

Smoking

General health and tobacco habits among middle-aged Swedes

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Background: Convincing scientific evidence exists that smoking has devastating effects on health. The use of smokeless tobacco (snuff) as a tobacco habit has been reported to be considerably less harmful, and has been suggested as an aid to smoking cessation, among other things. **Methods:** Cross-sectional data on general health and tobacco habits were obtained through a self-administered mail questionnaire in 2002 representing 50-year-old ($n = 6236$) and 60-year-old ($n = 6232$) Swedes in two counties. Participation rates were 70.2 and 75.7% in the both age cohorts, respectively. Of all participants 46.2% were male and 53.8% female. A general health index encompassing five items (score 0–5) was designed, with the best general health attributed to those scoring 5. **Results:** Male daily smokers accounted for 15.6% of the 50-year-olds and 18.7% of the 60-year-olds compared with 21.1 and 16.6%, respectively, for females. Corresponding figures for daily snuffing were 21.1 and 11.9% for men and 1.7 and 0.4% for women. When adjusting for age, sex, place of living, social network, education, and marital status, and related to subjects who never used tobacco, 'best general health' score 5, significant differences were found for ex-smokers (OR 0.82; 95% CI 0.74–0.90; $P < 0.001$) and ex-snuffers (OR 0.74; 95% CI 0.61–0.90; $P < 0.01$). **Conclusion:** Those who have stopped smoking or snuffing seem to be in a vulnerable condition with respect to general health and in need of extra support and health-promoting activities.

Keywords: epidemiologic survey, general health, middle-aged men and women, tobacco habits

Scientific research on smoking and its consequences for health convincingly concludes that smoking separately constitutes the most important human health hazard. In comparison with smoking studies, research into snuff use has been modest. Prevailing results suggest that snuffing is less harmful. The debate on the health risk of snuff continues.^{1–7} WHO defines health as 'a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity'.^{8,9}

Further health has been described as a complex and multifaceted dynamic experience governed by many factors, including physical, mental, emotional, social, spiritual, and societal health domains as a response to environment and lifestyle behaviour. Consensus still is lacking, making it difficult to define and measure health.

The initiation and maintenance of tobacco use as a lifestyle and its health consequences are complex and influenced by social, psychological, and biological factors.¹⁰ The consumption of snuff and cigarettes in Sweden has changed since the 1980s, most markedly for men, with reduced smoking and an increased use of snuff.^{5,11} According to the studies of living conditions in Sweden¹² in 2002, 16% of men and 19% of women were daily smokers, with the highest prevalence among 45- to 64-year-olds (males 23%; females 22.5%). Daily use of snuff among 45- to 54-year-olds and 55- to 64-year-olds was 20 and 11%, respectively.

Hatsukami *et al.*,¹³ in their review comparing the health consequences of cigarettes and smokeless snuff use, reported that cigarette smoking produced more negative health effects.

Lately oral smokeless tobacco has been suggested as a cessation method for cigarette smokers who are unable or unwilling to quit.^{14,15} This has led to aggressive marketing strategies by the smokeless tobacco industry, intensifying its focusing on adolescents and young adults. The consequences of this will be more people becoming tobacco-dependent and enhanced adverse health effects among adults in the future.

The aim of this study was to describe the general health of middle-aged Swedes related to tobacco habits and socioeconomic factors.

