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Web-based computer-tailoring for practice nurses aimed to improve smoking cessation guideline adherence: A study protocol for a randomized controlled effectiveness trial

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ABSTRACT

Background: Dutch practice nurses sub-optimally adhere to evidence-based smoking cessation guidelines. Web-based computer-tailoring could be effective in improving their guideline adherence. Therefore, this paper aims to describe the development of a web-based computer-tailored program and the design of a randomized controlled trial testing its (cost-)effectiveness.

Methods: Theoretically grounded in the I-Change Model and Self-Determination Theory, and based on the results of a qualitative needs assessment among practice nurses, a web-based computer-tailored program was developed including three modules with tailored advice, an online forum, modules with up-to-date information about smoking cessation, Frequently Asked Questions (FAQs) and project information, and a counseling checklist. The program's effects are assessed by comparing an intervention group (access to all modules) with a control group (access to FAQs, project information and counseling checklist only). Smoking cessation guideline adherence and behavioral predictors (i.e. intention, knowledge, attitude, self-efficacy, social influence, action and coping planning) are measured at baseline and at 6- and 12-month follow-up. Additionally, the program's indirect effects on smokers' quit rates and the number of quit attempts are assessed after 6 and 12 months.

Discussion: This paper describes the development of a web-based computer-tailored adherence support program for practice nurses and the study design of a randomized controlled trial testing its (cost-)effectiveness. This program potentially contributes to improving the quality of smoking cessation care in Dutch general practices. If proven effective, the program could be adapted for use by other healthcare professionals, increasing the public health benefits of improved smoking cessation counseling for smokers.

1. Introduction

Smoking continues to be the leading cause of preventable disease and premature death worldwide [1,2]. In the Netherlands, smoking prevalence has been decreasing for years, but about 23% of the adult population still smokes [3]. Evidence-based smoking cessation interventions combining pharmacotherapy with behavioral counseling are effective in supporting smokers to quit [4–6]. Dutch smokers most often visit their general practice for such cessation support, which is increasingly provided by trained practice nurses (PNs) [7,8]. PNs are employed in 80% of general practices, taking over specific tasks from the GP such as chronic disease consultations and lifestyle counseling, like smoking cessation support [9].

PNs are qualified to provide smoking cessation counseling [9], but their adherence to evidence-based smoking cessation guidelines has proven to be suboptimal (i.e. partial adherence) [10–12]. Complete adherence to these guidelines is known to have better effects on patients' quit rates than only a brief quit advice or less elaborate counseling [13]. As improved guideline adherence positively contributes to the quality of smoking cessation care [9,14], it is therefore important to improve PNs' smoking cessation guideline adherence.

Dutch PNs' suboptimal guideline adherence can be explained by various perceived barriers, such as low self-efficacy to motivate smokers and use motivational interviewing techniques; difficulties finding up-to-date information about smoking cessation, compensation of counseling and high-quality training opportunities for PNs; and not considering cessation counseling as their responsibility [9,15,16]. Particularly guideline elements like 'motivating smokers to quit' and 'organizing adequate follow-up consultations' are regularly not adhered to in practice [16]. Recognizing these barriers to smoking cessation guideline adherence, Dutch PNs have recently indicated interest in a tailored, easy-to-use, web-based program that can provide them with guideline adherence support [16].

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Such guideline adherence support can be provided via web-based computer-tailored (CT) programs, providing PNs with personally relevant advice, based on their individual answers to the questions of an online questionnaire [17]. When PNs, for instance, indicate specific difficulties for adhering to evidence-based smoking cessation guidelines they subsequently receive CT advice about only those difficult situations (e.g. when patients have little time) that they individually perceive as barriers to adherence [18]. Integrating CT advice in a web-based environment makes it easily accessible, since PNs can consult it wherever and whenever they find convenient [19,20].

CT programs have proven to be effective in changing various health behaviors and their determinants [21–24]. CT programs for smokers, for example, were found to be effective in improving quit rates [25–28] and a CT intervention for physicians showed promising results regarding adherence to smoking cessation guidelines [29]. We therefore hypothesize that CT advice on applying evidence-based smoking cessation guidelines can effectively support PNs to improve their guideline adherence. Ultimately, CT advice could contribute to improving the quality of smoking cessation care in general practices, resulting in more successful quit attempts among counseled smokers and less smoking related illness and death. Nonetheless, a CT program for PNs aimed at improving their smoking cessation guideline adherence does not yet exist.

