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A comparison of dependence across different types of nicotine containing products and coffee.

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ABSTRACT.

Introduction.

Few studies have compared the dependence to different tobacco and nicotine products. Besides how dependence may vary between tobacco products there is even less known how it relates to other common drugs, e.g. caffeine. In this study degree of dependence was compared between snus, cigarettes, nicotine replacement (NR), electronic cigarettes and coffee.

Methods.

An internet panel was used to obtain a representative sample of 3001 Swedes. The responders were asked among other related things about their use of snus, NR, traditional cigarette or e-cigarette use and coffee consumption. The indicators of dependence used were: A. the Heavy Smoking Index, B. The proportions that used within 30 min after raising in the morning, C. rating the first use in the morning as the most important and D. Stating that it would be very hard to give up entirely.

Results.

Significantly fewer among coffee drinkers started use within 30 minutes of awakening compared with all other products. The first use of the day was found to be more important for

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snus users compared with other products. On HSI there was no difference between snus and cigarettes. Snus and cigarettes were rated as being more difficult to give up than NR and coffee.

Conclusion.

Dependence to traditional cigarettes and snus seem to be relatively similar while NR was rated lower and coffee lowest. Since the prevalence of caffeine use in all forms is so much more prevalent than nicotine use there might be more persons in the society heavily dependent on caffeine.

Implication.

Tobacco products are likely more dependence forming that NR products and coffee. The addiction to coffee or caffeine is seldom discussed in the society. But if there are more individuals heavily dependent on coffee than nicotine and some nicotine containing products like snus and even more so NR are not that much more harmful than coffee how problematic is the addiction?

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INTRODUCTION

Nicotine and tobacco products are associated with dependence (1). Some studies have found that tobacco products, and particularly cigarettes, are associated with a dependence degree equal to common illicit drugs (2). As much as tobacco and nicotine products (TNP) can vary in their harmfulness and can be positioned on a continuum of harm there may also be a continuum of dependence. The large majority of studies on dependence on tobacco products has been directed at cigarettes. There are few if any studies comparing the degree of dependence across different nicotine and tobacco products and to other drugs in the same population. The world´s probably most used drug caffeine is very much ignored when it comes to its dependence potential. Officially it is not fully recognised as a drug disorder and needs more research according to American Psychiatric Ass. (1). Little is known how the possible dependence to e.g. coffee compares with that of nicotine containing products. In order to get an understanding of this the current study was conducted in a country where different types of nicotine products (NP) are commonly used (cigarettes, snus and nicotine replacement products), to compare the dependence to these products with that to coffee.

METHODS.

A weighted representative sample on sex, age (18-75 years) and region of Sweden belonging to an internet panel were contacted from September to October 2017 and questioned about their TNP and coffee use. During the development of the questionnaire it was cognitively tested to ensure proper understanding. Some oversampling was made to get a better sample size of rare events like daily use of E-cigs and nicotine replacement (NR). The survey was conducted by IPSOS an opinion poll institute in Stockholm and supported by the Snuskommissionen (the Snuscommission). www.snuskommissionen.se

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The indicators of dependence used were all taken from the Fagerstrom Test for Cigarette Dependence (3) except for a question how difficult it would be to stop. Number of uses/day and time to first use named the Heavy Smoking Index (HSI) (4) was judged to be relevant for comparing cigarettes and snus because of their similar number of average uses per day but not for coffee or NR use which frequency of use was much less. Time to first use and importance of the first use was judged to be relevant to ask for all products. The estimation on difficulty to give up was made on a 5 point scale.

The survey also asked for e-cigarette use but the prevalence was so low, 0.5%, and the responders so few, fifth teen, that it was dropped from all analysis.

RESULTS.

For prevalence, which is defined as daily use, it is notable that snus is consumed by more people than cigarettes, 9.9 and 6.8%. NR are consumed by 1.5% of the population while as many as 71% drink coffee daily, see Table 1.

