 101)
No qualification	26.0	18.7
O levels/GCSE	30.6	22.3
A levels	23.5	25.9
Degree or equivalent	19.8	33.1
Income	(n = 390)	(n = 87)
< £30 000	73.8	69.1
> £30 000	26.2	30.9
Employment status	(n = 460)	(n = 106)
Employed full-time/part-time	63.6	67.9
Homemaker	5.4	6.4
Retired	16.7	18.5
Student	3.0	0.0
Unemployed	8.1	3.6
Other	3.2	3.6
Mean years smoked (SD)	(n = 462)	(n = 106)
	23.4 (14.5)	14.0 (11.3)
Mean cigarettes per day (SD)[b]	(n = 461)	(n = 106)
	18.0 (9.8)	17.3 (10.8)
Time to first cigarette	(n = 460)	
Within 5 minutes	24.4	NA
6–30 minutes	33.2	
> 30 minutes	42.4	
Type of cigarette smoked[a]	(n = 462)	(n = 106)
Regular	54.5	58.4
Light	19.2	23.9
Ultra Light	3.2	3.4
Hand-rolled	23.1	14.3
Stages of change	(n = 462)	
Precontemplation	57.0	NA
Contemplation	33.2	
Preparation	9.8	

Entries are percentages or means (and associated standard deviations). [a]Sample sizes vary because some participants did not respond to particular questions. [b]At time of cessation for ex-smokers.

RESULTS

Current smokers

A majority of smokers [76.5%; 95% CI (72.6%, 80.5%)] reported an interest in purchasing PREP-C ('very' or 'somewhat' likely to purchase). Greater interest was seen in those who thought PREP-C reduced the risks of smoking regular cigarettes by at least 50% [82.2% versus

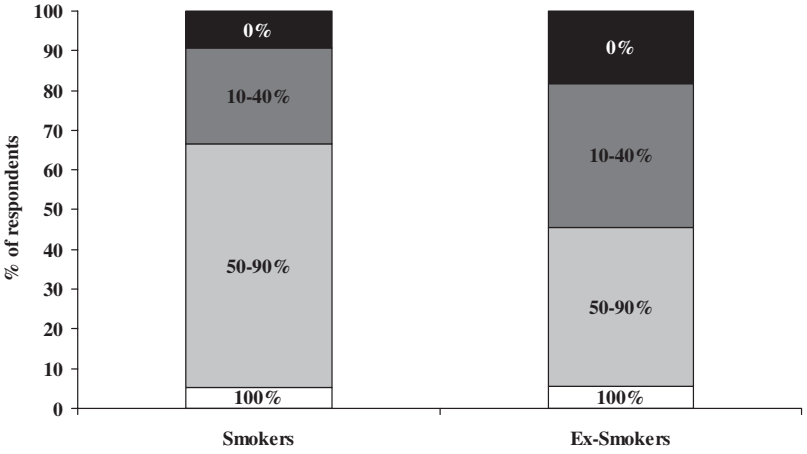

Figure 1 Percentage of smokers and ex-smokers who believed that PREP-C reduced health risks by 0% (not at all), 10–40%, 50–90%, or 100% (completely eliminate risks). The percentages in the bars indicate the expected reduction in risk

69.0%; OR = 2.07 (1.26, 3.39); $P = 0.004$] and those who believed that PREP-C reduced risks more than 'a little' [89.6% versus 41.4%; OR = 12.25 (7.04, 21.33); $P < 0.001$]. Interest in PREP-C was lower among men [72.1% versus 80.2%; OR = 0.64 (0.41, 0.99); $P = 0.046$], but this was accounted for by lower interest among hand-rolled cigarette smokers [57.9% versus 82.1%; OR = 0.30 (0.19, 0.48); $P < 0.001$]. Interest in PREP-C did not vary by interest in quitting ($P = 0.244$).

Among smokers interested in PREP-C, 35.2% said they would use it mainly to reduce the risks of smoking. Almost as many (28.4%) said they would use it to help quit smoking completely. Those who reported that they would use PREP-C to help quit smoking were more likely to be regular cigarette smokers (69% versus 55%; $P = 0.025$) and were more interested in quitting (20% preparation versus 6% preparation; $P < 0.001$). Most respondents (68.3%) indicated they would use PREP-C to replace their current brand completely, but 10% stated they would use PREP-C in addition to their current brand.

Figure 1 illustrates the perceived risk reduction afforded by PREP-C. Almost all smokers (90.6%) thought that PREP-C was safer than regular cigarettes (i.e. 'risk' values less than 10). On average, smokers considered the risk of PREP-C to be 52% (49–54%) that of regular cigarettes. Moreover, 5.4% stated that PREP-C carried *no* health risks (i.e. equivalent to not smoking at all).

