



## Full length article

# Motivating smokers to quit using computer-generated letters that target either reduction or cessation: A population-based randomized controlled trial among smokers who do not intend to quit



Christian Meyer<sup>a,b,\*</sup>, Sabina Ulbricht<sup>a,b</sup>, Severin Haug<sup>c</sup>, Anja Broda<sup>d</sup>, Gallus Bischof<sup>e</sup>, Hans-Jürgen Rumpf<sup>e</sup>, Ulrich John<sup>a,b</sup>

<sup>a</sup> Department of Social Medicine and Prevention, University Medicine Greifswald, Greifswald, Germany

<sup>b</sup> Partner site Greifswald, DZHK (German Centre for Cardiovascular Research), Greifswald, Germany

<sup>c</sup> Swiss Research Institute for Public Health and Addiction at Zurich University, Zürich, Switzerland

<sup>d</sup> Institute of Health and Nursing Sciences, Martin-Luther-Universität Halle-Wittenberg, Halle (Saale), Germany

<sup>e</sup> Research Group S:TEP, Department of Psychiatry and Psychotherapy, University of Lübeck, Lübeck, Germany

## ARTICLE INFO

## Article history:

Received 16 January 2016

Received in revised form 7 July 2016

Accepted 9 July 2016

Available online 15 July 2016

## Keywords:

Smoking cessation

Reduced smoking

Computer expert system

Self-help intervention

Population-based interventions

## ABSTRACT

**Background:** This study examined the long-term efficacy of individualized counseling letters that targeted either smoking abstinence or reducing the number of cigarettes smoked per day to promote future cessation.

**Methods:** A nationwide random-digit-dialing telephone sample was used to identify smokers from the general adult population (participation proportion: 54.5%). In total, 1462 participants (48% female) who did not intend to quit within the next six months and who smoked ten or more cigarettes a day were randomized to one of two intervention groups or an assessment-only control condition. The interventions consisted of three tailored letters that were sent after baseline and follow-up assessments after three and six months. Follow-up data on smoking status were provided by 82% and 77% of the participants 12 and 24 months after study inclusion, respectively. Generalized estimation equation (GEE) models adjusted for potential baseline confounders and multiple imputation of missing follow-up data were used to estimate intervention effects.

**Results:** At 24-month follow-up prevalence of 7-day point abstinence was 8.4%, 12.9% and 14.7% in the control, abstinence intervention and reduction intervention condition, which corresponds to a number needed to treat of 22 (95%-CI: 11–707) and 16 (95%-CI: 9–53). Adjusted GEE analyses revealed that the smoking reduction intervention ( $OR_{adj} = 2.3$ ,  $p < 0.01$ ) but not the abstinence intervention ( $OR_{adj} = 1.4$ ,  $p = 0.20$ ) increased the odds of 6-month prolonged abstinence compared with the control condition. No significant differences appear when directly comparing both intervention groups.

**Conclusion:** Smoking reduction should be considered as an alternative intervention goal for smokers who are unable or unwilling to quit.

© 2016 Elsevier Ireland Ltd. All rights reserved.

## 1. Introduction

Although effective tobacco control measures have been implemented over the past decades (US Department of Health and Human Services, 2014) a substantial part of the population continues to smoke and does not intend to quit (John et al., 2003; Velicer et al., 1995; Wewers et al., 2003). According to survey data

collected in Canada, the United States, the United Kingdom, and Australia 67% of daily smokers were in the precontemplation stage, which is defined by no intention to quit within the next six months (Reid et al., 2010). Thus, innovative population-based strategies are needed to motivate smokers to quit. Smoking fewer cigarettes has been discussed as an intermediate goal for individuals who are currently unwilling or unable to quit (Cinciripini et al., 1995). From a harm-reduction perspective, it has been argued that reduced smoking may reduce smoke exposure, which in turn may decrease smoking-related health risks (Shiffman et al., 2002). A number of studies have indicated that smokers were able to substantially reduce smoking and maintain the reductions over time (Hughes

\* Corresponding author at: Institute of Social Medicine and Prevention, University of Greifswald, Walter-Rathenau-Str. 48, D-17475 Greifswald, Germany.  
E-mail address: [chmeyer@uni-greifswald.de](mailto:chmeyer@uni-greifswald.de) (C. Meyer).

and Carpenter, 2005). Recent evidence suggests that reduced smoking is associated with improvements in a number of cardiovascular risk factors and respiratory symptoms as well as declining biomarkers, reduced incidence of lung cancer and a possible small increase in birth weight (Pisinger and Godtfredsen, 2007). However, these findings have been challenged by other studies that have failed to demonstrate these health benefits of reduced smoking and that are concerned about the previous studies' methodologies (Hughes and Carpenter, 2006).

Another argument for promoting reduced smoking is that it may initiate cessation over the long term. A systematic review of RCTs that tested smoking reduction interventions among smokers who were not ready to quit identified nine trials involving pharmacological treatment (Asfar et al., 2011). The pooled analysis revealed twofold odds of the point prevalence of smoking abstinence compared with the control condition at follow-up. Only one trial tested an intervention that was exclusively based on non-pharmacological interventions. HMO patients received a reduction-oriented telephone counseling sessions and tailored newsletters (Glasgow et al., 2009). At month 3 the rate of smokers reducing cigarette consumption by at least 50% was significantly increased in the intervention compared to the control group and a modest but non-significant intervention effect was observed at 12-month follow-up with respect to smoking abstinence.

