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Journal

American Journal of Public Health, 103(11)

ISSN

0090-0036

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Publication Date

2013-11-01

DOI

10.2105/ajph.2013.301547

Peer reviewed



Published in final edited form as:

Am J Public Health. 2013 November ; 103(11): . doi:10.2105/AJPH.2013.301547.

Perceptions of Relative Risk of Snus and Cigarettes Among US Smokers

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Abstract

In a survey of 1836 adult US smokers, when using a direct comparison measure, 22.1% reported snus was less harmful than were cigarettes. When asked indirectly (estimating the health risk of snus and cigarettes in 2 separate questions and comparing the answers to each other), 51.6% rated snus as less risky. The Food and Drug Administration should consider both direct and indirect measures when perceived risk data are presented as evidence for tobacco regulation.

In July 2011, The RJ Reynolds Tobacco Company submitted a citizen petition to the US Food and Drug Administration requesting that it change one of the smokeless tobacco warning labels from “WARNING: This product is not a safe alternative to cigarettes” to “WARNING: No tobacco product is safe, but this product presents substantially lower risks to health than cigarettes.”¹ This request referred to studies²⁻⁷ reporting that a large portion of the public perceives smokeless tobacco products to be as harmful as or more harmful than cigarettes.

A closer look at the studies that report perceptions of comparative risk between smokeless tobacco and cigarettes²⁻⁷ shows that most of them³⁻⁶ employed a direct measure of comparative harm, which elicits estimates of relative harm of smokeless tobacco and cigarettes within a single question (e.g., Compared to regular cigarettes, are smokeless tobacco products less harmful, as harmful, or more harmful?). However, 2 studies^{2,7} used an indirect method: measuring the perceived harm of cigarettes and smokeless tobacco in 2 separate questions and then comparing the answers. Studies employing direct methods found that 7% to 25% of participants rated smokeless tobacco as less harmful than cigarettes. By contrast, studies using indirect methods found that a much larger proportion (41%–49%) of participants rated smokeless tobacco as less dangerous than cigarettes.

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Contributors

L. Popova analyzed the data and led the writing. P. M. Ling conceptualized and supervised the study. Both authors contributed to the development of the survey instrument, interpretation of the data, and article writing and revision.

Note. The article contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Cancer Institute, National Institutes of Health.

Human Participant Protection

The study was approved by the Committee on Human Research of the University of California, San Francisco.

This evidence suggests that different measures of perceived relative harm—direct and indirect—produce different estimates. However, other explanations for the different estimates besides measurement artifacts cannot be ruled out by comparing data from different studies. To determine whether different measures produce different answers, we used both direct and indirect measures of perceived relative harm in the same study. We measured the perceived relative harm of cigarettes and snus (finely ground smokeless tobacco packed in small porous pouches to be placed between gum and lip). Snus is a relatively recent addition to the US smokeless tobacco market,⁸ and some argue it should be promoted for harm reduction.⁹ Swedish snus has been reported to carry lower health risks than do cigarettes,¹⁰ but because the product labeled snus in the United States is manufactured, stored, and used differently than is Swedish snus, the health risks of the US snus products are unknown.

METHODS

We conducted an online cross-sectional survey in November 2011 with a nationally representative probability-based sample of 1836 current or former smokers who were part of a panel maintained by the research company Knowledge Networks. The survey is described in detail elsewhere.¹¹ In the first part of the survey, we introduced snus to the participants by showing them a picture of a snus pouch, and we referred to the product as “a new smokeless tobacco product.” We measured familiarity with snus by asking participants, “How familiar are you with new smokeless tobacco products, such as snus?” on a 1 to 7 scale ranging from not at all familiar to extremely familiar (mean = 2.55; SD = 1.84). In addition, we asked whether participants had ever tried snus (13.2% had tried the product).

We measured perceptions of the comparative harm of new smokeless tobacco products (i.e., snus) and cigarettes both directly and indirectly. The direct measure was “Compared to smoking cigarettes, using new smokeless tobacco, such as snus, is ...” with answers on a 7-point scale ranging from -3, a lot less harmful; to 0, equally as harmful; to +3, a lot more harmful. To measure perceptions of relative risk indirectly, we asked 2 separate questions: “In your opinion, how harmful are new smokeless tobacco products, such as snus, to general health?” and “In your opinion, how harmful is smoking cigarettes for health?” The answers to both were on 7-point scales, ranging from 1, not at all harmful, to 7, extremely harmful.

