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Evaluation of the motivation to quit smoking in outpatients attending a smoking cessation clinic

Abstract

Introduction: The efficacy of nicotine dependency treatment not only depends on the method employed but also, to a large extent, on patient motivation. Our aim was to evaluate the level of motivation and to define the most motivating factor to quit smoking in patients presenting to a smoking cessation clinic.

Material and methods: We investigated 111 nicotine addicts (50 men and 61 women) with a mean age of 58 years. We performed the evaluations using the N. Schneider motivation test, the Fagerström Test for Nicotine Dependence, and the smoking cessation clinic questionnaire.

Results: The most common motivation to quit smoking was health reason (83%). The mean score in the Schneider motivation test was 6.93 and the mean nicotine dependence score in the Fagerström test was 5.49. Readiness to quit smoking within a month was declared by 87 subjects (with 36% within 24 hours, 23% within a week, and 28% within 4 weeks). The motivation to quit smoking was similar in men and in women.

Conclusions: Health reasons are the strongest motivation to quit smoking among both male and female patients attending the smoking cessation clinic. Readiness to attempt smoking cessation, as indirectly assessed by the declared deadline for making the attempt, did not correlate with the level of motivation to quit smoking.

Key words: nicotine, smoking cessation, motivation

Introduction

Smoking is the main reversible cause of morbidity, which is why providing smokers with assistance in quitting may considerably contribute to reducing the prevalence of smoking-related disorders. The mean prevalence of smoking in the European Union between 2002 and 2003 was estimated at 29% (35% among men and 22% among women) [1]. Poland is a one of the countries with the largest tobacco consumption in the world with smokers accounting for about 35% of the general population, including 40% of men and 25% of women. Smoking is one of the most important causes of early mortality with about 4.83 million deaths recorded worldwide in 2000 (12% of deaths in adults ≥ 30 years of age). The most common cau-

ses included: cardiovascular disease (1.69 million deaths), chronic obstructive pulmonary disease (0.97 million deaths) and lung cancer (0.85 million deaths) [2]. According to the World Health Organisation (WHO), if the scale of smoking is not reduced, the annual mortality among smokers in 2030 will reach 10 million. The risk of premature death increases with the number of cigarettes smoked and decreases after smoking cessation [3].

Most smokers want to quit, with health reasons being the motivation for the majority of them. Strong motivation seems to be the fundamental factor in successful smoking cessation. The level of motivation is indirectly reflected by the readiness to quit smoking, which may be defined as the patient-declared deadline for attempting to quit.

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Our study aimed to evaluate the level of motivation and to determine the most motivating factor to quit smoking in patients attending the smoking cessation clinic.

Material and methods

The study included 111 patients consulted at the Smoker's Assistance Clinic of the Institute of Tuberculosis and Lung Diseases in Warsaw, Poland, between 2005 and 2007, in the alphabetical order of the Clinic's database.

Before the consultation each patient completed the Smoker's Assistance Clinic questionnaire that included:
— A motivation test, in which the maximum score (maximum number of "yes" answers) was 12 points and good motivation was reflected by scores of at least 6 points.
— The Fagerström Test for Nicotine Dependence [5–7], in which the maximum score was 10 points:
  • 0–3 points: low dependence
  • 4–6 points: moderate dependence
  • 7–10 points: high dependence.
— An assessment of the readiness to quit smoking, which took into account the replies in which the patient declared quitting smoking within no longer than one month.
— The smoking cessation clinic questionnaire, in which the motivation-related replies concerned the following issues:
  • health
  • cost of smoking
  • unpleasantness of the habit
  • feeling of guilt in front of others
  • unwillingness to be addicted
  • others (at the subject's discretion).
Each subject could select more than one reply.

Statistical analysis of the data was performed with Statistica 6.0 software (StatSoft) and with the use of an Excel macro (AZB analysis & software, 2007) [8].

The normality of the distribution of the test variables was analysed in the groups using the Shapiro-Wilk test. Non-parametric tests were used for distributions that failed to meet the normality assumption. The uniformity of variance was checked with the Levene test. The U Mann-Whitney test was used to compare the means between the groups. Comparisons of multiple independent groups were performed by analysis of variance (ANOVA or the non-parametric counterpart, the Kruskal-Wallis test). As post-hoc tests, the Sheffe and the Tukey test (ANOVA) and the Dunn test (a non-parametric test for the Kruskal-Wallis test), respectively, were used for the detailed identification of statistically differing groups.

