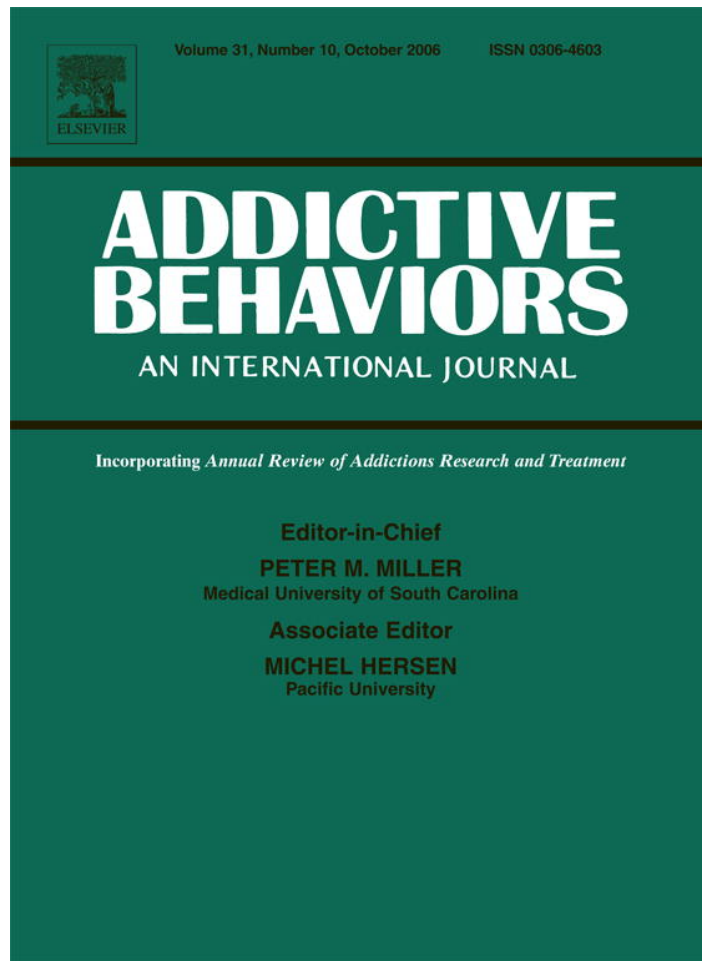


Provided for non-commercial research and educational use only.
Not for reproduction or distribution or commercial use.



This article was originally published in a journal published by Elsevier, and the attached copy is provided by Elsevier for the author's benefit and for the benefit of the author's institution, for non-commercial research and educational use including without limitation use in instruction at your institution, sending it to specific colleagues that you know, and providing a copy to your institution's administrator.

All other uses, reproduction and distribution, including without limitation commercial reprints, selling or licensing copies or access, or posting on open internet sites, your personal or institution's website or repository, are prohibited. For exceptions, permission may be sought for such use through Elsevier's permissions site at:

<http://www.elsevier.com/locate/permissionusematerial>



Short communication

Initial evaluation of a real-world self-help smoking cessation programme for adolescents and young adults

Reiner Hanewinkel ^{*}, Gudrun Wiborg

Institute for Therapy and Health Research, IFT-Nord, Düsternbrooker Weg 2, 24105 Kiel, Germany

Abstract

There is a lack of effective smoking cessation programmes for young people, despite the urgent need for them. The present study reports the initial results of a real-world self-help cessation programme which also contained a “quit and win”-contest component designed for adolescents and young adults. Consecutive registrants ($N=1265$) were surveyed 11 to 23 months after they registered to the programme to assess continuous abstinence. Results must be interpreted cautiously because this is an uncontrolled study with a 20.7% response rate ($N=262$). The programme was assessed positively by the participants. Results showed an 8.5% intention-to-treat quit rate with an average duration of 51.30 weeks continuous abstinence. Predictors for successful smoking were occasional smoking (not daily smoking) and older age.

© 2005 Elsevier Ltd. All rights reserved.

Keywords: Smoking; Cessation; Self-help; Quit and win; Adolescence

1. Introduction

Recent research shows that first symptoms of tobacco dependence can occur within a few weeks of occasional smoking (DiFranza et al., 2002). Many young smokers believe to be able to stop smoking without help and overestimate the percentage of adolescents who succeed in quitting (Stanton, Lowe, & Gillespie, 1996; Sussman, Dent, Severson, Burton, & Flay, 1998). Studies show that young smokers often fail to stop smoking (Mermelstein, 2003). There is a great need for cessation programmes tailored

^{*} Corresponding author. Tel.: +49 431 570 29 20; fax: +49 431 570 29 29.

