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Does Nurse Counseling or Offer of Nicotine Gum Improve the Effectiveness of Physician Smoking-Cessation Advice?

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ABSTRACT: Medical advice and use of nicotine gum have recently received increased attention as effective tools to encourage smokers to quit, yet the relative value of nurse vs physician counseling has not been explored in depth. In this study, 425 smokers attending three urban primary care centers in Barcelona were systematically allocated to one of three groups: group A patients received a brief counseling session to quit from their family physician; group B patients were given the same brief counseling along with a free supply of nicotine gum; group C received a brief health-education session from the primary care nurse. Three hundred forty-nine patients (82%) could be reached by telephone at the two-month follow up. By that time, after correcting for the estimated validity of the phone report of smoking status, the proportion declaring themselves to be nonsmokers was 10.9%, 11.1%, and 10.8%, respectively, without significant differences between them. At one-year follow up the proportions were 4.4%, 5.3%, and 6.0%. In the logistic regression analysis, only the expected difficulty of quitting was predictive of one-year abstention, OR = 3.1 (95% CI: 1.3–7.3). The present study shows no difference between physician versus nurse counseling and no improvement in the proportion of quitters with the addition of nicotine gum in the physician-counseled group.

KEY WORDS: Smoking Cessation, Primary Health Care, Counseling, Nicotine Gum, Nurse Advice

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An increasing number of studies seeks to assess the effectiveness of medical counseling in modifying health-related behaviors such as smoking (1,2), excessive alcohol consumption (3), diet (4), or exercise (5). Surprisingly few studies, however, have dealt with the impact of counseling given by nurses. Nevertheless, a few recent studies have shown great potential for health promotion in primary care settings if the role of the nurse is expanded to include personal counseling (6,7).

Among published studies focused on encouraging smokers to quit, those showing the effect of nicotine chewing gum to help smokers to quit have failed to discover clearly its benefits among nonselected patients in primary care settings (8–11). Furthermore, Hughes (12) showed that nicotine chewing gum has no effect as compared to placebo among unselected smokers in general medical practice.

As most of the published studies reporting on this topic were done in non–Spanish-speaking populations, we wished to test whether counseling addressing life-style would be as useful in the Spanish context. Spain has a high prevalence of smoking: among the general population 49% smoked in 1987 (13), and among health professionals, 51% of doctors smoked in 1986 (14). At the same time, the primary care sector is experiencing a deep reform process all over the country. In the reformed centers, physician and nurses work full time in health centers and offer comprehensive care, including health promotion activities. Each center includes a relatively small number of primary care teams (PCT), composed of a family physician and a primary care nurse.

In a previous study (15) we evaluated the effectiveness of smoking cessation physician advice. Among 208 unselected smokers receiving advice from their family physician, we found 5.3% quitters after one year, while the proportion of quitters among the 216 smokers of a control group was 2.3%. We concluded that medical advice was effective in our context. Thus, we decided to further evaluate whether other approaches, available at the primary care level, would yield additional benefits to the minimal intervention. In this paper we report the one-year results of a study designed to evaluate the effectiveness of nurse counseling in obtaining long-term smoking cessation, as compared to standard (minimal intervention) physician advice. As a second objective we sought to ascertain if the offer of nicotine chewing gum to unselected smokers without special supportive measures could have some impact on the physicians' results.

METHODS

Three urban reformed primary care centers covering mainly low-income areas in Barcelona were invited to collaborate in the study. With 1.7 million

inhabitants, Barcelona is a major economic, industrial, and cultural center and the capital of Catalonia (population 6 million), a culturally and socially distinct community within Spain that has received large migrations from the rural areas during the sixties and seventies. An information session was held in every center, followed by two more specific meetings that were held separately with physicians and nurses. Half (15) of the total primary care nurse/physician teams (PCTs) agreed to participate.

