Unemployment and change in smoking behaviour among Danish adults

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Abstract

Objective - To describe changes during the period 1982 to 1992 in the prevalence of daily smoking in relation to occupation, and to examine the effect of becoming unemployed on smoking prevalence among Danish men and women.

Design - Questionnaire data collected in two independent cross-sectional studies. In 1982 the participation rate was 79% among 4807 randomly selected men and women aged 30, 40, 50, and 60 years. In 1992 it was 73% among 2226 randomly selected men and women of similar ages. Five years later the participants from the study in 1982 were re-examined. Of the 2432 men and women who were employed at the initial examination, 190 had been unemployed for more than one month.

Setting - Eleven municipalities in the county of Copenhagen.

Main outcome measures - Prevalence of daily and heavy smoking.

Results - From 1982 to 1992, the prevalence of daily smoking decreased from 59% to 48% in men and from 50% to 46% in women, but the falling prevalence was found only among skilled workers and in the group of salaried employees and civil servants. An existing occupational difference in smoking prevalence was enhanced. In the 1982 study 63% of women who subsequently experienced unemployment smoked daily; this was a significantly higher percentage than the 47% of daily smokers among women who remained continuously employed. In men there was no such difference. The experience of unemployment during the five-year follow up was not associated with increased prevalence of daily smoking in men or women.

Conclusion - Smoking prevalence declined in Denmark in the 1980s, during which time the disparity in smoking by occupational status increased. Becoming unemployed was not associated with increased prevalence of smoking in men or women.

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Keywords: smoking behaviour; unemployment; Denmark

Introduction

Several population studies have indicated a strong relationship between occupational status and smoking behaviour.¹⁻³ In Denmark, cross-sectional surveys on smoking behaviour since 1970 have shown that men and women in unskilled manual jobs are more likely to smoke than salaried employees.³ Recent studies have also shown that the unemployed are more likely to smoke than employed people.⁴

As unemployment is a persisting problem in Denmark and other European countries, it is important for future anti-smoking efforts to know why smoking rates are high among the unemployed. Possible explanations for the high prevalence of smoking among the unemployed are that loss of employment leads to an increased prevalence of smoking, or that people who lose employment are more likely to be smokers before leaving employment compared with people who remain employed. Despite the amount of research that has been carried out on the health consequences of unemployment, few investigators have studied the effect of unemployment on smoking behaviour.

In a study of 6057 middle-aged British men who were followed during five years after an initial health screening in 1978-80, unemployment was not associated with an increased prevalence of smoking but men who subsequently experienced unemployment were more often smokers than men who remained continuously employed.⁵ In a longitudinal study of 1060 Swedish school-leavers, however, clear effects of unemployment were found among young women but not among men. Of 21-year-old women who had been long-term unemployed during a five-year period, 64% increased their tobacco use compared with the pre-employment period. In total 75% of these women were smokers.⁶

The aims of the present study were: (a) on the basis of two identical cross-sectional studies, to describe changes over 10 years in smoking prevalence in relation to occupational status; and (b) in a five-year follow-up of those who were employed in the first cross-sectional study, to analyse the effect of unemployment on the prevalence of smoking.

Methods

The data were collected from two cross-sectional studies in the World Health Organisation (WHO) project 'MONItoring

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Table 1 Distribution of participants in MONICA I (1982) and MONICA III (1992)

	<i>Participants</i>	
<i>Age (years)</i>	<i>Men No (%)</i>	<i>Women No (%)</i> *
MONICA I		
30	484 (81)	484 (80)
40	500 (83)	480 (80)
50	493 (82)	472 (78)
60	463 (77)	409 (68)
Subtotal	1940 (81)	1845 (77)
Total	3785 (79)	
MONICA III		
30	201 (69)	205 (76)
40	201 (70)	206 (76)
50	200 (71)	206 (77)
60	204 (75)	202 (71)
Subtotal	806 (71)	819 (75)
Total	1625 (73)	

* Percentages in parentheses represent participation rates within each MONICA age stratum.

trends and determinants in Cardiovascular disease (MONICA) 1982–1992 in Denmark'.

The participants were drawn from two stratified random samples of people aged 30, 40, 50, and 60 years among the population in 11 municipalities in the western part of the county of Copenhagen. In 1982 the sample consisted of 4807 men and women; in 1992, 2226 men and women. The method of data collection was the same in the two studies.

All received a standardised questionnaire concerning smoking and sociodemographic conditions, including questions on occupational history, and an invitation to participate in a health examination at the hospital.

