LETTERS TO THE EDITOR

Letters intended for publication should be a maximum of 500 words, 10 references, and one table or figure, and should be sent to Simon Chapman, Deputy Editor, at the address given on the inside front cover. Those responding to articles or correspondence published in the journal should be received within six weeks of publication.

Do men and women differ in exposure per cigarette?

EDITOR,—A recent report has suggested that women smokers may be more susceptible to lung cancer of all major histological groupings than men smokers.[1] Efforts to assess differential exposure to tobacco combustion products using daily cigarette consumption or pack-years, however, might be misleading because of gender differences in body weight, body fat, smoking topography (puff volume, puff number), etc, that could result in the same number of cigarettes producing male-female differences in exposure.

Plasma concentration of cotinine, a metabolite of nicotine with a half-life of approximately 18–20 hours,[2] generally reflects amount of exposure to cigarette smoke and its associated hazards.[3] Self-reported smoking status (smoking *vs* non-smoking) has generally been shown to be reliable except in participants in a smoking-cessation intervention, although the reliability of self-reported daily cigarette consumption is less well documented.[4] The availability of a database that includes measures of both self-reported cigarettes/day and concentrations of plasma cotinine during *ad libitum* smoking enabled a comparison of mean exposure/cigarette (calculated by dividing plasma cotinine by cigarettes/day) for men *vs* women. Subjects were 162 men and 93 women recruited to participate in experiments in our laboratory. Although inclusion/exclusion criteria varied across studies, subjects were generally selected for being moderate-to-heavy smokers in otherwise good health. Plasma cotinine concentrations were analysed using the high performance liquid chromatographic (HPLC) method developed by Hariharan *et al*.[5] Subject characteristics, demographic data, and smoking patterns are shown in the table.

Despite small but significant differences in the machine-rated nicotine yield of their usual brands, exposure for men as a result of each cigarette smoked (mean (SD) plasma cotinine/cigarette = 10.5 (SD 6.0) ng/ml) was almost identical to that of women (10.6 (SD 4.8) ng/ml). Our data are consistent with, and extend to a large number of subjects, findings by Benowitz and Jacob,[6] who studied 10 male and 10 female smokers using a much more sophisticated methodology. These investigators showed no significant gender differences in either nicotine intake per cigarette or per cent conversion to cotinine, although considerable individual variability in the extent of nicotine-to-cotinine conversion was found. Nevertheless, when the derived constant *K* reported by these investigators (0.083 for men and 0.076 for women) was used to estimate nicotine intake per cigarette from observed plasma cotinine values in our study, differences between men (0.87 (SD 0.50) mg/cigarette) and women (0.80 (SD 0.37) mg/cigarette) were still not significant.

Failure to detect any gender differences in either plasma cotinine per cigarette or estimated nicotine intake per cigarette in a relatively large sample suggests that daily cigarette consumption or pack-years are in fact reasonably good measures of exposure for the purposes of assessing possible gender differences in the health effects of smoking. Similar levels of exposure, however, probably lead to higher concentrations of toxins in the smaller lungs of women—a factor that should be ruled out before prematurely inferring greater biological susceptibility in women.[1]

CYNTHIA S POMERLEAU
OVIDE F POMERLEAU
Department of Psychiatry, University of Michigan, 475 Market Place, Suite L, Ann Arbor, Michigan 48108, USA; email: cspom@umich.edu