Material and methods

Study base: This study is based on cross-sectional data on general health, health behaviour, and socio-demographic factors obtained through a self-administered mail questionnaire in 2002. It included all subjects born in 1942 and 1952 in the counties of Örebro and Östergötland, Sweden ($n_{\text{total}} = 17\,138$; $n_{50\text{-year-old}} = 8878$; $n_{60\text{-year-old}} = 8260$). The final response rate was 72.8% ($n = 12\,468$); 50-year-olds = 70.2% ($n = 6232$) 60-year-olds = 75.5% ($n = 6236$). The design of the study, recruiting of participants and scope of this population-based cross-sectional health survey have been outlined elsewhere.¹⁶

Analysis of non-response: For the total groups born in 1942 and 1952, only the gender, age, and county of the non-responders could be analysed. There was no significant difference between non-responders with respect to county. The total population consisted of 50.6% men and 49.4% women. However, more women than men answered the questionnaire, i.e. 46.2% men and 53.8% women ($P < 0.001$). The response rate for those born in 1942 (60-year-olds) was significantly higher than for those born in 1952 (50-year-olds) ($P < 0.01$). An analysis of the non-response performed on those born in 1942 in 1992 demonstrated minor deviations from a random distribution, e.g. an overrepresentation of women and individuals with low education and fewer teeth.¹⁷ Thus, some caution is advisable in interpreting the data.

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Dependent variables

General health was created as a pooled score index (score 0–5; score 5 defined as ‘best general health’) based on the following questionnaire questions and answers:

Health status was assessed by four indicators. For each item, ‘Yes’ was scored as 1 and ‘No’ as 0.

‘Do you regard your health as good?’ ‘Do you regard your general state of health as better or worse compared with your neighbours of the same age?’ ‘Have you been in contact with a physician during the past 3 months?’ ‘Have you used pharmaceuticals during the past fortnight?’ ‘Have you been sick-listed during the past 3 months?’

Independent variables

Socio-demographic characteristics

Age: 50 and 60 years old.

Gender: Men, Women.

Marital status: What is your present marital status? Married/cohabitant, score 1; Single, score 0.

Place of living: City or Town, score 1; Rural, score 0.

Social network: ‘How many people, who you know, do you meet or speak to during an ordinary week?’ 6 or more per week, score 1; Less than 5 per week, score 0.

Education: ‘What is your level of education?’ College or high school/grammar school, score 1; Secondary education or primary education, score 0.

Working hours: ‘How much do you work on average?’ One hour or more, score 1; Not at all, score 0.

Tobacco habits

Smoking: Smoking was classified based on the question, ‘What are your smoking habits?’ with the following alternatives: Smoke

daily; Have been a smoker but finished; Have never been a smoker; Occasional smoker.

Tobacco use included current daily cigarette smoking and smokeless use of snuff.

Snuffing: Snuffing was classified based on the question, ‘What are your snuffing habits?’ with the following alternatives: Daily snuffing; Have been a snuffer but finished; Never been a snuffer; Occasional snuffer.

The studies were conducted according to Swedish law.

Statistical methods

Descriptive statistics were computed to evaluate the data for general health according to smoking and snuffing habits (table 1). Binary logistic regression analysis was used to determine the odds ratios for ‘best general health’ (score 5) according to smoking and snuffing habits (table 2). The relationship between the dependent variables and the independent variables was modelled and evaluated in subsequent steps. The statistical significance was tested, and $P < 0.05$ was considered statistically significant. All analyses were done using the statistical package Stata, version 8.0 (Stata Corporation, TX).

Results

Among 50-year-old men, 15.6% smoked daily, whereas 18.7% of 60-year-old men smoked daily. The comparative figures for women were 21.1 and 16.6%, respectively. Snuff was consumed daily by 21.1 and 11.9% of the men and 1.7 and 0.4% of the women, respectively. Distribution of general health among 50- and 60-year-olds related to smoking and snuffing habits is shown in table 1. Among those with a general health score of 5, the differences were greatest between daily smokers and non-daily smokers aged 50. Minor differences were found in prevalences for male users and non-users of snuff. When adjusted for age, gender, place of living, social life, work, and marital status, significant differences were found in odds

Table 1 Distribution of ‘general health’ (score 0–5) in percentage among 50- and 60-year-old men and women related to smoking and snuffing habits. Score 5 characterizes the group with ‘best general health’

