

Smoking During Pregnancy in Finland: Determinants and Trends, 1987–1997

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ABSTRACT

Objectives. This study examined determinants of and trends in smoking during pregnancy in Finland from 1987 through 1997.

Methods. A repeated cross-sectional investigation of 694 926 women was conducted.

Results. The prevalence of smoking during pregnancy remained similar from 1987 through 1997 (at 15%). In 1997, prevalences of smoking were alarmingly high among young (37%), single (30%), and less educated (25%) women and among women living in northern (20%) and eastern (19%) Finland. These determinants were persistent over time, with the exception of an increase in regional differences.

Conclusions. Despite increasing knowledge of adverse effects, smoking during pregnancy has not declined in Finland over the past decade. (*Am J Public Health*. 2001;91:284–286)

The adverse effects of smoking during pregnancy on fetal growth have long been established,¹ and prenatal exposure to tobacco smoke has been linked to an increased risk of perinatal death.² From the public health viewpoint, smoking during pregnancy is among the most important of preventable prenatal health risk factors.

In Finland, nurses and physicians are advised to routinely encourage pregnant women to stop smoking. Recent United Kingdom time trend data suggest that current practices designed to prevent smoking during pregnancy are not effective or that implementation of programs has been hampered by a lack of sufficient prioritization.³

We assessed changes from 1987 through 1997 in the prevalence of smoking during pregnancy in Finland and evaluated potential differences according to geographic area and age group, marital status, and occupation of the mother.

Methods

Since January 1987, the Finnish Medical Birth Registry has used a standard form to collect nationwide information on smoking habits during pregnancy. A question on mother's occupation was added in October 1990. The primary study population for the present analyses was composed of 694 926 women who gave birth from 1987 through 1997 in Finland; the sample included 508 003 deliveries that took place from 1991 through 1997.

Registry data were validated with information obtained in the Finnish Prenatal Environment and Health Study. In that study, we collected questionnaire information on smoking during pregnancy from all mothers who gave birth between May 1, 1996, and April 30, 1997, in 2 hospital districts in southeastern Finland and retrieved information on smoking during pregnancy among these mothers from medical records completed during pregnancy. A

total of 2751 deliveries occurred during the study period, and 2591 mothers completed questionnaires (response rate: 94%). Information from medical records and the birth registry was also available for these 2591 mothers.

We calculated annual prevalence of smoking during pregnancy. Ninety-five percent confidence intervals (CIs) based on a binomial distribution were always narrow (less than 1%) and therefore are not shown. We compared prevalences according to the following potential determinants: time period; age group, marital status, and occupation of the mother; and geographic area. We compared birth registry data on smoking with the corresponding information derived from the questionnaire and from the medical records of the Prenatal Environment and Health Study population. Goodness of agreement was quantified via the kappa statistic.⁴

Results

The overall prevalence of smoking during pregnancy in 1997 was similar to the prevalence in 1987 (Figure 1). An increase in prevalence occurred in the early 1990s, followed by a decrease in 1994 back to the level of 1987.

Young women had the highest prevalence of smoking during pregnancy; smoking preva-

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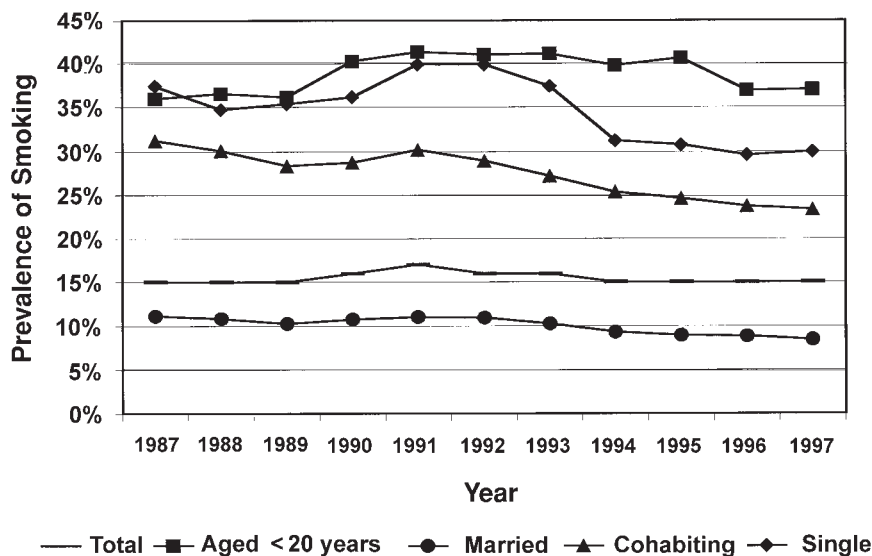


FIGURE 1—Smoking during pregnancy in Finland, 1987–1997: (1) all women and (2) young (less than 20 years), married, cohabiting, and single women.