Given the high prevalence of smoking, self-help interventions may provide a feasible and cost-saving alternative to interpersonal counseling (Meyer et al., 2008, 2012). In particular, substantial effects have been found for print-based self-help interventions that were tailored to characteristics of the individual smoker compared with non-tailored materials and with no intervention (Hartmann-Boyce et al., 2014). Print materials that were tailored by computer expert-systems have been predominantly designed for and tested among proactively recruited samples of smokers, including a majority who do not plan to quit (Hartmann-Boyce et al., 2014). In turn, tailoring intervention materials for unmotivated smokers by targeting reduced smoking might improve the size of the intervention effect. To date, no efficacy trial of such an intervention has been provided.

The objective of the present study was to test the efficacy of computer-generated tailored letters that targeted either the reduction or the cessation of smoking against an assessment-only condition. Adults who smoked ten or more cigarettes a day and who did not intend to quit within the next six months were proactively recruited from the general population. The outcome of primary interest was abstinence from smoking.

## 2. Methods

We conducted a three-arm randomized controlled trial to compare the effect of computer-generated counseling letter interventions that targeted either reduced smoking or smoking abstinence with a minimal assessment-only control condition. The trial was registered at [ClinicalTrials.gov](http://ClinicalTrials.gov) (Reg.-No.: NCT00678938) and has been approved by the ethical review board at the University of Greifswald (Reg.-No. III UV 52/04).

### 2.1. Sampling and randomization

To draw a nationwide random sample of the general population, we used a random-digit-dialing procedure that is adapted to the specifics of national telephone number allocation practices (Häder and Gabler, 1998). Among the sample of 84,150 telephone numbers, 34,903 numbers were allocated to private households. The contact person was asked whether the household included an adult who smoked tobacco. The contact person was the target person if

he or she affirmed current smoking and age of 18 or older. If the contact person did not currently smoke tobacco, a target person was determined by the "last birthday" question, which referred to all adult smokers in the household. The inclusion criteria for the present study were daily smoking in the past 4 weeks of at least 10 cigarettes per day and no intention to quit smoking within the next six months. Study information was given by phone and participants' verbal consent was electronically registered during the interview. After the initial telephone contact a letter was sent to all participants. The letter repeated all detail about the study including data protection issues and the information that participation is voluntary and that participants are free to withdraw their consent at any time. In line with telephone survey research practice in Germany written informed consent was not considered for practical reasons. The procedure was approved by the ethical review board. The participants were randomized to the three study conditions via a computer-based procedure. To increase the power of the comparisons between both intervention groups, we used a disproportional randomization algorithm (Dumville et al., 2006), setting the allocation probability to 36.8% for each intervention group and 26.4% for the assessment-only control group.

### 2.2. Study conditions

**2.2.1. Abstinence intervention.** This intervention consisted of three counseling letters and self-help manuals that targeted smoking abstinence. The letters were tailored according to the principles of the Transtheoretical model (TTM) of behavior change (Velicer et al., 2000) and generated by a fully automated computer expert system that was structurally comparable with the system developed by Velicer et al. (1993). The system used in this study was based on an initial version provided by the Cancer League Switzerland (Martin-Diener et al., 1997), reprogrammed and modified with respect to feedback paragraphs and norm data. The norm data were taken from multiple large-scale surveys that were conducted in the target population. The letters were tailored to the stage of change regarding the target behavior, smoking cessation, which was defined by current smoking status (differentiating abstinence of less or more than 6 months), the intention to quit smoking (within the next six month or within the next 4 weeks) and having a quit attempt in the past 12 months (DiClemente et al., 1991; Velicer et al., 1995). In the present study all participants were in the precontemplation stage at baseline with respect to smoking abstinence. However, advanced stages could be reached in the later assessments. Further measures used to tailor the letters were the scores on the decisional balance (10 items measuring pros and cons of non-smoking; Jäkke et al., 1999), self-efficacy (9 items measuring situational temptations to smoke; Jäkke et al., 1999), and processes of change scales (36 items measuring risk assessment, commitment, helping relationships, taking control, stimulus control, self-reevaluation, coping with temptation to smoke; Etter et al., 2000). For the first letter the selection of feedback paragraphs depends on the individual scores on the abovementioned scales compared to the population norm within the respective stage of change. This letter was sent out immediately after the baseline assessment. Two further letters were provided three and six months after the initial contact and based on information gathered at two further telephone interviews. Both letters additionally included ipsative feedback, i.e., information that is tailored to individual changes that have occurred since the previous assessment of the different constructs. The letters were accompanied by a selection from a series of six self-help manuals that covered specific information that was relevant for the particular stage of change. The intervention system had been tested in studies among consecutive general practice patients (Meyer et al., 2008, 2012).

Download English Version:

<https://daneshyari.com/en/article/7503604>

Download Persian Version:

<https://daneshyari.com/article/7503604>

[Daneshyari.com](https://daneshyari.com)