Three interventions were designed. The first intervention level (group A) consisted of standard physician advice, operatively defined as a personalized firm counsel to stop smoking, lasting between 3 and 5 minutes. The second intervention (group B) included minimal intervention for all smokers plus the offer of nicotine gum if it was indicated (smoking 15 or more cigarettes per day and willing to quit). A free supply of nicotine gum sufficient to last two to four weeks was offered to these patients. A visit during the next week was scheduled to avoid early relapses due to problems with the use of nicotine gum. The third intervention (group C) received up to 15 minutes of nurse advice that was designed to include talking about quitting and ways to cope with expected difficulties. Patients of this group were *not* counseled by the physician, who only suggested that patients should obtain the nurse's advice in a separate room. To increase the commitment to the protocol, randomization of patients was not considered the best option; instead, each PCT was randomly allocated to perform the three different interventions successively. Each physician was assigned to a different intervention option every week, so that during that week they could not include any patient under an intervention option different from previously scheduled.

Moreover, for practical reasons, the groups were designed to have unequal sample size, the three interventions—medical advice, nurse advice, and nicotine gum—holding a 2:1:1 ratio. Thus the more time-consuming interventions were reduced, while the statistical power (β) was fixed as 0.80 and type I error (α) held equal to 0.05 to detect a significant difference between standard counseling (minimal intervention) and each of the two other, more "intensive" groups, using the χ^2 and Fisher exact test when needed (16). All smokers consulting the physician during the study period were included, as long as they currently smoked at least one cigarette per day during the past week, lived in a house with a telephone, and did not have any of the exclusion criteria (a severe chronic or terminal disease or another addiction to legal or illegal drugs). All patients in the three groups received a booklet and were offered a follow-up activity (visit or phone call) for the first month after the intervention.

After two months, the first follow up was done through a telephone call. A maximum of 5 phone calls at different times and days was made before a patient was considered lost to follow up. A systematic subsample—one out of every four—of those patients stating they had quit were visited at home to

validate their smoking status through the measure of carbon monoxide in expired air by an Ecolyzer Bedfont EC-50. This afternoon home visit was performed by a trained public health nurse. Up to eight parts per million (ppm) of CO in expired air were taken as the cut-value to suspect smoking, according to Jarvis (17). At one year, all patients declaring themselves to have quit at two months were phoned to assess the long-term cessation rate. Besides comparing the proportions of nonsmokers in each group, a logistic regression was performed with cut-offs of $p=0.10$, with no interaction terms to find out those factors associated with the probability of giving up smoking (18).

Table 1. Subject Characteristics

	% Reached by Phone (n = 349)	% Lost to Follow Up (n = 76)
Age		
<30 years	36.7	53.9
30 – 44 yrs	30.8	27.6
≥45 yrs	32.5	18.5*
Sex		
Men	69.8	67.1
Women	30.2	32.9
Smoking-related illnesses		
Present	44.4	35.5
Absent	55.6	64.5
Expected difficulty		
Yes	73.9	77.1
No	26.1	22.9
Cigarettes/day		
≤15	35.8	27.6
>15	64.2	72.4
Age at onset		
<15 years	44.5	55.3
≥15 years	55.5	44.7*
Degree of dependence		
High	48.1	49.3
Low	51.9	50.7
Other smokers at home		
Yes	54.1	67.1
No	45.9	32.9*
Previous attempts to quit		
No	38.8	47.3
Yes	61.2	52.7
Motivation to quit		
Low/null	25.6	30.1
Moderate/high	74.4	69.9
Ever counseled to quit		
Yes	55.3	52.1
No	44.7	47.9

*Differences statistically significant ($p<0.05$).

RESULTS

During the one-month recruitment period, 425 smokers were included in the study by any of the 15 physicians participating in the study. At the two-month follow up, 349 (82%) patients were reached by phone, 52 of whom declared themselves quitters at that time. Out of 14 cases randomly selected for determination of CO in expired air, one case had levels clearly indicative of smoking status; another case refused the test; and two more cases could not be reached at home after two trials. Considering all the nonresponses as smokers, we found the proportion of self-reported abstention being true was 71%. Demographic features and smoking-related attitudes of the respondents and those lost to follow up are shown in Table 1.

The three groups had no significant differences in these characteristics except for the proportion of smokers having tried to quit before (higher among the B group patients). Patients who were not reached at first follow up were similar to those reached except for some small differences involving age, age at onset of smoking, and presence of other smokers at home.

