

## Smoking cessation with a 16 h nicotine patch: results in a group of hospital workers

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*Smoking cessation with a 16 h nicotine patch: results in a group of hospital workers. C.A. Jiménez Ruiz, S. Flórez, A. Ramos, L. Ramos, S. Solano, E. Forniés. ©ERS Journals Ltd 1997.*

**ABSTRACT:** As part of a programme for the implementation of a Smoking Control Policy in our hospital, an open study, without randomization, of 65 hospital workers, who wanted to give up smoking, was carried out.

The characteristics of smoking in each subject were recorded. The Fagerström Questionnaire was used to measure the degree of dependence on nicotine. The treatment consisted of the daily use of 16 h nicotine patches for 12 weeks. During the first 4 weeks, the patches contained 15 mg of nicotine, for the second 4 weeks, 10 mg, and for the last 4 weeks 5 mg (per patch and day). Five visits were scheduled during the 26 week study period: at the start of the study and after 4, 8, 12 and 26 weeks.

The abstinence was checked by measuring carbon monoxide in end-expiratory air.

The success rate was 31% after 12 weeks, and decreased to 29% after 26 weeks. In conclusion, the nicotine patches appeared safe and effective in this study.

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Hospitals must act as centres for the spreading of good health practices. Hospital workers, and physicians and nurses in particular, must comply with the requirement to act as role models and health educators [1, 2]. Cigarette smoking by such professionals undermines the message to patients concerning the adverse effects of tobacco consumption on health [3, 4]. Although smoking prevalence among doctors is low, it is higher among nurses [5].

Several years ago, we initiated a programme for the implementation of a Smoking Control Policy in our hospital. As a part of this programme, we offered treatment to help in quitting smoking with 16 h transdermal nicotine patches. We report the outcome in 65 subjects for up to 6 months of follow-up.

### Material and methods

#### Subjects

Volunteers were recruited by placing a poster on a board in the hospital. Seventy seven workers responded. The inclusion criteria were as follows: males or females aged 20–70 yrs, having smoked at least 15 cigarettes-day<sup>-1</sup> for at least 3 yrs. Eleven of the 77 workers did not comply with these inclusion criteria.

Exclusion criteria were: pregnancy or breastfeeding; presence of severe or symptomatic cardiovascular disease; regular use of psychotropic drugs; alcohol or drug

abuse; and chronic dermatological disorders. One of the 77 workers who responded had to be excluded according to these criteria. Thus the study population consisted of 65 subjects, 26 males and 39 females. Thirty of the subjects were physicians, 20 were nurses, and 15 were other male hospital staff. The baseline characteristics of the subjects are presented in table 1.

#### Clinical procedure

At the first visit, a smoking medical history was recorded to evaluate the characteristics of smoking in each subject. The Fagerström Questionnaire was used to measure the subject's degree of dependence on nicotine [6]. Carbon monoxide in end-expiratory air was measured using a carbon monoxide analyser (Bedfont Monitor, Sittingbourne, UK) [7]. A booklet containing advice on smoking cessation was given to each subject in addition to explanations about how the patch works and how

Table 1. – Baseline characteristics of the subjects

Subjects n	65
Age yrs	38 (2)
Cigarettes smoked daily n	27.4 (1.7)
Fagerström Questionnaire score	7.4 (1.1)
Carbon monoxide in exhaled air ppm	28.4 (3.9)

Data are presented as mean, and SD in parenthesis. Fagerström questionnaire score: ≤6 points=low or moderately dependent smoker; >6 points=highly dependent smoker. ppm: parts per million.

it should be used. The target date for smoking cessation was set for the next day.

Five visits were scheduled during the 26 week study period, at the start of the study and after 4, 8, 12 and 26 weeks. The following assessments were carried out: 1) carbon monoxide concentration in end-expiratory air; 2) severity of withdrawal symptoms; 3) side-effects. Each subject was seen by one of two physicians for 5–10 min; most of the time was used to complete the case record forms, but a few minutes to give advice about cessation.

### Treatment

The treatment consisted of daily use of nicotine patches for 12 weeks. During the first 4 weeks, a nicotine patch that delivered 15 mg for 16 h was used. During the first 4 weeks, the doses were reduced to 10 mg·day<sup>-1</sup>, and for the last 4 weeks the dose was 5 mg per patch and day. All smokers were told to use the nicotine patch during the day, and to remove the patch at bedtime.

### Measure of outcome

Success was defined as a statement that smoking had ceased, verified by a concentration of carbon monoxide of 4 parts per million (ppm) or less in expired air. Relapses were allowed during the first 2 weeks of treatment. Subjects who did not appear at the scheduled visits were considered to be smokers.

