



Knowledge, Attitudes and Beliefs Regarding Swedish Snus

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1 Introduction and Background

Tobacco harm reduction is an important component of the 2009 US Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act). Section 911, Modified Risk Tobacco Products, requires the Food and Drug Administration (FDA) to establish a process for determining whether a product will significantly reduce harm and the risk of tobacco-related disease. The subsequent draft FDA guidance on Modified Risk Tobacco Product specifies that an application must contain evidence to show that the advertising for and labeling of modified risk products enable the public to comprehend the information concerning modified risk. Furthermore, it specifies that the information be provided such that the public understands the relative significance of such information in the context of total health and in relation to all of the diseases and health-related conditions associated with the use of tobacco products (FDA 2012).

This report reviews the available scientific literature describing research that assessed public perceptions, perceived health risk and marketing of tobacco use related to Swedish snus in Sweden and other Scandinavian countries. The results of the studies provide an understanding of the public's awareness and knowledge of tobacco use (snus and cigarettes) in countries where Swedish snus has been available for several decades or longer.

2 Literature Search and Methods

The literature review conducted for this report focused on identifying studies among populations in Sweden and other Scandinavian countries that were published within the last 10 years in order to capture more contemporary knowledge, attitudes and beliefs in these populations. Several methods were used to identify studies. An initial Medline search was conducted using the keywords below, limited to studies on humans only:

"health OR knowledge OR attitude OR practice" AND "tobacco, smokeless"[MeSH Terms] OR chew* tobacco* OR oral tobacco* OR snuff OR snus OR plug tobacco* OR (spit* AND tobacco*) OR smokeless tobacco* OR loose leaf tobacco* OR dip tobacco* OR dipping tobacco* OR snus OR cigar OR cigars OR ((smoke* OR tobacco*) AND (pipe OR pipes))"

In addition, several studies were identified as a result of the literature search conducted for a companion ENVIRON report, "Tobacco Use Behaviors," which summarizes scientific literature describing the demographics of tobacco use and associations between these demographics and different tobacco products (cigarettes, snus, and in the US, other more-commonly used smokeless tobacco products). Finally, the references of key publications identified by either method were reviewed for potentially relevant publications, which also produced additional studies for review. In selecting studies for inclusion in this review, we focused on available scientific literature describing knowledge and attitudes towards tobacco use, whether among smokers, users of other tobacco products, or non-smokers of any age.

3 Review of Available Studies among Swedish and Scandinavian Populations

This report examines contemporary awareness and knowledge of the tobacco product, Swedish snus, often in comparison to cigarettes, in Sweden and other Scandinavian populations where snus has been available and used for several decades. In total, 13 studies were included in this review and are summarized below. The review separates studies in adults, whose tobacco habits are generally set, from studies in adolescents and young adults, whose tobacco habits are generally just forming or are more likely to be in flux.

3.1 Adults

Five studies among adults examined knowledge, attitudes and beliefs towards tobacco use (Bolinder et al. 2002; Borland et al. 2012; Lund and Scheffels 2012; Lund and Scheffels 2013; Lund 2012). These studies investigated knowledge, perception and attitudes about snus in Sweden and Norway at a time point (cross-sectional).

