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Family practitioners' intervention against smoking in Germany and the UK: Does remuneration affect preventive activity?

Summary

The effect of different systems of remuneration on preventive activity of family practitioners (FPs) were studied. Interventions against smoking were compared in FPs' practices in Gemany and the UK. Almost 800 consecutively attending patients were included in a cross-sectional survey. Smoking prevalence was remarkably similar among German and British practice attenders. Slightly more than 50% of smokers in both countries remembered an intervention against their smoking by their FP or related staff. Multiple logistic regression analysis also showed that there was no significant difference for remembered interventions between the two countries (adjusted OR 1.15 [95%-CI 0.6, 2.2]). The structure of interventions employed was similar in both countries. Most British and German ex-smokers denied that their FP had made an important contribution to their giving up smoking. There is evidence that, under capitation, FPs concentrate their activities on patients who are more at risk. Overall, however, the economic structure does not seem to influence the core of preventive behaviour of FPs to any great extent. Smoking cessation efforts in Family Practice need to be improved in both countries.

Smoking is probably the most important single risk factor for cardiovascular disease, cancer, and mortality from all causes. Its contribution to total mortality in developed countries has been estimated at 29% [1]. Although the only controlled trial of anti-smoking advice with morbidity/mortality endpoints failed to show a significant difference in mortality between intervention and control group [2] there is sufficient evidence from observational studies to justify intervention against smoking in medical settings as well as at a population level.

That Family Practitioners (FPs) can successfully help their patients to give up smoking has been shown in several studies [3–7]. Thus they can potentially make an important contribution to the long-term trend against smoking [8] in many developed countries.

The organizational structure of primary care may greatly affect curative medical care and also preventive activities. We are witnessing a shift from open-ended Fee-For-Service (FFS) based systems of payment to prospective ones (e.g. capitation) in several countries. To estimate the effect this change will have we carried out an international comparative study of German and British family practice. In the UK, capitation payment has long existed, although it has often been modified [9]. We used intervention against smoking as an indicator of the quality of care (data on process and hypertension control will be published elsewhere).

The study was meant to answer the following questions:

- do the two systems of remunerating FPs affect the frequency and kinds of interventions aganist smoking?
- are groups that differ as to cardiovascular risk treated differently under FFS and capitation?

Methods

A total of 15 FPs' surgeries in Germany and the UK that were matched for rural-urban location were included in a cross-sectional survey. Consecutive patients attending for consultation, to a total

Frequency (Col %)	Ger		UK		Total
never smoked	197 (51.6)		175 (45.6)		372
Ex-smoker >3 months	80 (20.9)		90 (23.4)		170
Ex-smoker <3 months	105 (27.5)	7 (1.8)	10 (2.6)	119 (31.0)	17
Smoker 1–5/d		20 (5.2)	17 (4.4)		37
Smoker 6–20/d		65 (17)	79 (20.6)		144
Smoker >20/d		13 (3.4)	13 (3.4)		26
Total		382	384		766

Table 1. *Smoking-prevalence. 766 patients in Germany and the UK, missing values = 12, df = 5, $\chi^2 = 4.02$, p = 0.55.*

Frequency (Col %)	Ger	UK	Total
Intervention yes	103 (55.7)	108 (51.7)	211
Total	185	209	394

Table 2. *Intervention against smoking. 394 smokers (current and all ex-smokers) in Germany and the UK, Odds Ratio: 1.17 (95%-CI: 0.79, 1.75).*

Frequencies (%)	Ger		UK			
Smoking status	**n**	**Intervention yes (%)**	**n**	**Intervention yes (%)**	**OR**	**95%-CI**
Ex-smokers	80	35 (42.7)	90	31 (34.4)	1.48	0.8, 2.75
Current smokers	105	68 (64.8)	119	77 (64.7)	1.0	0.58, 1.74

Table 3. *Intervention against smoking – stratified analysis according to smoking status. 394 patients in Germany and the UK, each row represents one 2×2 table. Mantel-Haenzsel-OR: 1.16 (95%-CI: 0.78, 1.72), Breslow-Day-Test for homogeneity: p = 0.26.*

of 778, were informed about the study and were asked to participate in this study. They filled in a questionnnaire on sociodemographic data, medication, diagnoses, risk factor concepts, and remembered intervention against smoking. In the following interview queries arising from the questionnaire could be addressed so as to keep the proportion of missing data low. Patients' records were analyzed for medication, laboratory tests, and previous contacts. During this study interviews and examinations were performed by one researcher (NDB) in both countries. Eight – mainly closed format – questions dealt with smoking. Only cigarettes were taken into account: For detailed categories of answers see Table 1.