Age	Gender	Tobacco use	<i>n</i>	0	1	2	3	4	5
50 years	Male	Daily smoker	481	7.3	6.6	12.1	13.1	21.4	39.5
		Not daily smoker	2148	3.7	3.7	5.3	15.2	24.2	47.9
									Diff: –8.4%
		Daily snuffer	526	4.6	3.6	5.7	16.3	21.3	48.5
	Female	Not daily snuffer	2080	4.3	4.3	6.8	14.4	24.3	45.9
									Diff: +2.6%
		Daily smoker	700	8.1	8.0	10.3	16.9	22.6	34.1
		Not daily smoker	2340	5.7	4.7	8.1	16.9	26.4	38.2
60 years	Male								Diff: –4.1%
		Daily smoker	486	6.0	8.9	7.0	17.7	21.4	39.1
		Not daily smoker	2300	5.5	7.3	8.8	17.5	24.9	36.0
									Diff: +3.1%
	Female	Daily snuffer	327	6.7	7.0	13.8	16.5	19.6	36.4
		Not daily snuffer	2428	5.4	7.7	7.7	18.0	25.0	36.3
									Diff: +0.1%
		Daily smoker	498	9.2	11.4	10.6	17.1	24.5	27.1
		Not daily smoker	2335	6.8	8.2	10.7	19.2	26.1	29.0 Diff: –1.9%

Table 2 Odds ratios (ORs) for 'best general health' (category 5) according to use of tobacco

	OR	(95% CI) ^a	OR	(95% CI) ^b	OR	(95% CI) ^c	OR	(95% CI) ^d	OR	(95% CI) ^e
Daily smoker	0.85	0.76–0.94**	0.82	0.74–0.92**	0.80	0.70–0.90***	0.87	0.77–0.99*	0.90	0.79–1.02 ns
Occasional smoker	1.09	0.93–1.29 ns	1.02	0.87–1.21 ns	1.00	0.85–1.18 ns	1.05	0.88–1.26 ns	1.05	0.87–1.26 ns
Ex-smoker	0.84	0.77–0.92***	0.84	0.77–0.92***	0.80	0.73–0.87***	0.80	0.72–0.88***	0.82	0.74–0.90***
Daily snuffer	1.17	1.01–1.35*	1.09	0.94–1.26 ns	0.88	0.75–1.03 ns	0.92	0.77–1.09 ns	0.94	0.79–1.12 ns
Occasional snuffer	0.87	0.67–1.12 ns	0.83	0.65–1.08 ns	0.73	0.56–0.95*	0.76	0.57–1.01 ns	0.78	0.58–1.05 ns
Ex-snuffer	0.95	0.81–1.13 ns	0.92	0.78–1.08 ns	0.74	0.62–0.89**	0.73	0.60–0.89**	0.74	0.61–0.90**

Odds ratios (OR) were determined using those who never have used tobacco as baseline

*Significant at 5%; **significant at 1%; ***significant at 0.1%

a: Crude

b: Adjusted for age

c: Adjusted for age and gender

d: Adjusted for age, gender, place of living, social life, work, and marital status

e: Adjusted for age, gender, place of living, social life, work, education, and marital status

ratios among ex-smokers and ex-snuffers related to 'best general health' score 5 (table 2). The percentage was lower for users than for non-users related to general health score 5 for 50-year-old daily smokers (−8.4%), 50-year-old female daily users of snuff (−4.1%), and 60-year-old women who smoked daily (−1.9%). Correspondingly higher percentages related to general health score 5 were found for male daily smokers (+2.6%), male daily smokers (+3.1%), and female daily users of snuff (+0.1%).

Discussion

Daily smoking in this study was more common among women than among men, whereas the use of snuff was infrequent among women. Smoking and snuffing were related to general health. When adjusted for social and working conditions, lower odds ratios of having 'best general health' score 5 were found for ex-smokers and ex-snuffers. This finding could be due to mental and/or physiological reasons due to quitting of smoking and snuffing. It could also be that ill health or risk of having ill health was the reason for quitting. The design of the study did not permit us to study this.