Among those invited, 79 % in 1982 and 73 % in 1992 participated in the study. Table 1 gives the sex and age distribution. After five years, all Danish citizens who participated in the study in 1982 were invited to a follow-up examination. Of 3608 invited, 2987 (83 %) attended the re-examination. Data from the 1982 examination show a difference in smoking status between non-attenders and attenders at the five-year follow up. Non-attenders were more often daily smokers than attenders (63 % vs 53 %). Additional information on non-attenders and the methods of data collection have been reported elsewhere.⁷

Smoking behaviour was examined using the questions recommended by WHO to categorise smokers as present smokers: 'Do you smoke?' 'Daily?' 'Sometimes?' 'Never?'; or as former smokers: 'Have you smoked previously?' Present and former smokers were asked about their present or past average daily

consumption of cigarettes, cheroots, cigars, and pipe tobacco. Self-report is usually a satisfactory way to classify cigarette smoking in epidemiological surveys⁸ and this was confirmed in the baseline study by cross-classification with serum thiocyanate.⁹ In the present study daily and heavy smoking were used as dependent variables. Heavy smokers were defined as subjects with a daily tobacco use of more than 14 g. Converted into grammes of tobacco, one cigarette equals 1 g, one cheroot 2 g, one cigar 3 g.

Occupational classification was elicited by the question, 'What is your occupation at the moment?' Responses could be given in the categories: self-employed; assisting spouse; skilled worker; unskilled worker; salaried employee or civil servant; student; pupil; pensioner; disability pensioner; housewife; unemployed; early retirement pension; other. To determine the effect of becoming unemployed on smoking prevalence, the analysis was restricted to those who were employed at the examination in 1982. Those classified at the initial examination as pensioner, disability pensioner, unemployed, early retirement pension, student, pupil, housewife, or other were excluded.

For this study participants were classified by their employment experience at the initial examination and five years later as: (a) continuously employed throughout the five years; (b) discontinuously employed (that is, employed at the initial examination and still employed at the time of the follow up but unemployed for more than one month at some time between the two examinations; and (c) unemployed at the follow up.

Of the 1336 men and 1106 women who were employed at the initial examination and who attended both examinations, 1083 men (81 %) and 866 women (78 %) had been continuously employed. Table 2 provides data on age and percentage of unskilled workers among continuously and non-continuously employed. The continuously employed men and women were nearly the same age as men and women who experienced unemployment but the non-continuously employed were more likely to be unskilled workers than the continuously employed.

STATISTICAL ANALYSIS

The χ^2 test was used to test significance in differences in proportions. Differences were considered significant for $p < 0.05$. A Mantel-Haenszel test with adjustment for unskilled occupation was used for detection of differences between continuously and non-continuously employed, calculating the odds ratio and 95 % confidence interval for daily smoking.

Results

Table 3 shows that the proportion of daily smokers was highest among unskilled workers and the unemployed both in 1982 and 1992. The overall prevalence of daily smoking decreased from 59 % to 48 % in men and from

Table 2 Characteristics of men and women employed at the examination in 1982

Employment status	No	Mean age (years)	Unskilled workers (%)
Men			
Continuously employed	1083	41.9	10
Non-continuously employed	96	43.2	21
Discontinuously employed	66	39.3	20
Unemployed	30	51.3	23
Women			
Continuously employed	866	40.2	17
Non-continuously employed	94	43.0	39
Discontinuously employed	56	43.0	32
Unemployed	38	42.7	47

Table 3 Percentage of daily and heavy smokers in relation to occupational status, 1982 and 1992

	Daily smokers		Heavy smokers	
	1982 % (n)	1992 % (n)	1982 % (n)	1992 % (n)
Men, all	59(1149)	48(385)*	37(724)	34(278)
All employed	59(954)	50(318)*	37(602)	33(226)
Self-employed	56(101)	50(45)	41(73)	39(35)
Salaried employed/ civil servant	55(517)†	43(160)*†	33(311)	29(107)
Skilled worker	64(172)†	45(51)*	39(106)	29(32)*
Unskilled worker	67(164)†	61(62)‡	46(112)	52(52)‡
Unemployed	59(72)	66(40)‡	45(55)	56(34)‡
Women, all	50(921)	46(373)*	24(451)	26(211)
All employed	50(668)	44(257)*	26(342)	26(151)
Self-employed	54(20)	47(8)	32(12)	29(5)
Salaried employed/ civil servant	47(431)†	40(175)*†	24(217)†	24(103)
Skilled worker	few	few	few	few
Unskilled worker	59(183)†	53(57)†	30(93)	32(34)
Unemployed	66(63)‡	49(38)*	40(38)‡	26(20)

* $p < 0.05$ in χ^2 test, 1992 versus 1982.† $p < 0.05$ in χ^2 test, the marked group *vs* other groups of employed for the year concerned.‡ $p < 0.05$ in χ^2 test, unemployed *vs* all employed for the year concerned.

|| Including pensioners, students, and housewives who are not included in "employed" and "unemployed" categories.