A British study had shown that FPs' documentation tends to underestimate preventive activity compared to information given by patients themselves[10]. Also, practice records serve different purposes in the two countries (in Germany they have to justify claims on health insurance schemes). We therefore decided to rely solely on information given by patients. Whether a given patient could remember an intervention by his/her physician (or related staff) was defined as the main endpoint of the comparison. An intervention was assumed if the question "Has your family doctor ever talked to you about your smoking?" was answered by "yes" or if questions about possible interventions by doctor or nursing staff were answered in the affirmative. The questionnaire was developed simultanously in German and English. It was then translated from English into German to correct linguistic ambiguities.

Odds Ratios (OR) with 95%-confidence intervals (CI) and logistic regression models were calculated with the SAS-package (Proc FREQ[11], Proc LOGISTIC[12]). For stratified analyses homogeneity

Frequencies (%)	Ger n		UK n		OR	95%-CI
No hypertension known	145	79 (54.5)	185	91 (49.2)	1.24	0.80, 1.91
Known hypertensive	40	24 (60.0)	24	17 (70.8)	0.62	0.21, 1.83

Table 4. *Intervention against smoking – stratified analysis according to known hypertension. 394 patients in Germany and the UK, each row represents one 2×2 table. Breslow-Day-Test for homogeneity, p = 0.24.*

was tested for according to Breslow-Day[13], and if appropriate the adjusted Mantel-Haenzsel-OR is given[14]. Altough "interval since last visit" is a variable related to the system of payment it was entered into multiple analyses as an independent variable. We thus have accounted for attendance patterns that differ between the UK and Germany and might otherwise have caused selection bias in our samples of consecutive attenders.

Results

Prevalence data

Only 8% of the patients approached declined to take part in the study. Table 1 shows frequencies of smoking categories as given in the patients' questionnaire. Apparently smoking is prevalent to a similar extent in both countries. As numbers in the different categories of current smokers are small the categories are treated as one group in further analyses (including patients who had given up smoking less than three months previously).

Intervention

Main endpoint

The percentage of smokers (all current and ex-smokers combined) who remembered an intervention against smoking was defined as the main end-point of the comparison. The results are shown in Table 2. Slightly more than 50% of the smokers remembered an intervention. A greater percentage of German than of UK patients answered with "yes", but the difference was not significant.
Table 3 gives a breakdown of this group according to smoking status. A few more German ex-smokers mentioned some intervention, but for current smokers the percentage was exactly the same in both countries. The CIs are wide and include unity.

Stratified and multiple analyses

We also analyzed remembered interventions stratified according to number of cigarettes smoked daily (Fig. 1). Although small numbers and correspondingly wide confindence intervals require careful interpretation, British FPs seem to concentrate their interventions on the heavy smokers. German patients on the other hand mentioned interventions to the same extent across all strata.
There are other risk factors that tend to potentiate the deleterious effect of smoking on vascular disease. Hypertension is one of these factors. Table 4 shows interventions listed according to whether or not hypertension was known in a given patient. Again British FPs seem to concentrate interventions on patients that are at risk because of a combination of the two risk factors, smoking and hypertension.
Once demographic, morbidity, and process data had been adjusted for by multiple logistic regression, the variable "country" made no significant contribution (OR 1.15 [95%-CI 0.6, 2.2]) – (more detailed data available from first author).

Different interventions

All smokers were also asked what had been done by either FP or staff to help them stop smoking. As Figure 2 shows, various interventions were applied to a similar extent in both countries. Advice about smoking was mentioned by 48% of German and 44% of British smokers although repeated verbal intervention was mentioned more often in the UK. Nicotine replacement using either patch or gum was rarely used in either country.

Ex-smokers opinion

Those who had given up smoking more than three months ago, i.e. ex-smokers, were asked to what extent medical help and contributed to this achievement. Table 5 shows a very high percentage of patients who denied any influence of their medical care-givers. This applies to both countries.

Discussion

Although Germany and the UK have different structures of primary care, with remuneration systems being the most obvious of these differences, preventive activities against smoking are remarkably similar.
Response rates to research projects tend to be very different in the UK and Germany. German FPs are