The main strength of the study is the large number of subjects and the response rate, which exceeds 70%. However, among the drop-outs there might be an overrepresentation of smokers and snuffers, and subjects with health problems.¹⁸ In spite of this we found the measure used combining professional and the individual's self-perceived health to assess general health robust and justified in this type of study. Bias due to individual differences in respondents' ability to remember and the tendency to give socially desirable answers has been reported to be of minor importance.^{19–22} However, it should be borne in mind that dimensions of health mean different things to different people and that even the professional judgement is subjective and influenced by the patients' self-perceived health. The prevalences of tobacco use in the two studied counties were similar to national figures.²³

General health was influenced by work status (lower ratings among the unemployed), education (higher education was associated with higher ratings). This has earlier been shown to be an effect of lower cessation rates for subjects with lower education and living as cohabitants.^{24,25}

The subjects in this study were teenagers during a period in Sweden when society in general tolerated tobacco use. The difference in smoking prevalence found between 50-year-olds and 60-year-olds might be the result of a change in view and a more restrictive attitude with respect to tobacco use in Sweden during the childhood of those born in 1952 compared with those born in 1942. Ex-smokers were more frequent among men in our study, in concordance with Rodu *et al.*,²⁶ who reported snuff

as an important and frequently used adjuvant in promoting smoking cessation.

Notably, and of practical importance for tobacco preventive measures, were the findings that ex-smokers and ex-snuffers had the lowest odds ratios related to 'best general health' score 5. In these circumstances the high relapse rates reported after quitting smoking or snuffing is an important matter of concern. Reason for relapse could be enhanced physiological effects after ceasing to use tobacco,²⁷ and adaptive reactions by ex-smokers and ex-snuffers due to continued thinking or worrying about the threat of still becoming ill or developing other problems as a consequence of their former tobacco habits.²⁸

When quitting, which may have many different causes such as bad health and economy, the absence of nicotine leads to individual physical and psychological withdrawal symptoms, which can last for varying lengths of time.²⁹ These uncomfortable symptoms can lead to relapse and continued use of tobacco to boost the lower levels of nicotine in the blood. Even if reports diverge, nicotine dependency seems to be similar for smokers and snuffers.³⁰ Until now, researchers and practitioners have mainly focused on smoking in relation to cessation of tobacco use,³¹ whereas snuff has received little attention.³² Even if present knowledge suggests that snuff has fewer adverse health effects, making it tempting to recommend snuff as an aid to giving up smoking, it should be kept in mind that a report by Gilljam and Galanti⁶ indicates that snuff is not a necessary component of smoking cessation. Most men in their sample who quit smoking did so without using snuff, and the duration of abstinence was not affected by snuff use. As many questions about nicotine dependence and its consequences remain unanswered, it is too early to declare snuff as a useful component in smoking cessation. Research is warranted into the development of new methods and techniques based on longitudinal studies. Whether research should include a study of the factors that exacerbate and facilitate smoking cessation, especially in relation to the consumption of snuff?³³

It is well known that the major health problems caused by lifestyle factors such as tobacco use in youth give rise to health problems later in adulthood. As clear evidence is still lacking and further, more rigorous studies with adequate sample sizes have been proposed,⁴ primary tobacco preventive measures should be undertaken to inform young people about nicotine dependence associated with both smoking and snuffing to avoid the misunderstanding allowing snuff to be considered a harmless product.¹⁵

Conclusion

The present results show that those who have stopped smoking or snuffing seem to be in a vulnerable condition with respect to

general health and in need of extra support and health-promoting activities.

Key points

- The study asks how smoking and snuff use are associated with best general health.
- Those who had stopped smoking or snuffing had the poorest general health.
- Cessation measures that minimize withdrawal symptoms and help ex-smokers and ex-snuffers to avoid a relapse into their tobacco habits need to be developed.

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