Smoking cessation counselling: impact of chart stickers and resident training

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Summary

Objectives: To assess the effect of a training program for smoking cessation combined with chart stickers on resident's (physicians-in-training) practice of counselling smoking patients.

Setting: A single centre prospective observational study at the Basel University Hospital Medical Outpatient Department.

Methods: 456 consecutive outpatients were contacted by phone within 24 hours of their initial consultation. Information concerning questions asked about smoking and/or cessation advice provided by the resident to patients was collected and compared with a historical pre-interventional cohort using the identical questionnaire and study design.

Results: Of 272 patients included, 106 (39%) were current smokers, 123 (45%) had never smoked, and 43 (16%) were former smokers. The mean age was 43 ± 11 (range 16–87) years and 49% were male. Equal proportions of participants were in the pre-contemplation (40%) and contemplation stages (42%), 16% were preparing to quit and 2% had stopped in the previous 6 months. Results related to smoking cessation advice were compared to those obtained during an identical survey one year earlier performed prior to the intervention (pre-interventional). Residents questioned 82% (pre-interventional 81%) of the patients about smoking and inquired about smoking duration in 71% (pre-interventional 44%) of the patients. 46% (pre-interventional 28%) of the patients received information on smoking-related risks, whereas cessation was discussed with 32% (pre-interventional 10%) and offered to 23% (pre-interventional 9%) of the patients.

Conclusion: Compared with a historical pre-interventional cohort, the rates of patients receiving appropriate counselling approximately doubled following the introduction of systematic training on smoking cessation and chart labels. Extended regular training for physicians on smoking-related issues may have a potentially beneficial effect in improving counselling of smokers and meeting the global tobacco challenge.

Key words: smoking prevention; smoking cessation; counselling; addiction

Introduction

Smoking cigarettes is the single most preventable cause of death and disability [1]. Physicians are in a unique position to promote smoking cessation because more than 70% of people who smoke in the U.S. visit a physician each year [2]. To offer help for smoking cessation is a key task for every single health care provider [3]. This intervention is clearly shown to be both efficient and cost-effective in terms of years of life saved [4, 5]. The basic skills for providing appropriate preventive counselling for smoking cessation are supposed to be acquired during medical school training and residency [6, 7]. A revised version of the "Swiss Catalogue of Learning Objectives for Undergraduate Medical Training" was launched in June 2008 by the Joint Commission of Swiss Medical Schools in order to harmonise medical training at the five Swiss universities (http://sclo.smifk.ch/sclo2008). Although the catalogue lists smoking cessation skills as an objective, this has not been systematically implemented as a specific programme in Swiss medical schools to date. The preparedness of postgraduates regarding smoking cessation is considered to be suboptimal [8] and doctors feel insufficiently prepared to provide appropriate counselling to smokers, as reflected by reported low rates of cessation advice [6, 7, 9, 10]. In a recently reported study performed at our General Medicine Outpatient Clinic, we surveyed

how well residents provided medical advice for smoking cessation to an unselected patient population [11]. This prospective observational study enrolled 314 consecutive outpatients (mean age 48 years, 50% male, 32% current smokers, 41% had never been smokers, 27% former smokers) contacted by phone within 24 h after the consultation to inquire about counselling provided by doctors. Though residents asked 81% of the patients about smoking, a mere 22% of the patients received information about smoking-related risks, with cessation discussed only in 10% and offered to 9% of the patients. Though most junior physicians in the survey inquired about smoking, they clearly failed to raise tobacco-related health issues in appropriate fashion and offer cessation advice in the majority of cases. This study highlighted the necessity of implementing measures to improve counselling of smokers in the setting of our Department.

There is strong evidence that training program for smoking cessation improve the frequency and quality of smoking cessation counselling administered by physicians. In particular, training programmes based on behavioural theories taking into account smokers' motivational stage (pre-contemplation, contemplation, preparation, action, and maintenance) regarding quitting smoking have been shown to increase abstinence rates significantly [7, 12, 13]. Another intervention aiming at promoting counselling against smoking is the implementation of chart reminders. One option is labelling smokers' charts with a "smoker" sticker. The intervention is a simple and inexpensive method that is reported to increase the probability that smokers receive smoking cessation advice [14, 15].

