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Technical Reports

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

Summary

CO-Measurement of medical students was taken during a compulsory public health training at the University of Vienna. The students were not informed previously, so a non-response bias was excluded. Measurements were done with Bedfont EC50-MICRO Carbon monoxide monitor. The cut off point was set at 11 ppM. One hundred and seventy-three students were measured. Define indication of active smoking was found in 9%. With exception of one student all the others with carbon monoxide over 10 ppM called themselves active smokers. CO measurement will replace at some stage the usual question regarding the number of cigarettes consumed. Students also had the opportunity to learn a new diagnostic technique.

Many studies deal with the issue of active smoking among medical students, because their behaviour may influence the communication between medical personnel and tobacco consuming patients. These studies and the vast majority of all other smoking investigations used face to face interviews or questionnaires. This study is the first to use the measurement of carbon monoxide for the question under investigation. Assessing smoking behaviour by measuring carbon monoxide is an objective mode of measuring 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 EC50-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,

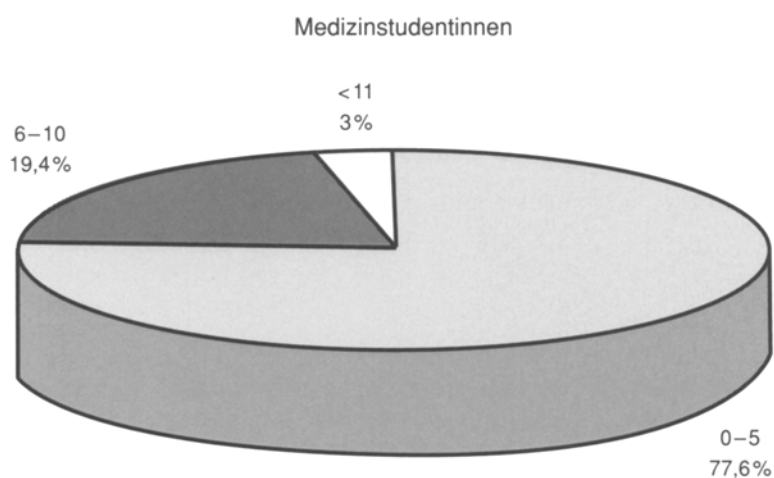
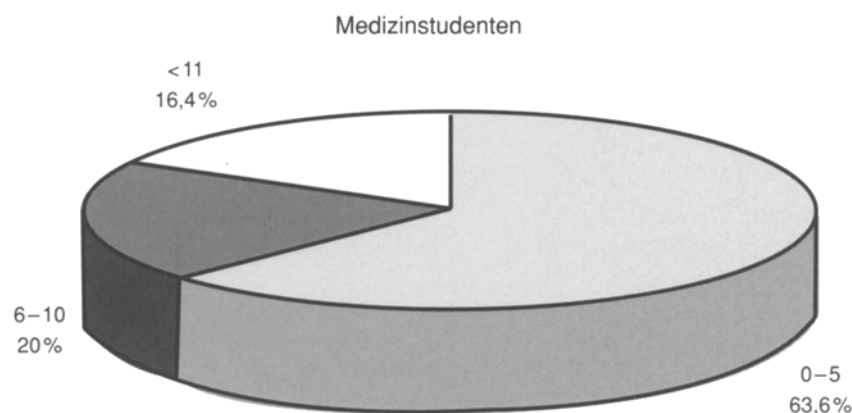
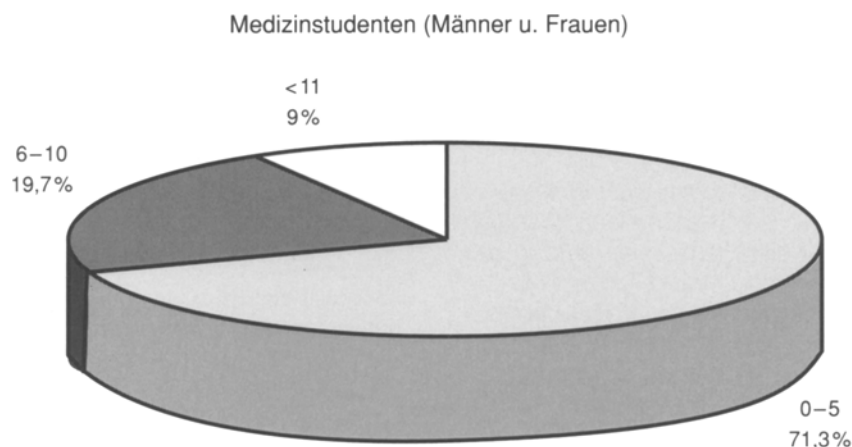
smoking behaviour was assessed on the basis of questionnaire.

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-



ment will, at some stage, replace 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.

Zusammenfassung

Objektivierung des Rauchverhaltens bei MedizinstudentInnen durch Messung des Kohlenmonoxidgehaltes der Ausatemluft

Im Rahmen der Pflichtlehrveranstaltung „Sozialmedizinisches Praktikum“ wurde ohne vorherige Ankündigung eine CO-Messung durchgeführt. Die Messung von CO in der Ausatemluft dient zur Objektivierung des Rauchverhaltens. Der cut off point wurde mit 11 ppM festgesetzt. Die Messung von 173 MedizinstudentInnen ergab eine relativ geringe Prävalenz an Aktivrauchern von 9%. Das Rauchverhalten wurde zusätzlich durch Befragung ermittelt. Mit Ausnahme eines Studenten bezeichneten sich alle Befragten mit Werten über 10 ppM als Aktivraucher. Die CO-Messung ermöglicht die einfache nicht invasive Objektivierung des Rauchverhaltens und wird in Zukunft die Frage nach der Zahl der Zigaretten ersetzen. Ausserdem hatten die Studenten Gelegenheit im Rahmen der Selbsterfahrung ein neues diagnostisches Verfahren kennenzulernen.

Résumé

Des mesures de monoxyde de carbone ont été faites à partir d'étudiants de médecine qui fument pour expliquer leur comportement de fumeur

Des mesures de monoxyde de carbone ont été prises sans prévenir les étudiants à l'université de Vienna. Les mesures de CO dans l'expiration aident à expliquer le comportement de fumeur. Le cut off point était à 11 ppM. Les mesures de 173 étudiants de médecine ont montré qu'il y avait environ seulement 9% des étudiants qui sont des fumeurs actifs. Le comportement des fumeurs a encore été recherché par des questionnaires. Selon les renseignements tous les étudiants sauf un avec des valeurs au-dessus de 10 ppM se spécifient comme fumeurs actifs. La mesure du CO remplacera dans le futur la question concernant le nombre de cigarettes fumées. Les étudiants ont également eût l'occasion d'apprendre une nouvelle „technique de diagnose“.

References

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