E-mail address: hanewinkel@ift-nord.de (R. Hanewinkel).

to young smokers as the target group. The present paper describes the initial evaluation of a real-world smoking cessation programme aimed at adolescents and young adults aged 14 to 25 years. In particular we examined the acceptability of the programme as well as quitting rates and predictors for successful quitting.

2. Methods

2.1. Intervention

Participants could register for participation in the programme “Just be smokefree” via a prepaid postcard or online either alone, in a team with other smokers or with a non-smoker as a supporter. After registration, all participants received a 28-A4-page self-help manual. The manual consisted of three main parts: The first part included general information on smoking and health-related effects, as well as on tobacco industry strategies. In the second and main part behavioural modification techniques, working sheets and tests were offered for self-monitoring current smoking behaviour, and decisional balance. The main part also included advice on how to deal with withdrawal symptoms, craving and perceived risk situations to smoke. The third part of the manual was addressed to the supporters including advice on how to motivate and support the smoker when quitting smoking as well as when lapses or relapses occur.

A quit and win contest was carried out (Hey & Perera, 2005a,b): participants were contacted via e-mail and normal mail and asked to answer a few questions regarding their smoking status. Among all respondents successfully quitting smoking, prize draws were held every three months (with prizes worth a total of € 1000 in each prize draw). Smoking status in the winners was validated via a cotinine test by their General Practitioners.

2.2. Design of the initial evaluation

To evaluate the intervention concept, a pre–post-study design with two post-tests was conducted.

2.3. Measures

Variables were age, sex, smoking rate (daily smoking; four-week-prevalence), number of smoked cigarettes, duration of smoking, prior quit attempts as well as perceived importance (1=“very important” to 4=“not at all important”) and confidence to quit smoking (1=“very confident” to 4=“not confident at all”). Additionally we assessed whether participants registered for the programme without a supporting person, with a supporting person or in a team. In the first post-test, a second postcard was sent to all registered participants assessing whether they still smoke or not. For those having stopped, the quit date was assessed. Participants were also asked to rate the programme in general and the self-help manual (1=“very badly” to 6=“very satisfactory”) and to rate, whether they think that the programme would help young people to stop smoking (1=“very sure” to 4=“not at all sure”). In the second post-test, again a postcard was sent to all registered participants assessing smoking status, quit date for those having stopped and smoking rate and frequency in those still smoking.

2.4. Procedure

The sample was recruited from consecutive registered participants during a one year window from April 2002 to March 2003. Baseline data were assessed at registration for participating. For the two post-tests in March 2003 and March 2004, a prepaid postcard was sent to all registered participants. To increase the retention rate, postcards were pre-paid and a total of 500 Euro were raffled off among all responders regardless of their smoking status.

2.5. Sample

1417 participants with 1265 being included in the baseline sample. 152 of the participants were excluded because they did not intend to stop smoking and ask for the materials and information only. 23 of the participants did not indicate, whether they had smoked daily or during the previous four weeks.

Mean age of the participants at baseline was 21.5 years ($SD=8.5$) and 56.7% were female. 59.5% registered without a supporting person, 24.3% with a supporting person and 16.2% as a team of smokers. At registration, participants smoked 84.4 months on average ($SD=80.3$), 97.6% had smoked during the previous four weeks and 84.1% were daily smokers, the mean number of daily smoked cigarettes being 14.7 ($SD=9.4$). 81.9% already tried to quit smoking at least once, and the average number of previous quit attempts was 3.1 ($SD=2.8$). The majority of the sample (60.2%) considered it “very important” or “quite important” (34.9%) to quit smoking, while 3.7% thought that quitting was “hardly important” or 0.9% “not important at all”. Some 16.4% of the sample was very and 51.3% quite confident to quit smoking, while 29.6% reported to be “hardly confident” and 2.5% were “not confident at all”.

In the first post-test (March 2003), 408 participants (32.3%) took part. They were contacted again for a second post-test in March 2004 with 262 participants returning their questionnaire (20.7% of the baseline sample) via internet or normal post.

In the subgroup of daily smokers at baseline ($N=1045$), the retention rate from baseline measurement to second post-test was 18.9% with $N=197$ taking part in the second post-test.

3. Results

3.1. Attrition analyses

Participants in the attrition group (who did not take part in the second post-test measurement) smoked 15.0 cigarettes per day on average, compared to 13.4 cigarettes smoked in the retention group ($t(1.261)=2.39$; $p=0.02$). Moreover, in the attrition group, the percentage of daily smokers was significantly higher than in the retention group (85.9% vs. 77.3%; $\chi^2(1)=11.39$; $p=0.001$).

3.2. Acceptance of the programme

The majority rated the programme as “very good” (26.7%), “good” (48.6%) or “satisfactory” (19.5%). Some two third thought the “Just be smokefree” could “very surely” or “surely” help young people to stop smoking (66.6%).