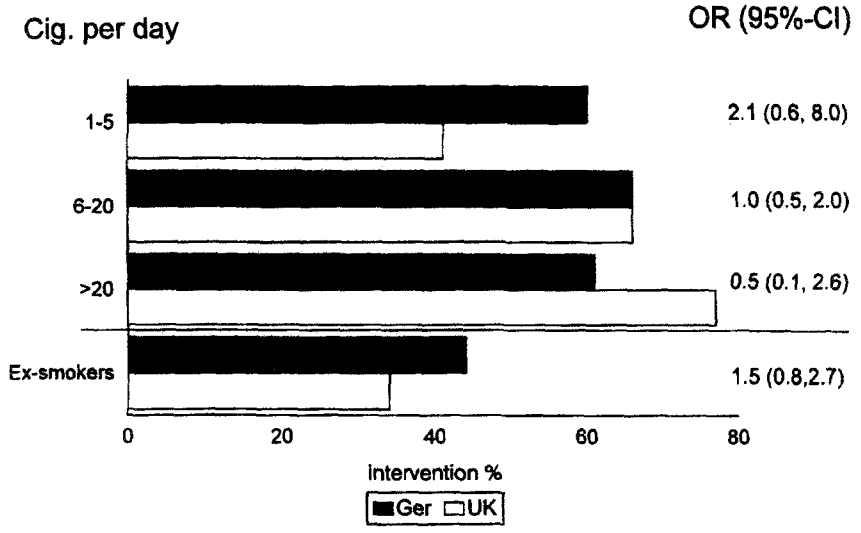

Figure 1. *Intervention against smoking – stratified according to cigarettes/day (country %); 394 patients in Germany and the UK; Breslow-Day-Test for homogeneity (current smokers' strata only): p = 0.37.*

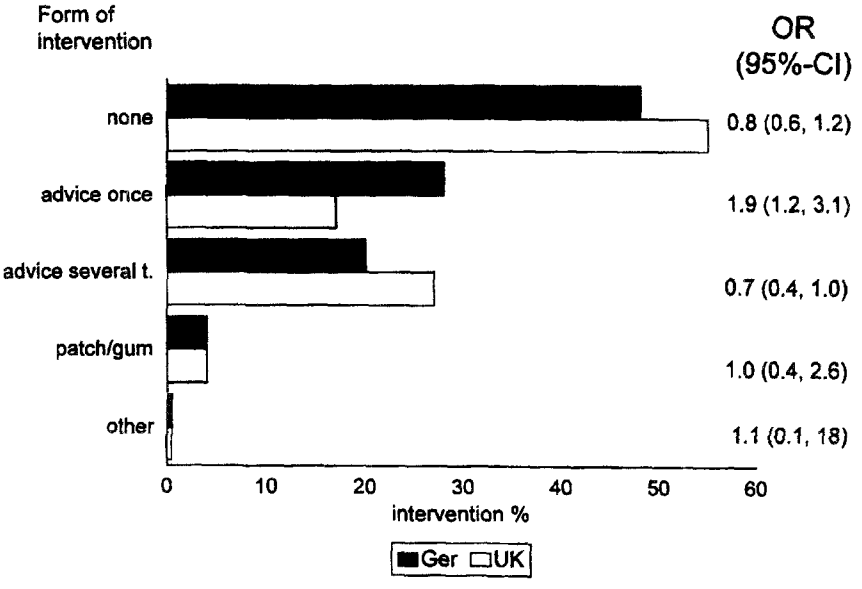

Figure 2. *Different interventions against smoking (country %); 386 smokers and ex-smokers in Germany and the UK.*

usually being much more reluctant to take part, a factor that would cause considerable bias. We therefore decided to choose among practices involved in previous research by matching them according to urban-intermediate-rural location. The demographic features of the samples we then obtained were very similar to those in truly representative surveys from both these countries[15,16].

The wording of the questions we used was certainly rather blunt. Among the verbal interventions in particular lengthy psychotherapeutic efforts as well as casual remarks concerning smoking may have been included. The effectiveness of interventions as such could not be studied, but even a brief warning about smoking has been shown to be effective to a certain extent[3]. Given the practical problems involved in the documentation of these activities, the method we used probably reflects FPs activity at least as well as does the commonly used proxy measure of the documentation of smoking habits in patients' records[17,18].

It has to be kept in mind that we interviewed attending patients. The percentage of ex-smokers among these is of limited value for estimating overall success. Patients who give up smoking may have fewer reasons (e.g. respiratory disease) to visit their doctor. They are, therefore, less likely to be included in a cross-sectional survey of this kind.

International observational studies are usually subject to confounding. Systems of primary care, with remuneration as the most conspicuous aspect, can be assumed to be the major difference between the two samples. However, samples certainly differ as to many other medical, political, cultural, and economic aspects. Still, observational studies of this kind can make an important contribution to our knowledge. They demonstrate the complexities and long-term effects in different systems of care, whereas controlled trials are always limited as to time and scope[19].

The British Government has recently introduced incentives for FPs to record smoking habits and other cardiovascular risk factors[20,21]. Our data were collected before these went into effect. Although political measures like this may blur the distinction between

Frequency (Col%)	Ger	UK	Total
Absolutely essential	4 (5.1)	5 (6.5)	9
Of some importance	11 (14.1)	14 (18.2)	25
Not important at all	63 (80.8)	58 (75.3)	121
Total	78	77	155

Table 5. *Ex-Smokers' (>3 months) opinion with regard to medical help with giving up smoking. 155 patients in Germany and the UK; df=2, $\chi^2=0.67$, p=0.71.*

the UK and the German system, convergence of this kind is quite typical of recent health system reforms. Prepaid schemes are commonly combined with selective incentives to stimulate activities that are regarded as essential but appear to have been neglected (e.g. advice against smoking). On the other hand safeguards against cost inflation, e.g. cash limits, are usually introduced within FFS-systems.