1 Risch HA, Howe GR, Jain M, Burch JD, Holowaty EJ, Miller AB. Are female smokers at higher risk for lung cancer than male smokers? A case-control analysis by histological type. *Am J Epidemiol* 1993;**138**:281–93.
2 US Department of Health and Human Services. *The health consequences of smoking: nicotine addiction. A report of the Surgeon General, 1988.* Rockville, Maryland: Public Health Service, Centers for Disease Control, Office on Smoking and Health, 1988. (DHHS Publication No (CDC) 88-8406.)
3 Perez-Stable EJ, Benowitz NL, Marin G. Is serum cotinine a better measure of cigarette smoking than self-report? *Prev Med 1995; 24:171–9.*
4 Strecher VJ, Becker MH, Clark NM, Prasada-Rao P. Using patients' descriptions of alcohol consumption, diet, medication compliance, and cigarette smoking: The validity of self-reports in research and practice. *J Gen Intern Med* 1989;*4:160–6.*
5 Hariharan M, VanNoord T, Greden JF. A high-performance liquid-chromatographic method for routine simultaneous determination of nicotine and cotinine in plasma. *Clin Chem 1988;34:724–9.*
6 Benowitz NL, Jacob P. Metabolism of nicotine to cotinine studied by a dual stable isotope method. *Clin Pharmacol Ther 1994;56:483–93.*

Table 1 Subject characteristics, demographic data, and smoking patterns (mean (SD))

	Men (n=162)	*Women (n=93)*
Age (years)	31.1 (8.7)	33.0 (11.1)
Height*** (m)	1.76 (0.07) (n=161)	1.63 (0.07) (n=92)
Weight*** (kg)	78.2 (12.4) (n=161)	65.1 (12.4)
Body mass index (kg/m²)	24.5 (3.8) (n=161)	23.4 (5.4)
Race (% white)	94 (n=104)	92 (n=60)
Education (years completed)	13.9 (1.9) (n=121)	14.1 (1.7) (n=53)
Cigarette consumption (cigarettes/day)	25.5 (8.7)	23.9 (8.1)
Plasma cotinine (ng/ml)	258.1 (142.4)	242.5 (109.1)
FTQ (range 0–11)	6.9 (1.9) (n=158)	6.5 (1.8) (n=91)
Nicotine yield of usual brand cigarette (mg/cigarette)*	0.93 (0.28) (n=145)	0.83 (0.29) (n=76)

*P<0.05; ***P<0.001.
FTQ=Fagerström Tolerance Questionnaire.

New legislation in Turkey

EDITOR,—The Prevention of the Harms of Tobacco Products law (no 4207) has been accepted by the Turkish National Parliament and approved by the president. It came into effect on 7 November 1996. The main provisions of the law are as follows:

(1) The legislation bans the advertising and promotion of all tobacco products. Billboard advertising by tobacco companies is to be removed within one year. Tobacco advertising in print and broadcast media, and in cinemas, and the sponsorship of sporting and cultural events, had been previously recommended to be banned in 1991 but the ban was vetoed by the previous president. Those violating the legislation banning advertising and promotion of tobacco products can be fined US$100–5000.
(2) The sale of tobacco products to minors (less than 18 years of age) is prohibited. Selling to minors can attract a fine of between US$100 and $5000.
(3) Smoking is banned in all public areas including on public transport, in government offices, hospitals, clinics, private health centres, schools, cinemas, theatres, and closed places in which five or more people work. Those who smoke in prohibited places and those responsible for these places who do not prevent smoking can be fined US$100.
(4) Separate places must be provided for smokers in enclosed public areas where smoking is banned.
(5) National and private television must broadcast educational programmes about the harmful effects of smoking and the benefits of quitting, with the duration being not less than 90 minutes per month. No "sunset" clause—that is, one that would allow the policy to end after a designated period of time—has been included in this provision.
(6) All places where smoking is banned must display visible warnings.
(7) The health warning dating from 1986 ("Smoking is harmful to your health") must continue to appear on all cigarette packs, but in a way that can be read easily. Companies not displaying this warning clearly on any pack can be fined US$100–5000.

We are grateful to all the international non-governmental organisations that encouraged and supported us with tactics, strategies, logistics, and the visits of experts during the struggle to have the law passed.

SALIH EMRI
Hacettepe University School of Medicine, Deparment of Chest Diseases, Ankara, Turkey 06100; email: se06-h@servis.net.tr

See page 9 of this issue.—ED