These studies investigated the perception of health risks related to snus use and reported that Scandinavians had an exaggerated perception of the health risks associated with snus use (Bolinder et al. 2002; Borland et al. 2012; Lund and Scheffels 2012; Lund and Scheffels 2013; Lund 2012). Lund and Scheffels (2013) investigated perceptions of risk of some tobacco-related cancers and diseases, including lung cancer and cardiovascular diseases (CVD), among Norwegian adults who were either current or former tobacco users. They reported that for all diseases except lung cancer, a majority of smokers believed snus users had a higher or equal risk. Although none of the tobacco users believed the risk of lung cancer or CVD was far higher for snus, some participants perceived the risks to either tobacco type user were fairly similar. Lund (2012) reached similar conclusions; both former and current adult smokers inaccurately reported that the harm from snus and cigarettes were more or less equal or that snus was only somewhat less risky. Smokers with a history of snus use, however, were more likely to correctly predict that daily snus use was far less risky than daily cigarette smoking. Correct beliefs of differential risks between the two products were positively correlated with the willingness to use snus in future quit attempts or having used it for smoking cessation. Borland and colleagues (2012) investigated the impact of providing factual information on the relative harms of smokeless tobacco products (“STPs”) and nicotine replacement therapies (“NRTs”) compared to smoked tobacco using a pre- and post-test comparison of knowledge about harms. The study was conducted in several locations worldwide (Australia, United Kingdom and the US), including among smokers in Sweden. After administration of the Fact Sheet, the authors observed that the knowledge on the mechanisms of tobacco-related harms became more accurate among smokers in Sweden, which was observed in the other countries investigated. Participants who read all or at least some of the Fact Sheet believed post-survey that STP was less harmful. Given the pre-test low levels of knowledge that smokers had about the harmfulness of different nicotine delivery products, the authors concluded that the provision of information may be an effective means to educate smokers on alternative nicotine delivery products such as STPs and NRTs. Their knowledge levels on the relative harmfulness of ST/NRT compared to cigarettes increased participants’ interests in using NRT as a cessation aid and/or trying STPs as a substitute for cigarette smoking.

Two of the five cross-sectional studies (Bolinder et al. 2002; Lund and Scheffels 2012) observed that a significant percentage of the medical community hold beliefs that are in conflict with scientific consensus on the health risks of snus. Bolinder and colleagues (2002) reported that half of the doctors surveyed believed that snus use probably increases the risk of oral cancer, hypertension, and some heart diseases. Lund and Scheffels (2012) observed that among Norwegian general practitioners, 15% believed that snus was equally or more harmful than cigarettes. Some doctors reported that they never or seldom recommended snus as a cessation aid (Bolinder et al. 2002; Lund and Scheffels 2012).

One study examined perceptions of nicotine addiction potential (Lund and Scheffels 2013). In this study, exclusive smokers were significantly more prone to believe that smokers had a higher risk of addiction, but some snus users also believed that cigarettes were more addictive. Among Norwegian snus users and cigarette smokers, the majority believed that snus users and smokers were more or less at the same risk of becoming addicted to nicotine. The highest proportion who believed that smokers were at higher risk of addiction was in the group of former dual users (those who had quit both products).

Certain factors were found to be correlated with the belief that snus was less harmful than cigarettes. In a study among smokers, in which the questions of the relative harmfulness of snus was stratified by perceptions of nicotine harmfulness, males and adults under 30 years of age tended to answer questions on the relative risks of snus more accurately than females and those over 60 years of age; females were more likely to be concerned with safety. An additional study among smokers reported that those with a higher nicotine dependency, and those who had used snus in quit attempts, were more likely to have an accurate knowledge of the relative harmfulness of snus (Wikmans and Ramstrom 2010). Lund (2012) reported that a higher proportion of those with a history of snus use correctly believed that daily snus use was “far less risky” than daily cigarette smoking compared to participants without history of snus use. A belief that smokeless tobacco was less harmful than cigarettes was also associated with interest in trying the product among smokers (Borland et al. 2012; Lund 2012).

3.2 Adolescents and Young Adults

Seven studies examined tobacco-related knowledge, attitudes and beliefs among adolescents and/or young adults: four were cross-sectional in design, one prospective study, with publications at baseline and follow-up, and one was an intervention study.

Rolandsson and Hugoson (2000) conducted an intervention study among male ice-hockey players, aged 12-19 years (n=252). Intervention entailed administering tobacco-related information: over-head pictures on the harmful effects of tobacco in general and from the view of oral health. The questionnaires collected information on personal characteristics, socio-economics, behavior and knowledge of tobacco products. Questionnaires were administered three times on two separate occasions: the first two were provided at baseline, administered immediately before and after a 15-minute anti-tobacco information session conducted by two dental hygienists. The third questionnaire was administered three weeks later. Post intervention, the authors noted that knowledge of tobacco and its harmful effects increased significantly. No significant difference was observed among the snuff users and non-users

concerning their knowledge of the harmful effects of tobacco (there was only one smoker in this study).