50 % to 46 % in women but this fall in prevalence was not significant among the self-employed, unskilled workers, and the unemployed. The prevalence of heavy smoking was unchanged from 1982 to 1992.

Table 4 gives the proportions of daily and heavy smokers in the different employment groups both at the initial examination and five years later. The proportion of daily smokers who were not smoking at follow up is also given. At the initial examination, women who later became unemployed were significantly more often daily smokers (63 %) than women who remained continuously employed (47 %). In men this difference was not significant. Five years later the prevalence of daily smoking had decreased among continuously employed men but not among the non-continuously employed men. In women no change in the prevalence of smoking was observed.

The proportion of those smoking daily in 1982 who were not smoking at the five-year follow up was similar for continuously employed (13 %) and non-continuously employed (11 %) women (table 4). Non-continuously employed men tended to be less likely than

continuously employed men to quit smoking but, possibly because of small numbers, the difference was not significant.

Both smoking and unemployment were associated with being an unskilled worker, and adjustment for possible confounding by occupation reduced the odds ratio for the association between prevalence of daily smoking and non-continuous employment.

Discussion

The participation rates at the two cross-sectional studies and at the follow-up study were relatively high (79 %, 73 %, and 83 %, respectively), so any bias from non-response or attrition is likely to be limited.

For the description of variables, the survey employed data collected on the basis of a standardised questionnaire, using questions that were considered satisfactory for estimating smoking status.⁹

During the 10-year study period, the prevalence of daily smoking decreased but the falling prevalence was seen predominantly among skilled workers and in the group of salaried employees and civil servants. An existing occupational difference in smoking was enhanced. It should be noted that, for the groups with relatively few subjects (self-employed and unemployed), the study lacks the power to detect minor changes in smoking prevalence. Similar trends in the prevalence of smoking have been observed in repeated nationwide studies in Denmark,^{3,4} and in studies from the UK^{2,10} and the US.¹

The unchanged prevalence of heavy smokers observed in the present study has also been reported in the nationwide Danish studies.^{3,4} Similar to a study of British middle-aged men,⁵ this study of Danish men and women did not find that smoking prevalence increases with unemployment. More unemployed than employed women were smokers but they also smoked more before unemployment.

This study suggests that being an unskilled worker is associated with smoking and unemployment, especially among women. This finding is supported by other studies showing

Table 4 Percentage of daily and heavy smokers in 1982 and 1987, and the percentage of those smoking daily at the initial examination in 1982 who were not smoking five years later, by employment status at follow up (among those employed at the initial examination)

Employment status at follow up	Daily smokers		Heavy smokers		Daily smokers in 1982; not smoking in 1987
	1982	1987	1982	1987	
Men					
Continuously employed	57	51*	36	34	10
Non-continuously	63†	61‡	37	34	3
Discontinuously	59	56	36	30	-
Unemployed	67	67	37	40	-
Women					
Continuously employed	47	44	24	28	13
Non-continuously	63	56¶	33	33	11
Discontinuously	57	52	34	36	-
Unemployed	71	61	34	32	-

* $p < 0.05$ in χ^2 test, 1987 versus 1982.

Odds ratio (OR) calculated comparing non-continuously employed with continuously employed for the given year. Adjusting for unskilled occupation.

† Unadjusted OR = 1.23 (0.78–1.93); adjusted OR = 1.20 (0.77–1.84).

‡ Unadjusted OR = 1.49 (0.95–2.34); adjusted OR = 1.38 (0.88–2.15).

|| Unadjusted OR = 1.89 (1.19–3.00); adjusted OR = 1.69 (1.05–2.69).

¶ Unadjusted OR = 1.59 (1.02–2.50); adjusted OR = 1.43 (0.90–2.26).

that female gender and lower socioeconomic status are important correlates of smoking.^{10,11} Little is known of the interaction between gender, social status, and smoking but it has been shown that, in women of lower socioeconomic status, smoking is linked to demanding family care responsibilities and financial difficulties.¹⁰

Findings from this study suggest that it is important to direct smoking prevention efforts towards the working class. In this context it is of paramount importance to know in more detail how smoking is adopted, maintained, and discontinued in this group. Research should be directed towards qualitative methods in combination with social epidemiology, to identify the underlying mechanisms and mediating factors responsible for the unevenly distributed prevalence of smoking in society.

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