We asked all participants the same questions in the following order: question about harm of snus, direct measure of comparative harm, question about harm of cigarettes. Each question appeared on a separate page in the online survey, and the questions were interspersed with 4 questions about specific health effects of snus and traditional smokeless tobacco between the first 2 measures and a question about comparative harm of dual use (use of both cigarettes and smokeless tobacco) before the last question.

RESULTS

The distribution of participants for relative perceptions of harm between snus and cigarettes (less than, equal to, greater than) for both measures is reported in Figure 1. In questions using the direct measure, 22.1% of respondents reported that snus was less harmful than were cigarettes, and the overall mean comparative harm of snus was 0.02 (SD = 1.16), which was not significantly different from 0 ($t(1791) = 0.691$; $P = .5$). However, in questions using the indirect measure, when we compared the answers from 2 separate questions, 51.6% of participants rated snus as less harmful than cigarettes. Mean harm from cigarettes was 5.91 (SD = 1.23), and mean harm from snus was 4.97 (SD = 1.55), with a mean difference of 0.94 (SD = 1.68), which was significantly different from 0 ($t(1788) =$

23.690; $P < .001$). We found a correlation of $r = 0.305$ ($P < .001$) between the direct and indirect measures.

DISCUSSION

Whether people perceive smokeless tobacco products (including snus) as less harmful than cigarettes depends on how the question is framed. We compared 2 types of relative risk questions—direct and indirect—and found that when risks of cigarettes and smokeless tobacco are juxtaposed in the same question, people more frequently rate them as equal. But when 2 separate questions are asked, fewer people rate the harm from cigarettes and smokeless tobacco as equal. This discrepancy might be because warning labels and other anti-tobacco messages encourage respondents to select what they may perceive as the socially appropriate answer: snus and cigarettes are equally harmful. However, the actual differences in perceptions are revealed when the underlying beliefs are measured indirectly.

These data show that the proportion of people believing that smokeless tobacco is less harmful than are cigarettes may be substantially larger than RJ Reynolds claims because most of the studies cited in the RJ Reynolds petition used direct measures.

Tobacco regulators and policy-makers should take into account the quality of the data presented to them and consider methodological issues such as these before policies such as changing the smokeless warning labels are enacted. Furthermore, policy-makers should consider several additional factors relevant to the proposed changes. Even if many consumers perceive smokeless tobacco as harmful to health, it is not clear whether the appropriate intervention would be to change smokeless tobacco warning labels.

There is a well-established literature that smokers underestimate the harms of cigarettes,^{12–14} and policymakers might consider it a higher priority to change cigarette warning labels to increase consumer perceptions of the harms of smoking. This change might also affect perceptions of harm of smokeless tobacco relative to cigarettes. However, in fact, RJ Reynolds is fighting the Food and Drug Administration's efforts to correct consumer perceptions of the harm of cigarettes with graphic warning labels in court.¹⁵

The RJ Reynolds' proposed changes in smokeless warning labels may also encourage misinformed dual use of both smokeless tobacco and cigarettes rather than substitution of snus for cigarettes. Dual use is consistent with Camel snus advertising that frequently encourages temporary use in smoke-free environments.

Finally, there are numerous other problems with the changes to the warning label as proposed by RJ Reynolds (such as the length, relevance, readability, and interpretation of the warning) that are beyond the scope of this article but that also need to be taken into account.

This study has several limitations. It is possible that the order of the questions might have played a role in how participants answered them. However, because the questions were interspersed with a number of other questions asking about health effects of various tobacco products and each question was presented on its own page, it is not very likely. Future studies could employ between-participants design to randomize participants to either answer direct or indirect questions of perceived harm to validate the findings of this study.

In addition, the slight difference in wording in the indirect questions about snus (How harmful are new smokeless tobacco products, such as snus, to general health?) and cigarettes (How harmful is smoking cigarettes for health?) might have affected participants' responses. Although it is not very likely and the literature presents no evidence that smokers perceive

harm to health versus general health differently, future studies using indirect measurement should use exactly the same wording in questions measuring the perceived risk of cigarettes and alternative tobacco products.