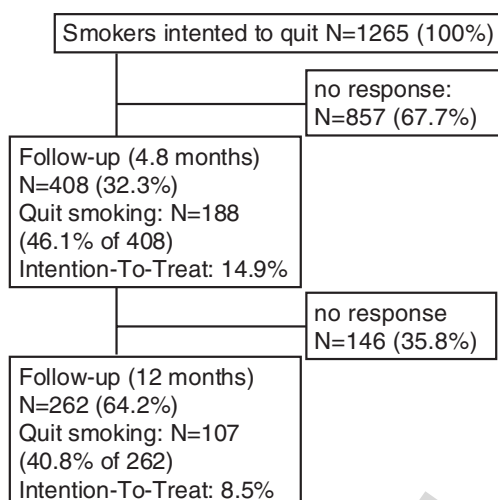


Fig. 1. Participation and quit rates.

3.3. Quit rates and smoking reduction

In the first post-test, 188 out of 408 responders (46.1%) reported to have quit smoking. An intention-to-treat analysis including all non-responders in the analysis as smokers resulted in a quit rate of 14.9%. The average abstinence duration was 19.3 weeks (SD=15.80; median=15.57). In the group of quitters, 75% were smoke free for at least a month and 35% for at least six months. In the second post-test, 107 out of 262 reported to be smoke free. The intention-to-treat analysis showed a quit rate of 8.5%. Mean duration of abstinence in participants in the second post-test was 51.30 weeks (SD=35.50). Those who did not quit, significantly reduced smoking from 13.58 to 11.01 cigarettes in the second post-test ($t(152)=4.35$; $p<0.001$) (Fig. 1).

At second post-test, 74 out of 197 daily smokers at baseline reported to be smoke free. The intention-to-treat analysis taking into account all daily smokers at baseline ($N=1045$) showed a quit rate of 7.1%.

Table 1
Results of the logistic regression analyses to predict quitting ($N=262$)

Predictor	Odds ratio	95% CI	<i>p</i>
Age	0.97	0.95–0.99	0.04
Sex	1.44	0.85–2.41	n.s.
Type of participation	1.47	0.98–2.21	<0.1
Daily smoking	0.49	0.27–0.88	0.02
Confidence to stop smoking	0.49	0.78–2.90	n.s.
Importance to stop smoking	1.00	0.64–1.56	n.s.
Prior quit attempts	0.85	0.44–1.65	n.s.
Number of daily smoked cigarettes	1.02	0.99–1.06	n.s.
Duration of smoking in weeks	0.99	0.99–1.00	n.s.

Note. Quitting was defined as follows: 1 = quit; 0 = not quit, CI = confidence interval.

3.4. Predictors for quitting

To examine predictors for quitting, smoking status served as the dependent variable with the categories “stopped smoking” and “still or again smoking”. The following baseline variables were included as predictors: age, sex, daily smoking, number of daily smoked cigarettes, confidence to be able to stop smoking, subjective importance to stop smoking, prior quit attempts (yes/no), type of participation in the programme (without social support, with social support, in a team of smokers). [Table 1](#) shows the main results of the analyses.

On average, participants who managed to quit smoking were older than those who did not quit (24.3 (SD=9.03) vs. 21.6 (SD=9.21) years). In our sample, a predictor for successful quitting was occasional smoking (not daily smoking) at baseline: in the group of the successful quitters, 69.1% of the participants had smoked daily at the beginning of the programme. In the group of participants who did not manage to stay smoke free, 82.6% smoked daily at the beginning of the programme.

4. Discussion

A pilot study was carried out to evaluate a low level smoking cessation programme for adolescents and young adults. An intention-to-treat analysis showed a quit rate of 8.5% with an average duration of abstinence of 51.30 weeks, in the subgroup of daily smokers the quit rate was 7.1%. The quit rate is higher than spontaneous or unassisted annual quit rates between 2% and 4% ([Paavola, Vartiainen, & Puska, 2001](#); [Zhu, Sun, Billings, Choi, & Malarcher, 1999](#)). This result can be considered as satisfactory. A recent review on the effects of 66 smoking cessation programmes for adolescents found a mean success rate of 12% ([Sussman, 2002](#)). However, most programmes included in this review were much more intensive, with a shorter follow-up period (mean follow-up: 8.6 months) and did not always measure continuous abstinence.

The significant components for quitting in this study were smoking status and age: older smokers had a higher chance to successfully quit smoking than younger. Daily smokers were less likely to quit smoking. These results have been described in literature ([Sargent, Mott, & Stevens, 1998](#)). A number of clinical studies indicate that women have more difficulties to stop smoking than men ([U.S. Department of Health and Human Services, 2001](#)). While only 37.8% of the women in our sample reported to be smoke free in the second post-test assessment, 46.7% of the male participants did so. However, this numerical difference failed to show statistical significance. In contrast to our expectations, social support in form of the registration as a team or with personalised support did not have any influence on quitting. However, we did not assess, whether participants who registered for sole participation, received any other kind of social support, so all we can conclude at this stage is that the type of participation did not have any significant influence on quitting behaviour. Also contrary to our expectations, perceived confidence to stop smoking did not predict actual quitting in the second post-test.