The sizes of the groups were compared using the chi-square test with Yates' correction or with the v-square test. The data from the multiple-choice questionnaire were analysed with the use of multiple reply tables.

Correlations of the results of the motivation test and the test of dependence were analysed using Spearman's correlation coefficient and Kendall's tau coefficient. The statistical significance level in all the analyses was adopted at $P < 0.05$.

Results

We investigated 111 subjects with nicotine dependency. The study group consisted of 50 men and 61 women. The mean age was 58 ± 12.2 years. No sex-related differences in age were observed (the mean age of the male subjects was 58.2 ± 12.7 years and that of the female subjects was 57.9 ± 8.2 years). Most subjects had secondary-level education (41%), 32% had higher education, and 21% vocational education (Table 1).

The subjects reported cardiovascular disease (36%), respiratory diseases (20%), and psychiatric disorders (10%). Most subjects had multiple comorbidities (Table 2).

In the motivation test, the mean score for the entire group was 6.93 ± 2.7, including 7.35 ± 2.4 for men and 6.64 ± 2.9 for women. No significant sex-related differences were observed.

The degree of nicotine dependency in the Fagerström Test for Nicotine Dependence was 5.49 ± 2.6 overall, including 5.25 ± 2.5 for men and 5.65 ± 2.7 for women. Also in this case there were no significant sex-related differences.

Readiness to quit smoking within the next month was declared by 97 subjects (87%), with 40 subjects (36%; 34% of men and 38% of women) declaring readiness to quit within 24 hours, 26 (23%; 30% of men and 18% of women) within a week, and 31 (28%; 24% of men and 31% of women) within 4 weeks. No data were obtained from 13 subjects. One subject declared quitting smoking within 6 months.

We observed no significant sex-related differences in the readiness to quit smoking as assessed by the declared deadline for smoking cessation attempt.

We found a statistically significant, poor correlation between the motivation test result and the readiness to quit smoking (Spearman's R = 0.28, $P = 0.0025$; Kendall's tau = 0.23, $P = 0.0004$). The

Table 1. Characteristics of study participants — education

Education	Trade school	High school	University	No answer	Total
Women	9 (15%)	27 (44%)	20 (33%)	5 (8%)	61 (100%)
Men	14 (28%)	19 (38%)	16 (32%)	1 (2%)	50 (100%)
Total	23 (21%)	46 (41%)	36 (32%)	6 (6%)	111 (100%)

Table 2. Characteristics of study participants — health problems

Comorbidities	Men	Women	Total
Cardiological	13 (26%)	27 (44%)	40 (36%)
Respiratory	12 (24%)	10 (16%)	22 (20%)
Psychiatric	5 (10%)	6 (10%)	11 (10%)
Neoplasms	2 (4%)	6 (10%)	8 (7%)
Others	17 (34%)	20 (33%)	37 (33%)
No data	18 (36%)	21 (34%)	39 (35%)