The aim of the present study was to assess the effect of a training programme for smoking cessation combined with chart stickers on residents' practice of counselling smoking patients in an ambulatory setting.

Methods

Study population

During a three month period in 2007 (January to March), 776 consecutive adult patients presenting for the first time to the Basel University Medical Outpatient Department were selected to be contacted by telephone within 24 hours of the consultation. The short time period for contacting patients was chosen to keep recall bias to a minimum. Overall, 320 patients (41%) could not be contacted within 24 hours and were excluded from the survey. In total, 239 (75%) of these had a correct landline telephone number available. In 81 patients (25%) contact details (telephone number) in the medical record were not listed or wrong. The remaining 456 subjects (59%) were contacted by telephone. Of these, 126 (28%) declined to participate, and 58 (13%) were excluded due to obvious language barriers. Finally, 272 patients were included in the study (inclusion rate 35%). Approval for the study was granted by the local Ethics Committee and written informed consent was obtained from all participants.

Residents

Eleven residents (mean age 34.8 years, range 31–41) worked in the Basel University Medical Outpatient Department during the study period. Each resident had his or her own panel of patients to whom continuous care was given. Five residents were females; no resident was a current smoker. All residents were at the end of postgraduate training in General Internal Medicine (median duration of training 6 years, range 4–9). None had received previous structured postgraduate training on smoking cessation. Importantly, in order to avoid a bias in their usual attitude, none of the residents was informed about the study.

Questionnaire

All questionnaires were completed by MM during the telephone interview. The questionnaire contained four main parts: general inquiries, questions related to the contact with the resident, questions on the motivational stage, and questions on the number of previous attempts to quit smoking. In the general part, participants were asked to provide their age, gender, education, profession, reason for visiting the outpatient department, and smoking status (current smoker, non-smoker, and former smoker). Current smokers were asked the following general questions: How many cigarettes per day do you smoke, for how long have you been smoking, and when do you smoke your first cigarette after getting up in the morning? All participants were asked the following questions related to the contact with their resident: 1) Did the doctor ask about smoking? 2) Did you expect him to ask? For smokers, the following questions were asked: 1) Did the doctor ask how much you smoke? 2) Did the doctor ask for how long you have been smoking? 3) Did the doctor inform you about health risks associated with smoking? 4) Did the doctor talk about smoking cessation? 5) Did the doctor offer counselling on smoking cessation?

As defined by Prochaska and di Clemente, the motivational stage was determined in smokers and former smokers by asking the participants to select the most appropriate of the following statements: *Pre-contemplation*: I do not intend to quit smoking within the next 6 months; *contemplation*: I intend to quit smoking within the next 6 months; *preparation*: I intend to quit smoking within the next 30 days; *action:* I quit smoking less than 6 months ago; *maintenance*: I quit smoking more than 6 months ago [12, 13]. Finally, smokers were asked to state how many attempts to quit smoking they had made in the past.

Interventions

The first intervention was a compulsory smoking cessation training session for all residents working at the Medical Outpatients Department one month before recruitment of patients started. The residents were trained by one person only (AZ) to guarantee identical educational sessions. The training programme comprised one half-day session (4.5 hours). It was based on active learning of counselling skills and interventions that match patient's readiness to quit smoking (see above, motivational stages as defined by Prochaska and di Clemente). For ex-

Figure 1

Illustration of the sticker affixed to smoker's chart (cover sheet).

ample, for smokers in the action state physicians learned how to assist patients in terms of setting a quit date, prescribing nicotine replacement therapy with instructions for use, and suggesting strategies to prevent relapse. The teaching sessions focused in particular on the '5A' intervention (*ask about tobacco use, advise tobacco users to quit, assess readiness to make a quit attempt, assist with the quit attempt, and arrange follow-up care*), motivational interviewing with the '5R' approach (*relevance - personal relevance of quitting, risks - identify risks related to smoking, rewards - point out benefits of smoking cessation, roadblocks – identify obstacles to quitting, repetition – reiterate motivational intervention every time unmotivated patients consult*), and the appropriate use of pharmacotherapy [3, 16, 17].