Prospectively, Rosendahl and colleagues (2005; 2008) evaluated knowledge of use behaviors and its impact on subsequent tobacco use. In the 2005 study, participants completed self-administered questionnaire to assess knowledge of tobacco effect (esthetic and health) and then were surveyed annually from the sixth through ninth grade. Knowledge items included nicotine dependence, health concerns and popularity of tobacco advertisements. The authors reported that acquired knowledge often was not associated with future tobacco use. For instance, knowledge of the addictive properties of nicotine was not associated with future cigarette smoking; on the other hand, a correct answer to the item on the addictive properties of snus was associated with a likelihood of snus use, either exclusively or in conjunction with cigarette smoking. A knowledge score was generated; no association was observed with this score and subsequent tobacco use, and was not associated with future tobacco use. In the 2008 study, indicators of snus and cigarette in the previous year were used to model the development of behavior between 11 and 18 years of age (Rosendahl et al. 2008). The authors observed marked sex differences; rapid escalation of snus use was found only among males while high consumption of cigarettes was observed only among females. According to the authors, dual users showed a trajectory of steeper and more sustained increase of tobacco consumption than exclusive users of either snus or cigarettes.

Four cross-sectional studies evaluated knowledge, attitudes and beliefs among Scandinavian adolescents and young adults (Nilsson et al. 2009; Overland et al. 2008; Wium et al. 2009; Wium et al. 2011). Subjective attractiveness (e.g. coolness factor, sexiness) and perceived trendiness (e.g. popularity) were evaluated among Norwegian adolescents (Wium et al. 2009; Wium et al. 2011). Males, compared to females, considered snus use to be more attractive and trendier; and use was more common among males than females. Both cigarette smoking and snus use were considered to be unattractive; however, snus was reported to be trendier compared to smoking. According to a cross-sectional study conducted by Nilsson et al. (2009), a majority of Swedish adolescents (85%) expected their parents to try to make them stop using snus, suggesting that these adolescents on some level consider snus use to be a habit that their parents would not approve of.

With regards to the perception of harmfulness of different tobacco types and substitutes among youths, participants aged 16-20 years old were asked to rank tobacco products in order of harm, including snus, NRTs and cigarettes (Overland et al. 2008). As observed among adult participants, adolescents overrated the harmfulness of snus. Cigarettes were generally rated as more harmful than snus but 41% still rated snus as equally or more harmful than cigarettes, while NRTs were perceived as least harmful among substitutes and other tobacco types (Overland et al. 2008).

4 Conclusions

This report summarized recently-conducted studies in which the objectives were to understand adults and adolescent participants' knowledge and attitudes toward Swedish snus in comparison with other tobacco or nicotine-containing products. These studies were conducted in Sweden and Norway where Swedish snus has been available for several decades or longer.

Adults generally, and smokers in particular, had an exaggerated perception of the health risks related to snus use. Participants often overrated the harmfulness of snus compared to other tobacco types. This was also observed in the one available study on this topic in adolescents. Factors that were associated with exaggerated beliefs were male gender, young age, and a higher degree of dependency. Those with beliefs more closely aligned with facts related to the relative risks of snus and cigarettes were more likely to be snus users or to have tried it.

In studies that provided tobacco health facts to participants, findings suggest that participants were able to understand comparative tobacco risk information; however, no studies of sufficient duration or design were identified to determine whether imparting tobacco health facts resulted in changes in established tobacco habits.

Most of the studies were conducted among tobacco users; there is limited information on tobacco-related knowledge and beliefs among non-smokers and non-users of tobacco. Only one of the identified studies was a prospective design, among adolescents, to examine for changes in perceptions and tobacco-related behaviors over time; perceptions on tobacco harmfulness did not appear to predict future tobacco use.

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