The proportions quitting, both crude and adjusted for estimated validity, are shown in Table 2. Overall, the three interventions had similar results, about 5% ex-smokers at one year. Among group B patients, only 27 of 54 patients accepting the free supply of nicotine gum reported at follow up that they had used it. In the logistic regression only the expected difficulty of quitting was associated with the one-year self-reported cessation (OR 3.1; 95% CI 1.3–7.3).

DISCUSSION

The main goal of the study design was to assess the effectiveness of various brief and simple interventions that could be easily implemented in primary

Table 2. Proportion (%) of Quitters by Intervention Group

		At Two Months		At One Year	
	N	%	p	%	p
Physician counseling	175	10.4	——	4.4	——
Physician counseling + NG	93	10.6	NS	5.3	NS
Nurse counseling	81	10.4	NS	6.0	NS

NG = Nicotine gum.
N = Total number of smokers in each group.
Abstainer rates are adjusted by the calculated validity of the telephone statement.
P value from the X^2 test using group A (physician counseling) as a reference.

care centers and thus reach a large number of smokers. This kind of intervention would obtain its best results when applied in a systematic way, using every visit to the center as a smoking cessation intervention (19,20). This is why the magnitude of the absolute quit rates was not as critical as proving the feasibility and effectiveness of new strategies using resources widely available to the PCT (ie, physician counseling, nurse counseling, or nicotine chewing gum).

At two-month follow up, the proportion of nonsmokers was very similar in all three groups; the differences were bigger, although below statistical significance, at one-year follow up, suggesting that group B and group C interventions might obtain better long-term results. However, a question remains concerning the extent to which these differences can be attributed to the major effort to follow up these groups, since 67% of the group B and 64.2% of the group C patients had at least a follow-up visit at the center, while the proportion among group A patients was 46%. Since the follow-up visit was offered to every patient, we can conclude that any additional benefit from a different follow up should be considered part of the intervention, since it was scheduled to reinforce and monitor it.

The fact that the rate of abstention following medical advice among light and moderate-heavy smokers was almost the same supports the value of medical counseling for all types of smokers. It is worthwhile to point out that the use of nicotine gum was even lower than planned; the average number of units used was 4 per day for 17 days, much smaller than the usually recommended dose. However, it seemed to be highly effective among those smokers actually using it: 8 people out of 27 declaring themselves to have used the gum (29.6%) were abstainers at the one-year follow up. These results support the hypothesis that nicotine gum works in motivated patients, while it does not make any difference among unselected smokers, as pointed out by Hughes (12).

Quasiexperimental design is a reasonable option when randomization is not feasible for ethical or practical reasons (21). However, a major concern arises with the comparability of groups. In this case, the higher proportion of patients having tried to quit before being recruited might indicate that some physicians would have been prone selectively to include more smokers willing to use the nicotine chewing gum in this group. However, there were nonsignificant differences in other relevant variables, including those known to affect the probability of quitting according to our own data.

Another methodological issue that must be considered is the fact that the final sample size was lower than expected. This was mainly due to the fact that a high proportion of people attending two of the centers was sixty years old or older, so that the recruitment was slower than expected. Therefore, the statistical power obtained to detect differences of 5% between groups was 50.4% ($p = 0.05$, one-tailed test). However, the percentages of abstainers in all three

groups were so close that the lack of power can hardly be a cause of misinterpretation.

In general, smokers not reached at follow up were younger than those contacted; this may be related to the fact that young people tend to spend more time out of the home than older people. This is particularly true during the spring months of April to June when this follow up was performed. It is not easy to evaluate the effect of this bias on the study results. However, it is important to note that the nonrespondents did not differ in either the amount of smoking or the expected difficulty of quitting, the only variable actually predicting quitting in the logistic analysis.

The relationship of expected difficulty to actual abstention is not surprising, since it fits Bandura's theory of self-efficacy (22) and has been found in previous studies (13,23,24). However, it would be helpful to study its determinants and ways to improve it further.

Overall, the results support the need for widening the scope and methods of interventions addressing smokers in the primary care setting. There is a strong rationale for primary care nurses adopting a more active role as health educators, especially concerning life-style changes.

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