The second intervention involved labelling smokers' charts with a "smoker" sticker (50 mm x 40 mm) as shown in fig. 1. The question "Advised to quit?" was clearly visible on the label. All patients presenting to the Medical Outpatient Department during the study period were asked by the receptionists whether they smoked or not. On each smoker's chart the sticker was affixed on the bottom right corner of the charts' cover sheet.

Statistical analyses

Results are presented as descriptive statistics, i.e. proportions, means, and standard deviations (SD), unless specified otherwise. To determine the effect of the two interventions, the data of the present study was compared with a historical sample assessed exactly one year prior to the present study. The results of the historical cohort have been published recently [11]. The identical questionnaire and study design were used for the historical cohort and the current survey. Baseline characteristics of patients and residents of the historical and present cohort were compared using the Wilcoxon test and Fisher's exact test for gender respectively. No statistical difference between the historical and present cohort in terms of patient's age, gender and number of cigarettes smoked per day, or resident's age, gender, years of experience, and number of patients seen during the study period was documented (p >0.1).

To assess the effect of the two interventions on different parameters (asked for smoking, asked for duration, discussed risks, discussed cessation, offered cessation), logistic regression was performed for each parameter separately. Experience (years since graduation) and gender were also included in each regression model. Hence results were adjusted for these parameters. As the samples are clustered within residents a generalised mixed effect model (GLMM) approach was applied (details are described in [18]). Odds ratios with corresponding 95% confidence intervals (C.I.) were estimated from the GLMM. In the case of an ordinal predictor, odds ratios were expressed as increasing the predictor one unit. A *p*-value <0.05 was considered significant. This study is exploratory; therefore *p*-values were not adjusted for multiple comparisons.

Analyses were done using R version 2.8.0 [19], and using Stata (Stata Statistical Software, 2005; Stata Corp., Collage Station, USA) for descriptive statistics.

Results

The baseline characteristics of the study population (n = 272) are presented in table 1. In total, 106 (39%) of all patients included were current smokers. Four percent of the smokers reported having their first cigarette less than 5 minutes and 16% less than 30 minutes after waking, whereas the majority (54%) smoked their first cigarette after more than 60 minutes.

The results of the assessment of motivational stage are summarised in figure 2. Similar proportions of participants (40% vs 42%) were in the pre-contemplation ("I do not intend to quit smoking within the next 6 months") and the contemplation state ("I do intend to quit smoking within the next 6 months"). The distribution of the motivational stages compared to the historic control were: pre-contemplation 40% vs 52%, contemplation 42% vs 36%, preparation 16% vs 13%, and action 2% vs 0%, showing a tendency for lower pre-contemplation rates combined with higher contemplation, preparation, and contemplation rates following the educational/chart sticker intervention (data not shown).

The second part of the questionnaire focused on the contact between patient and resident. From the respondents, 223/272 patients (82%) reported

Table 1

Baseline characteristics of the study population (n = 272) (* missing data = 2, ** missing data = 166).