## Results

### Success rates

The rates of sustained success are presented in figure 1. Nineteen of the 65 subjects were successful after 26 weeks of follow-up. This abstainer group consisted of 7 males and 12 females. Nine of them were physicians, six were nurses and four were other male clinical staff. When considering several parameters, such as: age, number of cigarettes smoked daily, Fagerström score, and

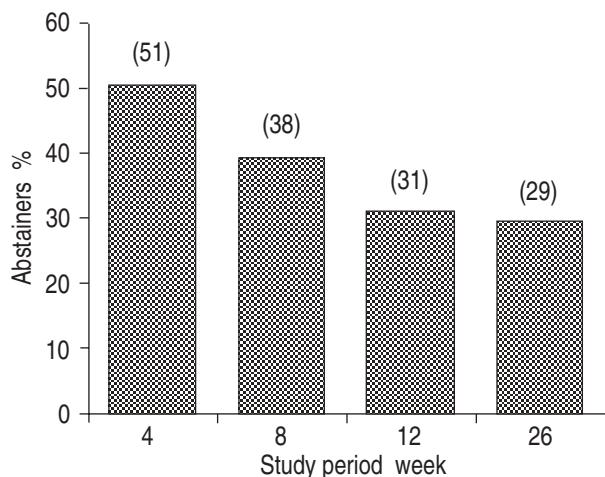


Fig. 1. – Change in verified abstinence during the study period.

carbon monoxide in exhaled air, no significant differences were found between the abstainer group and the relapses.

### Compliance with nicotine patches

After 4 weeks, 39 (60%) of the subjects had used the patches; most (35) used the patch daily, and just four used it occasionally (table 2). Almost all the subjects who were abstainers after the 12 week treatment period had used the patches daily or very often (table 2).

### Withdrawal syndrome

Ten typical withdrawal symptoms were assessed by the smoker at each visit, in accordance with a scale where: 0 = absence of symptoms and 4 = severe symptoms. The mean withdrawal syndrome score declined in the abstainer group during the following 26 week period (fig. 2).

### Side-effects

Fifteen of the 65 subjects suffered from adverse reactions (23%). The most frequent symptom was transient and mild itching under the patch (17%). Erythema persisting for several days in the area of the patch was reported by 10% of the subjects. Two subjects suffered from nausea (3%). Two subject had tachycardia without haemodynamic consequences, which disappeared spontaneously without treatment during the first days of treatment.

Table 2. – Usage of nicotine patches by the study subjects (n=65)

Time weeks	Occasionally	Daily or very often	Success rate
4	4 (6)	35 (24)	33 (50)
8	5 (8)	27 (41)	25 (38)
12	3 (4)	20 (31)	19 (30)

Data are presented as absolute number, and percentage in parenthesis.

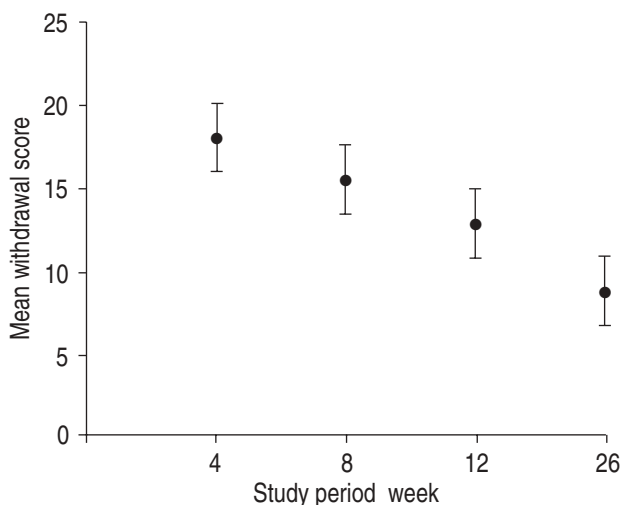


Fig. 2. – Mean withdrawal syndrome score at each visit in abstainers. Results are expressed as mean±SD.

## Discussion

Our protocol included minimal behavioural intervention plus nicotine patch, and the rates of sustained success were similar to other studies that have been carried out among the general population [8–10]. Studies suggest that physicians and nurses quit smoking for the same reasons as those cited by the general population [11, 12]. Nevertheless, the desire to provide a more positive example to patients and the exposure to smoking-related disorders may serve as additional motivators [3, 4, 11].

The baseline characteristics of the abstainer group were similar to the those of the relapsers. After the period of treatment, only 20 subjects had used nicotine patches daily or very often, and 19 of these were successful. None of the subjects who used the patches occasionally succeeded after 12 weeks.

Recent studies have suggested that the use of high doses of nicotine as replacement therapy in smokers with high dependence on nicotine is more effective than the use of lower doses [13, 14]. In the present study, low doses of nicotine were used and most of the smokers had a high Fagerström Questionnaire score. It is probable that if higher doses of nicotine had been used and the subjects had used the patches more often, the protocol would have resulted in a higher success rate. However, by using higher doses of nicotine, the number of side-effects would rise [15]. Moreover, recent studies have shown that complete abstinence from smoking for the first 2 weeks of treatment is one of the most powerful predictors of smoking cessation [16–18].

The nicotine patch seemed to be acceptable to the majority of subjects. The local side-effects were mild and nobody stopped using the patch because of them.

In conclusion, this study has shown a long-term success rate of 29% after 26 weeks. Nicotine patches can be considered safe. Local side-effects were minor and did not require removal of the patches.

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