Studies comparing the outcome under prepaid care to that with FFS usualy fail to show differences in the quality of care[21]. As input in terms of process is usually greater under FFS it has been postulated that, under prepaid schemes, physicians concentrate their activity on the more severely/definitely ill[22]. According to stratified analyses our data seems to support this hypothesis. For example, British FPs concentrate more on the heavy smokers and the British hypertensive patients also mention more interventions against their smoking than do their German counterparts. These effects, however, do not contribute significantly in a stratified or multiple analysis.

Overall anti-smoking activity of FPs in both countries seems to be very little influenced by economic factors. Theoretically, under capitation there should be an incentive for increased preventive activity. By motivating patients to give up smoking, FPs might reduce their future workload[23,24] while FFS incentives might work the opposite way. However, the data presented here show that economic explanations are of limited value with respect to preventive activity of FPs. Anti-smoking advice is probably part of a core of activity that is not greatly subject to either variation or economic influence[25].

Our data support the impression that FPs contribute little to the trend against smoking in industrialized countries. Most ex-smokers denied an important contribution by their FPs. Although the differences between intervention and control groups in the studies cited above are statistically significant, they are small in absolute terms and explicit intervention still fails in a majority of smokers. Furthermore, FPs with their knowledge of patients and their environment are usually well aware of the barriers that prevent their smoking patients from complying with their advice. All this might explain the lack of enthusiasm that many FPs show with regard to encouragement of smoking cessation. The fact that this aspect of FPs work does not conform with the traditional medical curative model adds to the difficulties. Still, we might be missing a chance, defeatism might be overcome. New approaches[26] could allow us to do our part in helping patients avoid this important risk factor.

Zusammenfassung

Ärztliche Vergütung und präventivmedizinische Aktivität: Interventionen gegen das Rauchen

Um die Auswirkungen verschiedener Vergütungssysteme auf präventive Aktivitäten von Allgemeinärzten abzuschätzen, wurden fast 800 Patienten aus deutschen und britischen Allgemeinpraxen in einen Querschnitt-Survey eingeschlossen. Erinnerte Interventionen gegen das Rauchen dienten als Indikator. Die Prävalenz des Rauchens in beiden Gruppen von Praxis-Patienten war identisch. An Interventionen gegen ihr Rauchen durch den Allgemeinarzt bzw. Personal konnten sich gut 50% der Raucher erinnern. Auch die multiple logistische Regression zeigt keine signifikanten Länder-Unterschiede (adjustiertes OR 1,15 [95%-CI 0,6, 2,2]). Die Art der eingesetzten Interventionsformen entsprach sich weitgehend. Die meisten Ex-Raucher in beiden Ländern verneinten einen wesentlichen Beitrag ihrer Ärzte zu ihrer erfolgten Entwöhnung. Es finden sich Hinweise dafür, daß unter pauschalierter Vergütung Ärzte ihre Aktivitäten auf die stärker Betroffenen konzentrieren. Ansonsten scheint jedoch der ökonomische Hintergrund diesen Kernbereich des Versorgungshandelns nicht wesentlich zu beeinflussen. Bemühungen zur Raucherentwöhnung in Allgemeinpraxen sollten jedoch verstärkt werden.

Résumé

La rémunération de médecins généralistes et leurs activités contre le tabagisme

Afin d'étudier l'effet de différents systèmes de remunération sur les activités préventives de médecins généralistes contre le tabagisme nous avons inclus près de 800 patients de généralistes allemands et britanniques dans une étude transversale. Nous avons demandé aux patients de mentionner ceux des conseils contre le tabagisme donnés par leur médecin dont ils se souvenaient. La prévalence de fumeurs était presque identique dans les deux groupes. Un peu plus de la moitié des fumeurs se souvenait des mesures anti-tabac conseillées par leur médecin traitant. Nous ne pouvions pas mettre en évidence une différence significative concernant le nombre d'interventions (regression logistique multiple OR ajusté 1,15 [95% intervalle de confidence 0,6, 2,2]). Les mesures prises étaient pareilles dans les deux collectivités. La plupart des ex-fumeurs des deux pays ont nié que les conseils données par leurs généralistes aient eu un effet significatif sur l'arrêt de leur tabagisme. Il nous a semblé que le système de rémunération globale favorise une concentration des interventions sur les patients courant les plus grands risques. En outre, le système de rémunération ne semble pas influencer de façon significative ces activités préventives. Toutefois les activités qui visent à réduire la consommation de tabac devraient être intensifiées dans les deux pays étudiés.

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