Characteristic	Description
Mean age (years) ± SD (range)	41 ± 16 (15 to 80)
Gender male (%)	130 (48%)
Smoking behaviour (n)	
Current smokers	106 (39%)
Never smokers	123 (45%)
Former smokers	43 (16%)
Education* (n)	
No education	36 (14%)
Apprentice	114 (42%)
Employed, non-academic	71 (26%)
Academic	49 (18%)
Reasons for consultation (n)	
Infection	44 (16%)
Gastrointestinal	37 (14%)
Checkup	34 (13%)
Cardiac	33 (12%)
Pulmonary	22 (8%)
Neurological	19 (7%)
Endocrine	11 (4%)
Others	72 (26%)
Attempts to quit before inclusion** (n)	
0	32 (30%)
1 to 3	66 (62%)
>3	8 (8%)

Figure 2

Motivational stage according to Prochaska and di Clemente [12, 13] among the smoking patients (n = 106).
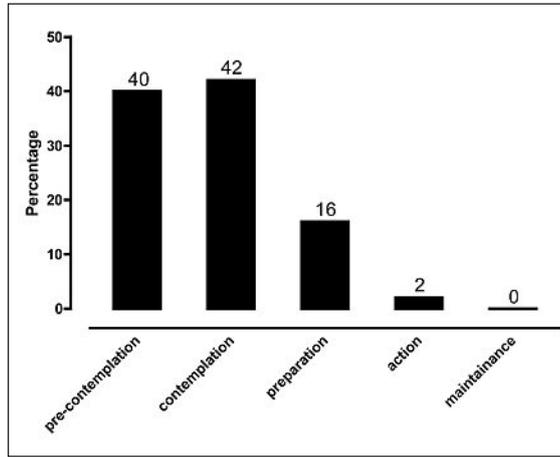

Figure 3

Individual performance of each resident (n = 11) for the tobacco intervention skills. Each symbol refers to one resident. Question 1, asked about smoking; 2, asked about duration; 3 discussed risk; 4 discussed cessation; 5 offered cessation. The horizontal bar for each question corresponds to the mean of 11 residents.
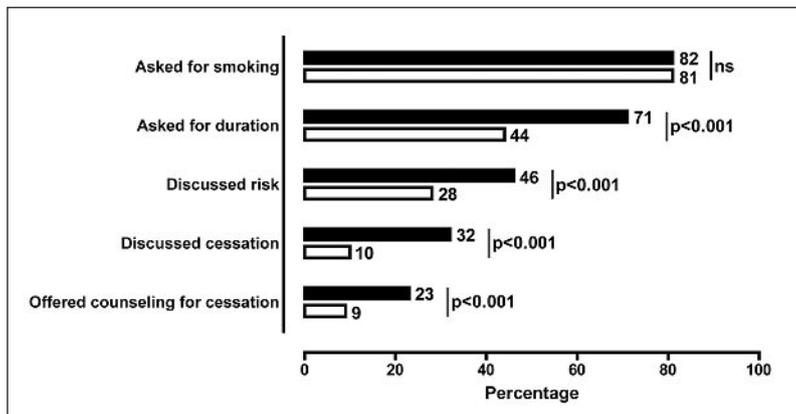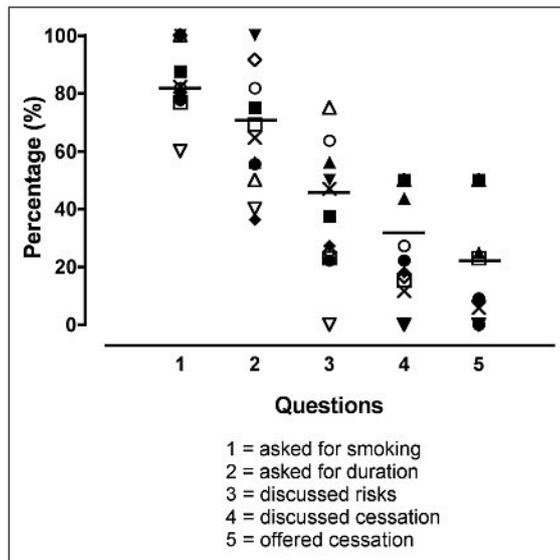