subjects who were willing to quit were highly motivated (7.65 points), while those who had not declared the moment of quitting smoking had a significantly lower motivation test score (3.77 points) compared to the others ($P = 0.0058$) (Fig. 1). However, we observed no statistically significant differences in the test results between the groups of subjects who declared they would quit smoking "tomorrow", "in a weeks' time", and "in a month's time".
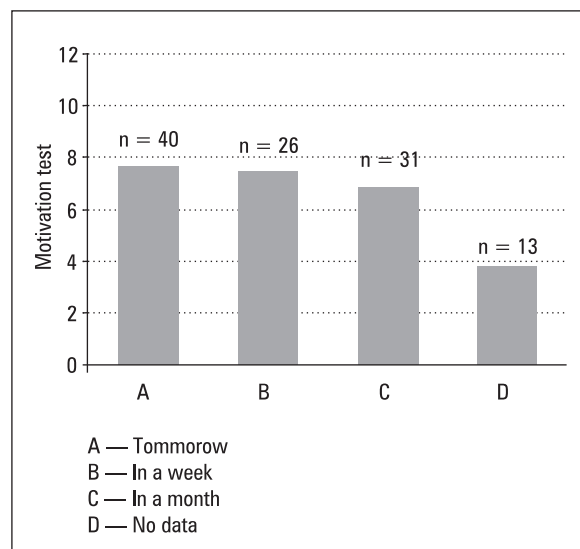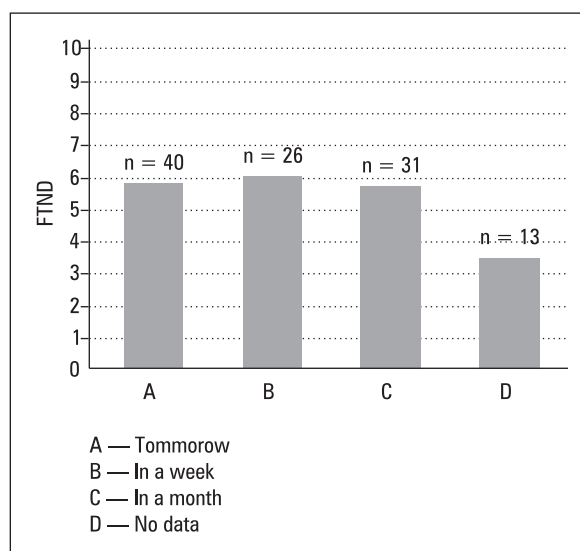
The positive correlation between the result of the Fagerström Test for Nicotine Dependence and the readiness to quit smoking was near-significant (Spearman's R = 0.173, $P = 0.07$; Kendall's tau = 0.135, $P = 0.036$). The subjects who had not declared the moment of quitting smoking had significantly lower scores in the Fagerström Test for Nicotine Dependence than the other subjects ($P = 0.0262$) (Fig. 2). Also in this case we observed no sex-related differences between the groups of subjects declaring the approximate time of quitting smoking.

Health reasons were the most frequent motivation to quit smoking (92 subjects, 83%) (Table 3).

Discussion

Identification of the factors that motivate smokers to quit seems valuable in the treatment of nicotine dependency and smoking prevention.

The information used in our study was provided by patients of a smoking cessation clinic, to

Figure 1. Motivation and readiness to quit smoking

Figure 2. Fagerström Test for Nicotine Dependence (FTND) and readiness to quit smoking

which they presented voluntarily and with the intention of quitting smoking. In spite of that, the mean score in the motivation test was rather low (6.93 ± 2.7). The degree of nicotine dependency was moderate (5.49 ± 2.6). We did not observe any sex-related differences in the degree of dependen-

Table 3. Characteristics of study participants — reasons to quit smoking

Reasons to quit	Men	Women	Total	p value
Health	43 (86%)	49 (80%)	92 (83%)	NS
Cost	17 (34%)	26 (43%)	43 (39%)	NS
Unwilling to be addicted	13 (26%)	20 (33%)	33 (30%)	NS
Cosmetic reasons	7 (14%)	9 (15%)	16 (14%)	NS
Feeling of guilt	8 (16%)	9 (15%)	17 (15%)	NS

NS — non inficance

cy or the motivation to quit smoking. Similar observations regarding the absence of any effect of sex on the severity of dependency or the motivation to quit smoking have also been made in other studies [9].

Success in smoking cessation is also related to the smoker's social status and education. Poverty and the low level of education are factors that diminish the chances of quitting smoking, while persons with a higher level of education are more interested in health-related issues and are willing to change their health behaviour [4, 9, 10]. Most of the patients presenting to our smoking cessation clinic had higher- or secondary-level education, which suggests that they took a greater interest in their health. In the study group, women and men did not differ in their level of education. Most subjects were middle-aged or elderly and some of them had already been suffering from smoking-related disorders. The most common co-morbidities were cardiovascular diseases, followed by respiratory diseases, then by psychiatric disorders.