Future studies on perceptions of the harm of smokeless tobacco should use indirect methods, which measure the perceived harm of smokeless tobacco and the perceived harm of cigarettes separately. Indirect measures provide information about both absolute and relative perceptions of risk and would allow researchers to track changes over time. The consideration of appropriate measures is particularly important because tobacco companies have a documented history of misrepresenting tobacco science by selectively framing questions or measures to their own benefit.¹⁶ Therefore, the Food and Drug Administration should require tobacco companies to provide full and detailed explanations of their methodology as well as all their consumer research data on perceptions of tobacco products, and should compare these data to independent research on consumer risk perception and behavior, including an independent assessment of how question framing affects the answers reported.

Acknowledgments

This research was supported by the National Cancer Institute (grant R01 CA-141661).

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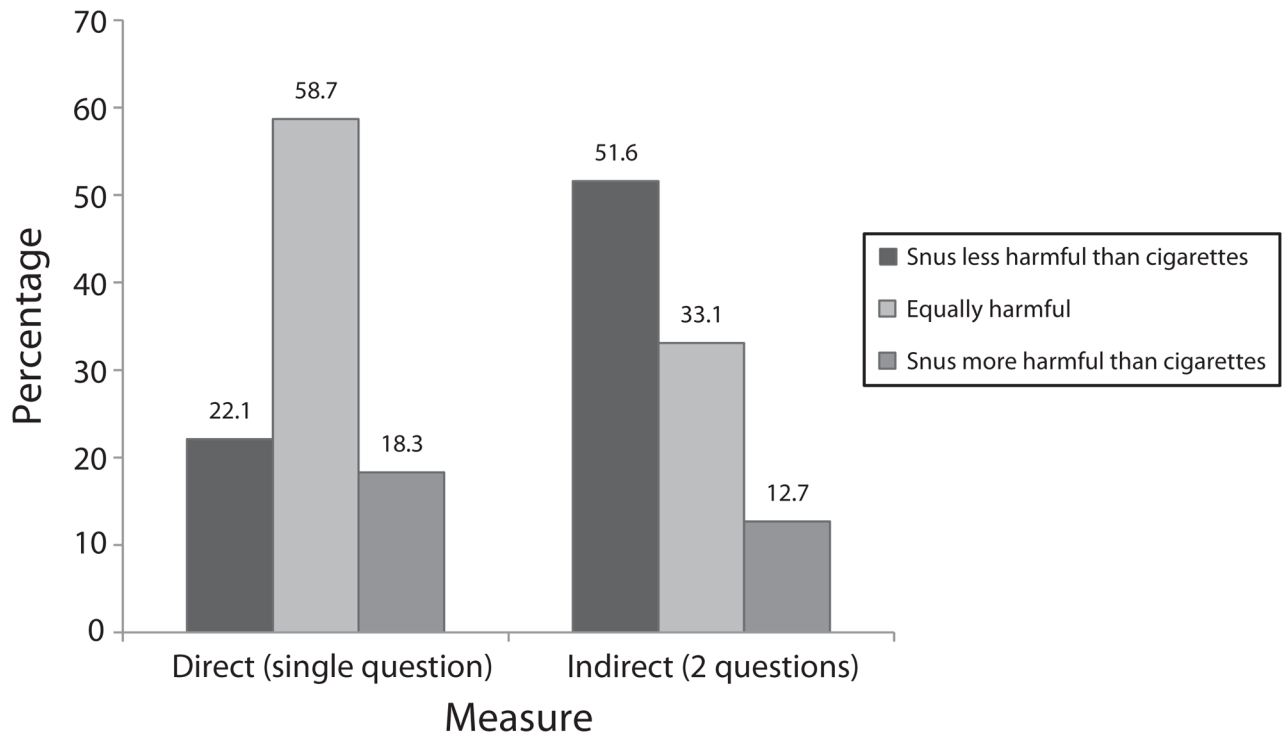


FIGURE 1. Percentage distribution of US adult current and recently former smokers by relative degree of perceived harm from using snus or smoking cigarettes: November 2011

Note. Percentages for direct and indirect measures do not add to 100% because of missing data (direct, 0.9%; indirect, 2.6%).