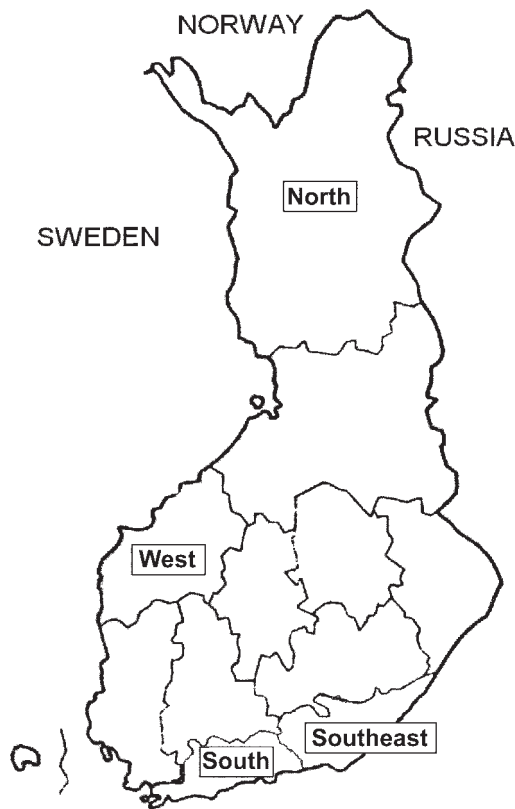


FIGURE 2—The 4 study regions, Finland, 1987–1997: north (Lapland), south (Uusimaa), west (Vaasa), and southeast (Kymi).

lences in 1997 were 37% and 23% in women 19 or younger and those aged 20 to 24 years, respectively (Figure 1).

Marital status was a strong determinant of smoking during pregnancy, with single mothers smoking at a rate (30%) more than 3 times that of married women (8%) in 1997. Women who were not married but were living with the father also smoked more often (23%) than married women. Differences between the groups remained similar during the entire study period.

The prevalences of smoking during pregnancy were highest among workers (29% in 1991 and 25% in 1997) and among mothers whose occupation was unknown (25% and 21%). The prevalence was remarkably high and constant over time among housewives (21% in both 1991 and 1997). Women of higher occupational status smoked less often during pregnancy, and the prevalence trend for this group showed a decrease (6% in 1991 and 4% in 1997).

In 1987, 18% of all pregnant women in northern Finland (Lapland) and southern Finland (Uusimaa) were smokers (Figure 2 shows the 4 study regions). Ten years later, prevalences were 20% in Lapland and 16% in the region of Uusimaa. By 1997, the differences between those residing in southern and western Finland and those residing in northern and eastern Finland had increased. Western Finland showed the lowest occurrence of smoking during pregnancy over the study period (range: 10% to 13%). In southeastern Finland (Kymi), rates increased from 16% to 19% between 1987 and 1997.

Among the 2591 women participating in the Finnish Prenatal Environment and Health Study in southeastern Finland, 577 (22%) reported that they smoked daily or occasionally at some point during pregnancy. Finnish Medical Birth Registry data on smoking during pregnancy were in excellent agreement with the questionnaire information ($\kappa=0.84$, 95% CI=0.81, 0.87), and with the information abstracted from medical records ($\kappa=0.89$, 95% CI=0.86, 0.91).

Discussion

Our study shows that smoking during pregnancy is alarmingly common among young women, women with less education, and women living in the northern and eastern parts of Finland. The influence of the main determinants of smoking—age, occupation, marital status, and geographic area—was persistent, with the exception of an increase in geographic differences over time.

In spite of increasing professional knowledge of the adverse effects of smoking during pregnancy and health education efforts, smoking during pregnancy has not declined in Fin-

land over the past decade. Regional differences in smoking during pregnancy, closely linked to educational and socioeconomic differences, have increased.

Our analysis of the determinants of smoking during pregnancy revealed the most important target groups for future action to be young, less educated, and unmarried women, and to some degree women living in rural areas. In addition to the need to focus efforts on these target groups, there seems to be a need to revisit the current approaches used in overall tobacco use prevention. Surveillance of smoking during pregnancy as part of birth registration appears to be a valid source of information, and such

data are useful in identifying target groups for smoking prevention programs and evaluating the influence of preventive efforts. □

Contributors

N. Jaakkola participated in the planning and analysis of the study and wrote the paper. M. S. Jaakkola and M. Gissler contributed to the interpretation of the results and the writing of the paper. J. J. K. Jaakkola initiated the study and supervised the data analysis, interpretation of the results, and writing of the paper.

Acknowledgments

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