Measurement of expired carbon monoxide among medical students to assess smoking behaviour

Methods

One hundred and seventy-three students (male = 42.8%, female = 57.2%) in their fourth year of medical school at the University of Vienna who took part in a compulsory public health training event were measured. Measurements were done with the Bedfont ECS50-MICRO Carbon Monoxide Monitor. The students were not informed previously, the measurements were taken around 4 p.m. None of the students refused the measurement. In addition, smoking behaviour was assessed on the basis of questionnaire.

Results

Definite indication of active smoking (11 ppM and more) was found in 9%, (male = 16.4%, female = 3%), 19.7% (male = 20%, female = 19.4%) show CO levels between 6 and 10 ppM which may include some light smokers. 71.3% (male = 63.6%, female = 77.6%) of the students were definitely non-smokers, showing a lung breath carbon monoxide level between 0–5 ppM. With the exception of one student all other students with more than 10 ppM called themselves active smokers.

Discussion

Our study is the first to use a new approach to assess smoking behaviour in medical students: CO measurement avoids a non-response bias by taking the measurement during a compulsory training event. The advantages of our procedure are obvious. CO measure-
The usual question for the numbers of cigarettes consumed, as CO measurement provides objective information about the intake of harmful substances. Another benefit is the training effect for medical students. It also will facilitate the evaluation of treatment and cessation techniques. When it comes to reduced smoking, CO measurement is essential properly monitor harm reduction.1

All of the papers published so far are based on face-to-face interviews or self administered questionnaires. Information on smoking habits of medical students has been provided in hundreds of studies. The medical student's smoking rate varies greatly between countries and regions: daily smoking in men from 2% (Australia) to 48% (one center in the former USSR); in women from nil in some Asian medical schools to 22% in one European school.2

A computer search located an additional 28 papers for the time period from 1975 to 1997, all using the conventional methods mentioned above.

More than 70% of the medical students are non-smokers and will remain non-smokers with a high degree of probability.3

9% of the students (male = 16,4%, female = 3%) are definitely smokers and need advice, and diagnostic services followed by treatment.4

The sex difference reflects the situation in the smoking population. Those medical students between 6 and 10 ppM are a specific group at risk. They may increase their consumption under stress, especially when they start postgraduate training in hospitals.