Figure 4

Physician's performance in terms of smoking counselling (black bars) after an intervention (training and introduction of chart stickers) compared with a historical cohort [11] (open bars). Values adjacent to each bar represent absolute numbers. Smokers reported (1) if they had been asked whether they smoked; (2) if they had been asked about duration; (3) discussed the smoke-related health risks with their registrar; (4) if the importance of cessation had been mentioned to them (discussed cessation); (5) whether they had been offered counselling (offered cessation). To assess the effect of the interventions on different parameters, logistic regression was performed for each parameter separately. A p-value <0.05 was considered significant (ns, non-significant).

being questioned about smoking. On average, each resident looked after ten smokers (mean 9.6, range 2–17). Figure 3 shows the individual performance of each resident for the five questions regarding the tobacco intervention skills. About two thirds (178/272, 64%) of the participants expected their doctor to ask about smoking habits. Results were compared by performing logistic regression analysis to a historical cohort that had been assessed one year prior to the current study and before implementing compulsory resident training and chart reminders (pre-interventional) (fig. 4) [11]. Though data still showed that only around 82% of patients were asked whether they smoked, the other counselling parameters significantly improved following the interventions – i.e. 71% (pre-interventional 44%, p <0.001) of the smokers were questioned for how long they had been smoking, and smoking-related risks were addressed with 46% (pre-interventional 28%, p <0.001) of the smokers. Importantly, the rate at which cessation was discussed increased threefold to 32% (pre-interventional 10%, p <0.001) and cessation offers doubled, being proposed to 23% of the smokers (pre-interventional 9%, p <0.001).

In a logistic regression analysis, unscheduled consultations generally emerged as an independent risk factor for suboptimal tobacco counselling: though the odds ratio (OR) to ask for smoking in scheduled versus unscheduled visits was still OR 1.12 (95% C.I.: 0.45–2.82; p = 0.8001), the remaining ORs for the other counselling parameters were: asked for duration: OR 4.49 (95% C.I.: 2.31–8.75; p <0.001); discussed risks: OR 4.08 (95% C.I.: 1.93–8.61; p <0.001); discussed cessation: OR 4.96 (95% C.I.: 2.15–11.43; p <0.001); offered cessation: OR 2.73 (95% C.I.: 1.14–6.51; p = 0.0272). Hence, during unplanned visits to the outpatient department, smokers were clearly at risk of receiving suboptimal tobacco counselling (questioned about duration, discussed risks and cessation, offered cessation). For physician-associated factors, logistic regression analysis revealed that resident gender had no influence on smoking cessation advice provided, but the professional experience (i.e. years of postgraduate training) determined whether cessation was offered: OR 0.78 (95% C.I.: 0.63–0.97; p = 0.0241). This latter result unexpectedly showed that residents with longer postgraduate training were less likely to offer cessation, thus underlining the need for regular postgraduate training to maintain smoking intervention skills for physicians.

Discussion

The underlying study assessed how two interventions (structured training session on smoking cessation and implementation of chart reminders) in a General Medicine Outpatient Department would affect the deceptive performance of doctors in providing counselling for tobacco addiction. We found that training of residents and labelling smoker's medical records with a chart reminder doubled the percentage of patients receiving appropriate advice for smoking cessation. Though these results are far from ideal, they underscore that systematic training and chart reminders may substantially improve management of tobacco addiction.

Two additional findings in our study also deserve mention: firstly, compared to planned consultations, smokers in unscheduled consultations clearly received suboptimal tobacco interventions. Hence drawing particular attention to improvement of counselling in this group of outpatients may be a straightforward measure. Secondly, the underlying study showed that residents with the longest professional experience (postgraduate training) were less likely to offer smoking cessation interventions, highlighting that tobacco intervention skills may require reinforcement by regular postgraduate training.

