To the Editor,

As the population ages, there is a need to re-evaluate current cardiovascular disease (CVD) prevention practices in the elderly. While the benefits of smoking cessation and of smoking abstinence in the elderly are well established (1-3), physicians are less likely to assess smoking status in the elderly (4), advise older patients to quit (5), or introduce lifestyle modification for CVD prevention in the elderly (2). The study of smoking practices and their trends in the elderly may help illustrate the importance of addressing smoking in this population. The present study examined cigarette smoking trends in a population-based sample of Minnesotans aged 75-84 years.

The Minnesota Heart Survey (MHS) has been described previously (6). Briefly, it is a population-based surveillance study of CVD risk factors in Minneapolis/Saint Paul residents (2000 census: 2.6 million). MHS has completed 6 surveys (1980-82, 1985-87, 1990-92, 1995-97, 2000-02, and 2007-09); the last four surveys included participants aged 75-84 years. Ethical approval was provided by the Internal Review Board of the University of Minnesota, and participants provided informed consent.

Population-based sampling involved a two-stage strategy. The metropolitan area was divided into census-defined clusters and households were then randomly selected within included clusters. Participants completed a home interview and a clinic visit. A total of 268,
318, 142, and 145 adults aged 75-84 years participated in both components of the four most recent surveys, respectively.

Smoking status was assessed by self-report. In earlier surveys, smoking status was validated using serum thiocyanate level. Validation was not performed in 2007-09 due to high concordance with self-report in previous surveys (6). We examined sex-specific trends using generalized linear mixed models that contained a random effect to account for the clustered sampling. Age-adjusted prevalence was estimated for an age of 80 years.

Participants were predominantly Caucasian (range: 98.5%-100%), and the majority were women (53.8%-67.9%). The median age varied from 77.4 to 78.9 years.

The overall prevalence of current cigarette smoking was less than 8% in all surveys and did not change substantially over time (p=0.36). In 1990-92, the prevalence of current smoking was 7.8% in men and 4.4% in women (Figure). By 2007-09, it was 4.3% and 2.5%, respectively (p=0.29 and p=0.58, respectively). Combining the 4 surveys, 20 of 23 currently smoking men and 27 of 28 currently smoking women smoked ≤20 cigarettes per day.

The prevalence of ever smoking increased among women across surveys (p=0.08)(Figure). This increase was due to an increased prevalence of past smoking (p=0.04). In contrast, the prevalence of ever and past smoking was consistent among men (p=0.81 and p=0.44, respectively).

Among past smokers, participants reported quitting at increasingly younger ages. Among men, the reported quitting age decreased from 50.7 years in 1990-92 to 44.6 years in 2007-09 (p=0.0002). Among women, it decreased from 56.0 years to 45.7 years (p=0.0002). The prevalence of quitting for health reasons was 25.0% in 1995-97 and 38.2% in 2007-09 among men (p=0.38) and 45.5% and 40.7% among women, respectively (p=0.86).

The benefits of smoking cessation and abstinence in the elderly include decreased morbidity and mortality due to CVD and smoking-related cancers, better physical function, and higher quality of life (1-3). Many of these benefits occur within 1-2 years of quitting (1;3). While the prevalence of smoking has remained consistent over the last 20 years, the absolute number of elderly smokers is increasing as the population ages. Given the high underlying CVD risk in the elderly, the absolute number of events that can be prevented at a population level through smoking cessation is substantial (2).

The observed low prevalence of smoking is likely explained, in part, by selective attrition due to increased mortality among smokers. However, with improved medical care, this survival difference may be decreasing; our sample experienced a change in demographics over time, with an increasing proportion of men in later surveys. Other factors that likely contributed to the low prevalence of smoking include implemented population-level interventions, such as legislation limiting smoking in public places and anti-smoking programs (e.g., ClearWay Minnesota).
Limitations of the present study are the restriction to community-dwelling subjects, a possible under-representation of smokers due to volunteer bias, recall bias, a decreasing response rate, a modest sample size, and unclear generalizability to other geographic areas.

In conclusion, between 1990 and 2009, the prevalence of current smoking in the elderly remained consistently low as a result of quitting, anti-smoking programs, and probable effects of selective mortality among smokers. With an aging population, the absolute number of elderly smokers will likely increase despite its low prevalence.

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References

Figure.
Population-based trends in age-adjusted prevalence of current and ever smoking among men and women aged 75 to 84 years participating in the Minnesota Heart Survey. Data were plotted at the midpoint of each survey, and models were age-adjusted using generalized linear mixed models and setting the age term to 80 years. P-values are for linear trends.