The study has methodological weaknesses to be addressed briefly in the following. Participants could register continuously within a time period of 12 months for the programme, but were all assessed at the same time, thus the individual time intervals for the first and second post-test data assessment vary. For that reason, we did not only assess whether participants managed to quit smoking, but analysed their mean duration of abstinence. The mean duration of continuous abstinence (51.30 weeks) in this study is

longer than the recommended four-week prolonged abstinence as standard criteria for the evaluation of the effectiveness of smoking cessation programmes in adolescence and youth (Mermelstein et al., 2002), and it exceeds the six-month prolonged abstinence interval applied in studies examining cessation programmes in adults (Pierce & Gilpin, 2003).

Since the programme is offered via Internet and all over Germany, it is accessible for everybody interested. For that reason it was not possible to conduct a randomised controlled trial and the assessed changes in smoking behaviour could be due to other factors rather than the programme. Self-reported smoking behaviour was not validated by biochemical measurement in the post-test data assessments. It cannot be ruled out that participants did not tell the truth when data was assessed. We tried to minimise this shortcoming by raffling off 500 Euro among all respondents regardless of their smoking status.

It was not assessed how much time participants spent to work with the manual. Also, it is not clear whether the self-help manual or the prize component was the more effective component in this programme.

Despite its limitations, the present study provides useful information about the potential effectiveness of a cessation programme tailored to young smokers. The programme can attract a high number of young people. Since the intervention is not a face-to-face one, the personal expenses are only limited. The major costs are printing and distribution costs, as well as prizes. Further studies including randomized control trials investigating the effectiveness as well as the cost-effectiveness are required.

Acknowledgements

The programme and study is supported by “Deutsche Angestellten Krankenkasse DAK” (a health insurance company), the “Deutsche Krebshilfe” (German Cancer Aid) and the European Commission, within the European Network on Young People and Tobacco Framework Project (ENYPAT).

References

- DiFranza, J. R., Savageau, J. A., Rigotti, N. A., Fletcher, K., Ockene, J. K., McNeill, A. D., et al. (2002). Development of symptoms of tobacco dependence in youths: 30 month follow up data from the DANDY study. *Tobacco Control*, *11*, 228–235.
- Hey, K., & Perera, R. (2005a). Competitions and incentives for smoking cessation. *Cochrane database of systematic reviews* (pp. CD004307).
- Hey, K., & Perera, R. (2005b). Quit and Win contests for smoking cessation. *Cochrane database of systematic reviews* (pp. CD004986).
- Mermelstein, R. (2003). Teen smoking cessation. *Tobacco Control*, *12*(Suppl 1), i25–i34.
- Mermelstein, R., Colby, S. M., Patten, C., Prokhorov, A., Brown, R., Myers, M., et al. (2002). Methodological issues in measuring treatment outcome in adolescent smoking cessation studies. *Nicotine and Tobacco Research*, *4*, 395–403.
- Paavola, M., Vartiainen, E., & Puska, P. (2001). Smoking cessation between teenage years and adulthood. *Health Education Research*, *16*, 49–57.
- Pierce, J. P., & Gilpin, E. A. (2003). A minimum 6-month prolonged abstinence should be required for evaluating smoking cessation trials. *Nicotine and Tobacco Research*, *5*, 151–153.
- Sargent, J. D., Mott, L. A., & Stevens, M. (1998). Predictors of smoking cessation in adolescents. *Archives of Pediatrics and Adolescent Medicine*, *152*, 388–393.

- Stanton, W. R., Lowe, J. B., & Gillespie, A. M. (1996). Adolescents' experiences of smoking cessation. *Drug and Alcohol Dependence*, 43, 63–70.
- Sussman, S. (2002). Effects of 66 adolescent tobacco use cessation trials and 17 prospective studies of self-initiated quitting. *Tobacco Induced Diseases*, 1, 35–81.
- Sussman, S., Dent, C. W., Severson, H., Burton, D., & Flay, B. R. (1998). Self-initiated quitting among adolescent smokers. *Preventive Medicine*, 27, A19–A28.
- U.S. Department of Health and Human Services. (2001). *Women and smoking: A report of the Surgeon General*. Washington, D.C.: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General.
- Zhu, S. H., Sun, J., Billings, S. C., Choi, W. S., & Malarcher, A. (1999). Predictors of smoking cessation in U.S. adolescents. *American Journal of Preventive Medicine*, 16, 202–207.

Author's personal copy