Many (41.7%) believed that PREP-C reduced the risks of smoking by 50% or more compared to their current cigarette, regardless of whether they smoked regular, light or ultra-light cigarettes. Only 15.2% reported that they did not know how much PREP-C reduced risks. In comparing the risks of PREP-C to the risk of using a nicotine patch, 20.1% of smokers believed that nicotine patches are more dangerous than PREP-C, and 41.0% believed that PREP-C and nicotine patches were about equally dangerous.

Few smokers changed their stage of change after hearing about PREP-C; 11.2% moved towards quitting and 8.1% moved away from quitting, yielding no significant net change ($P = 0.347$).

Ex-smokers

Among ex-smokers, 7.1% (2.2–12.1%) were 'very' or 'somewhat' likely to purchase PREP-C. The small sample of ex-smokers precluded analysis of individual differences associated with interest in PREP-C.

Ex-smokers considered the risk of PREP-C to average 63% (58–69%) that of regular cigarettes. About half (45%) indicated that PREP-C would reduce risk by at least 50%, and 5.6% indicated they believed that PREP-C carried *no* health risk (Fig. 1). Only 21.3% believed that PREP-C reduced the risks of smoking by 50% or more, regardless of the strength of cigarette previously smoked.

DISCUSSION

This survey evaluated the impact of product claims for a hypothetical PREP-C—a cigarette that claimed significantly reduced delivery of tobacco toxins, while working like a conventional cigarette. These claims were modeled after those expected to be made for Philip Morris' PREP. More than three-quarters of UK smokers surveyed expressed interest in such a product. Whether this would be beneficial or harmful to public health depends both on the actual toxicology of the product and the effect its marketing might have on cessation and initiation.

Adoption of PREP-Cs by ex-smokers can only be harmful, as it implies resumption of smoking and thus

renewed exposure to tobacco toxins, even if at a reduced level. One of 14 ex-smokers reported interest in using PREP-C. With 10 million ex-smokers in Great Britain [11], even half this rate of adoption would constitute a large at-risk group (3.5% = 350 000 people), and presents the potential to lose ground among people who have already quit smoking.

Unlike the claims made for Eclipse, which specifically mentioned reductions in disease [12], the claims for PREP-C claimed only to reduce exposures. Nevertheless, smokers expected approximately a 50% decrease in risk from PREP-C. Smokers readily translated claims of reduced toxin *exposure* to conclusions about reduced *risk*. While scientists debate the relationship between exposure and risk, smokers readily draw conclusions even from non-quantitative exposure data.

Brief exposure to PREP-C claims had no effect on a crude measure of quit interest. However, assessing the impact of real product claims on smokers' intentions is difficult. The exposure we tested here was quite unlike product advertising and promotion—respondents were presented with a brief text description of a hypothetical product; they saw no images; the message lacked emotional appeal; claims were stated as hypothetical facts, without a source or substantiation (of course, an unattributed claim might be more credible than one from a tobacco company); the claims were very brief and nonspecific; respondents were exposed to the message only once; and respondents were not able to actually try the product. Finally, to show changes in quit interest, smokers would have had to admit to a change of views in the space of a few minutes.

It is also hard to assess the impact of PREPs in a single exposure because the products' health claims themselves mention and raise health concerns. Thus, initial exposure to the claims may acutely heighten health concern, whereas repeated exposure, as in a marketing campaign, might lessen them [13,14].

Comparatively, our previous study of Eclipse claims in the United States showed greater belief in the safety of the product and greater decrease in quit interest [2]. The Eclipse claims included quantified claims for reduced disease, which may have made them more powerful. The Eclipse survey also queried smokers' concerns about the health consequences of smoking before asking about quit interest. In the present study, the claims themselves were the first mention of the health consequences of smoking, which could have weakened the claims by mixing an alarming message (cigarettes contains toxins that cause disease) with a reassuring one (PREP-C reduces exposure). US smokers may also be more receptive to PREP messages, given the corporate image advertising that tobacco companies have aired on US television.

Importantly, this survey did not assess behavior—either product purchase or quitting—and thus is only suggestive. However, the fact that smokers and ex-smokers imputed substantial risk reductions so readily to a PREP-C product suggests the need for continued concern about how PREPs are perceived and how they affect smoking cessation and relapse.

DECLARATIONS OF INTEREST

This study was sponsored by GlaxoSmithKline Consumer Healthcare (GSKCH), which markets nicotine replacement medications for smoking cessation. Drs Shiffman and Pillitteri, Mr Di Marino and Mr Gitchell serve as consultants to GSKCH regarding matters relating to smoking cessation. Dr Shiffman and Mr Gitchell also have a financial interest in a venture to develop a new nicotine replacement medication. Dr Jarvis has, in the past, received honoraria for speaking and travel expenses from pharmaceutical companies, including GSKCH, Pfizer and Novartis, but has received no financial support in connection with this study. Ms Kemper is employed by GlaxoSmithKline Consumer Healthcare.

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