In general our results are congruent with previously reported poor preparation of doctors for the management of tobacco addiction [9, 20–23]. The most frequent obstacles perceived by doctors in addressing smoking cessation with patients are time constraints (42%), ineffectiveness (38%), insecurity in discussing tobacco-related issues (22%), seeming unpleasantness of such discussions (18%), and lack of confidence in knowledge (16%) [24]. Consequently, recent studies have emphasised the need to improve counselling strategies for smokers with targeted efforts to improve physicians' skills [25–29]. A comparable study in a general medical outpatient setting which investigated the effect of a one-hour lecture with chart reminders, or free nicotine gums, or both, on smoking interventions had similar results to our findings: chart reminders and/or providing free nicotine replacement therapy boosted the time spent talking about smoking and improved counselling for smoking cessation [14]. Moreover, two other studies assessed the use of modified vital sign stamps including the patient's smoking status (current, former, or never) as a systematic screening tool to promote smoking cessation [30, 31]. Adding the smoking status to the vital sign stamp significantly increased the rate at which physicians asked patients about their smoking status. However, the vital sign intervention was only associated with an improvement of advice to, or advice how to stop smoking in one of the studies [30]. Whether smoker stickers have value-added potential on physicians' performance in assisting patients to quit smoking was assessed in a ran-

domised controlled trial among private practitioners in Geneva, Switzerland [32]. Practitioners in the intervention group received a box containing 500 stickers with a recommendation to label their smoking patient's charts without providing further training on smoking cessation counselling. Disappointingly, only 20% reported using the stickers in 43% of their smoking patient's charts. Physicians who reported using the stickers, however, advised more smokers to quit, indicating that use of such chart reminders may be associated with improved smoking cessation counselling. Thus clinician training, especially when combined with reminder systems, improves the rates at which clinicians provide tobacco interventions that reliably increase tobacco cessation [30]. Though the effect of training and the reminder system have not been separately assessed in our survey, it is likely that both will have contributed to doubling the resident's tobacco interventions.

The underlying study is subject to several limitations due to its design and available resources: First, the limited number of physicians-in-training (n = 11) did not allow meaningful statistical analyses between them, but no obvious trend was seen that could have introduced a bias. Second having used a historical control rather than a more robust parallel sham intervention control group, we cannot rule out that there might be biases related to factors such as resident groups, patient enrolment etc. We have, however, performed the current study one year later (i.e. in the same season), strictly applying an identical study protocol and questionnaire to both surveys for purposes of comparison. Moreover, statistical analysis by Wilcoxon test (Fisher's exact test for gender) showed that there were no differences between either patients or residents in terms of baseline characteristics. As in our previous study, we maintained a stringent 24 hour cutoff to establish patient contact and thus minimise recall bias [11]. The price of this approach, however, was a smaller number of potential participants reached (59%). Due to limited infrastructure and resources, patients were only recontacted once they had left the Outpatient Department, possibly leading to fewer numbers agreeing to participate and completing the questionnaire (60% of those contacted) than if they had been included directly after their consultation. Though it is unlikely that this skewed the survey, we speculate that those patients that declined participation might have been less willing to discuss tobacco-related issues with their physician. Equally important, an estimated 30% of the Basel population has a migrant background and is therefore particularly at risk for unawareness of the effects of smoking. Unfortunately language barriers and limited resources precluding the use of translators led to exclusion of 58 (13%) of the contactable patients who might well include smokers particularly difficult to counsel. The surveyed outpa-

tient population reflected the typical Swiss "smoking demographics" with about one third smokers, of whom 40% said they were pre-contemplative (i.e. "I do not intend to quit smoking within the next 6 months") [10]. Whether monitoring motivational stages to ascertain, improve, and guide counselling strategies is a potentially useful approach requires further clarification in the future.

In summary, our results suggest potential benefit from two simple and inexpensive interventions (structured training sessions on smoking cessation and chart reminders) for the management of tobacco addiction and cessation advice provided by physicians in an outpatient setting. These results also highlight the importance of formalised postgraduate training in the necessary skills to perform tobacco interventions that are essential to meet the global tobacco challenge confronting physicians. Whether the interventions herein described can be generalised to other health providers and implemented in the primary health care setting will require clarification in future trials. In

such trials both intermediate, but also long term success rates will need to be taken into account when choosing the most efficient counselling strategy for smokers.

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