No difference in dependence on HSI between snus and cigarettes was seen. Use within 30 minutes was significantly more frequent for the TNP than for coffee. For the first use snus was rated by 86% as the most important use which was significantly higher than all other products. Thereafter coffee was rated by 77% as the most important use which was significantly higher than cigarettes and NR.

Finally stating it would be very hard to give up was seen most often by smokers 35% and snus 34% users. Coffee was rated significantly lower at just 18% similar to NR at 20%.

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Although it seems as the dependence to coffee is not as strong as that to cigarettes and snus there might be significantly more people heavy dependent on coffee. In this sample N=385 would find coffee very hard to give up compared with N=178 with all TNP together.

DISCUSSION

First, it seems as there was no overall significant difference in degree of dependence between cigarettes and snus although those using snus reported that the first use was more preferred by snus users. Another Swedish study in youths found that those using snus were as dependent as those smoking (5). This finding is at odds with data from US that found that cigarette smokers lighted up closer to awakening than smokeless users (6) and that stopping use was easier with smokeless tobacco than with cigarettes (7). In a study validating a questionnaire that should assess dependence to all tobacco products the degree of dependence seemed to be somewhat lower among smokeless tobacco users than cigarette smokers (8). The conflicting findings could be because the US studies included all sorts of smokeless products which maybe more or less dependence forming or socially acceptable for use, e.g. directly after awakening.

Second, coffee was generally associated with lower dependence than tobacco products except for first use most important that was rated similarly with cigarettes and snus use. Significantly fewer used coffee within 30 minutes which might partly be explained by the longer time it takes to make coffee compared with starting to smoke or insert a snus pouch.

Third, surprisingly there may be more users of coffee being heavily dependent in the population than users of TNP because of the much higher numbers of coffee users 2139 than TNP 545. This difference might be smaller in countries with more prevalent smoking.

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Fourth, how problematic is a strong dependence on coffee when it is associated with very little harm? Addiction or dependence is by itself recognised as a disease (1) and must not involve physical harm. There has not been as much concern about people drinking coffee and maybe becoming heavily dependent as with dependence on TNP. More lately though there has been a discussion on the effects of sodas and energy drinks high in caffeine (9). In the present study the only caffeine use asked for was drinking coffee. The prevalence of caffeine use would likely have been even higher if daily use of energy drinks, sodas and tea had been included. If the dependence to coffee that can occur to a significant number is not problematic why is our view so different with nicotine? Probably because traditionally most nicotine has been consumed from burned tobacco and the negative health consequences are well known. But how problematic is the dependence to snus and NR with just a fraction of the dangers from cigarette smoking (10)?

There are several limitations with this study. The most obvious one is that the assessment instruments are not validated for across TNP use and not at all validated for coffee use. The relatively small sample size and low prevalence of TNP use resulting in small cells and imprecise estimates is another limitation.

In summary, this study found that cigarettes and snus are equally dependence forming and higher than that from NR. Coffee was associated with less dependence than all of the other TNP but because of its much higher prevalence there may be as many as or more highly addicted to coffee than to nicotine in the society.

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TABLE 1. PREVALENCE OF USE IN POPULATION AND INDICATORS OF DEPENDENCE

	Cigarettes N=203	Snus N=298	NR N=44	Coffee N=2139	
Pevalenc in population in%	6.8	9.9	1.5	71.3	
Heavy Smoking Index score	2.81	2.86			
First use within 30 minutes in %	64	68	57	43	a
First use the most important of all in %	65	86	68	77	b
Would be very hard to give up in%	35	34	20	18	c
Absolute mumbers finding it very hard to give up	71	98	9	385	

Statistical significance is defined as non-overlapping confidence intervals at the 5% level.

a. Coffee significantly different from all NP.
b. Snus significantly different from all products.
c. NR and coffee significantly different from cigarettes and snus