"Health reasons" were the most frequently indicated reasons for presenting to the clinic. It seems that age and the symptoms of the underlying illnesses might affect the selection of health reasons as the most common factor motivating the patients to quit smoking. Similar findings have been reported in other studies: Siemińska et al. [11] demonstrated health motivation in 89% of the subjects and Hyland et al. [12] showed an even greater percentage (92%) in their study conducted in the United States and Canada.

The second most common reply was smoking-related cost (43%), which is similar to the study of Hyland et al., in which the percentage of patients willing to quit smoking due to the high cost of cigarettes was 59% [12].

Curry et al. [13] compared the effect of intrinsic motivation (health, unwillingness to be addicted) and extrinsic motivation (cost, others' opinions) and found that the subjects who were guided by intrinsic factors, including health reasons, were more willing to quit smoking and maintained longer periods of abstinence.

Patients who are concerned about their health are also more active in quitting smoking, as demonstrated in a prospective study of Scandinavian smokers [14]. In our study, the subjects who indicated health motivation were also more ready to quit smoking, as most of them declared that they would quit within the next day or week.

Our additional aim was to evaluate the tools used for determining the level of motivation. We found no correlation between the readiness to quit smoking reflected by the deadline declared by the patients and motivation reflected by the numeric score of the test. This demonstrates the difficulties in objectification of the smoker's approach to his or her habit and the limitations of the tools employed by the investigators. This has clinical implications, as the course of action taken by the person in charge of the treatment depends on the patient's stage of the smoking cessation decision.

Conclusions

Health reasons are the strongest motivation to quit smoking among both male and female patients attending the smoking cessation clinic. Readiness to attempt smoking cessation, as indirectly assessed by the declared deadline for making the attempt, did not correlate with the level of motivation to quit smoking.

References

1. Tobacco Policy in the European Union: ASH Fact Sheet No.20 www.ash.org.uk/htlm/factssheets/htlm/fact20.htlm. Date last accessed: Nov 2005. Date last updated: May 2006.
2. Ezzati M., Lopez A.D. Estimates of global mortality attributable to smoking in 2000. Lancet 2003; 362: 847–852.
3. Doll R., Peto R., Boreham J., Sutherland I. Mortality in relation to smoking: 50 years' observation on male British doctors. BMJ 2004; 328: 1519–1533.
4. Tønnesen P., Carrozzi L., Fagerstrom K.O. et al. Smoking cessation in patients with respiratory diseases: a high priority, integral component of therapy. Eur. Respir. J. 2007; 29: 390–417.
5. Fagerstrom K.O. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. Addict. Behav. 1978; 3: 235–241.

6. Fagerstrom K.O., Schneider N.G. Measuring nicotine dependence: a review of the Fagerstrom Tolerance Questionnaire. J. Behav. Med. 1989; 12: 159–182.

7. Heatherton T.F., Kozlowski L.T., Frecker R.C., Fagerstrom K.O. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. British J. Addict. 1991; 86: 1119–1127.

8. AZB analysis & software (2007). Dunn's Test (post hoc Dunn's test analysis software), version 7.01. www.azb.com.pl; September 2009.

9. Targowski T., From S., Rożyńska R., Mierzejewska J. Wpływ niektórych czynników demograficznych i socjalnych na stopień uzależnienia od nikotyny oraz motywację do rzucenia palenia tytoniu u zdrowych. Pneumonol. Alergol. Pol. 2004; 72: 198–200.

10. Pisinger C., Vestbo J., Borch-Johnsen K., Jørgensen T. It is possible to help smokers in early motivational stages to quit. The Inter99 study. Prevent. Med. 2005; 40: 278–284.

11. Sieminska A., Buczkowski K., Jassem E., Lewandowska K., Ucinska R., Chelminska M. Patterns of motivations and ways of quitting smoking among Polish smokers: a questionnaire study. BMC Public Health 2008; 8: 274.

12. Hyland A., Li Q., Bauer J. et al. Predictors of cessation in a cohort of current and former smokers followed over 13 years. Nic. Tobacco Res. 2004 (supl. 3); S363–S369.

13. Curry S., Grothaus L., McBride C. Reasons for quitting: intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. Addict. Behav. 1997; 22: 727–739.

14. Dijkstra A., Brosschot J. Behaviour worry about health in smoking behaviour change. Res. Ther. 2003; 41: 1081–1092.