Therefore, this paper describes the development of a web-based CT adherence support program and its components for Dutch PNs. Additionally, the study design of a randomized controlled trial testing the program's (cost-) effectiveness is described.

2. Methods/design

The aim of this paper is to describe the development of a web-based CT adherence support program for PNs and the study design of the randomized controlled trial testing the effectiveness of this program in terms of guideline adherence by the PN and subsequent smoking cessation rates among their smoking patients. Evaluation by the Medical Ethics Committee Atrium-Orbis-Zuyd (14-N-17) revealed that no medical ethical clearance for this study was needed according to the rules of the Medical Research Involving Human Subjects Act (WMO). The study is registered with the Dutch Trial Register (NTR4436).

2.1. Study design effectiveness trial

In order to investigate the effects of the web-based CT program on PNs' adherence to evidence-based smoking cessation guidelines, a randomized controlled trial will be conducted. PNs in the intervention group have full access to the content of the web-based CT program (i.e. five intervention modules and three general modules), while PNs in the control group have access to the three general modules of web-based CT program only.

At the start of the trial all participating PNs are asked to fill out a baseline questionnaire. Upon completion of this questionnaire, only PNs in the intervention group receive a tailored feedback letter (which PNs can later also consult in one of the intervention modules). Immediately after receiving this feedback letter, intervention group PNs have access to five intervention modules i.e. brief tailored advice, extended tailored advice, new tailored advice, an online forum, and background information) and three general modules (i.e. project information, frequently asked questions (FAQs), and a counseling checklist). PNs are free to (re-)visit and use these modules at their convenience during a six-month period.

After completion of the baseline questionnaire, PNs in the control group receive a short thank-you message. During the subsequent six months, these PNs do not have access to the five intervention modules of the web-based CT adherence support program, but only to the three general modules: project information, the FAQs and the counseling checklist. PNs in this group can also (re-)visit and use these modules at their convenience.

Once the six-month intervention period ends and PNs in both the intervention and control group have filled out the first follow-up questionnaire, only project information, the FAQs and the counseling checklist remain accessible for both groups. Intervention group PNs will no longer have access to the five intervention modules. The three general modules remain available until PNs from both groups receive the invitation to fill out the second follow-up questionnaire, 12 months after baseline (see Fig. 1).

2.2. Recruitment of practice nurses

PNs actively engaged in providing smokers with cessation counseling and working in general practices in the Netherlands are invited to participate in the trial. Moreover, PNs are eligible when they are sufficiently proficient in Dutch, have Internet access and have an active email account.

PNs who already participated in our preliminary studies (i.e. individual interviews with PNs and an online questionnaire for PNs) and reported to be interested in participation are personally invited to participate. Further recruitment takes place via several national institutes and organizations for Dutch PNs specifically, or primary care professionals more generally. Through these institutes and organizations PNs are initially invited via email, newsletters and website messages. Additionally, social media platforms such as LinkedIn, Twitter and Facebook are used to inform as many people as possible about the research project and refer them to the project website (www.sterstudie.nl). This website has been online since September 2014, is free to visit and offers more details about the rationale and the different studies of the project, about the research team and about evidence-based smoking cessation guidelines in general. Through the website, PNs are also informed about the research objectives, the randomization procedure of the trial and the incentive for trial completion (i.e. a €50 gift voucher). They also have the opportunity to contact the research team for more information or directly register for participation in the trial via the website. In addition, a FAQs section is available on the website to directly answer questions that PNs might have. In case PNs report to be interested in participation they are subsequently contacted by telephone.

2.3. Randomization

After verbal consent is provided via telephone, PNs receive an email containing detailed information about the project and instructions for signing in to the web-based CT adherence support program (i.e. personal username-password combination and a personalized auto-login link). No one but the research team is able to retrieve these login data. After PNs access the program and start filling out the baseline questionnaire they are asked to provide online informed consent, after which they are randomly allocated to either the intervention or the control group of the trial. Group allocation takes place at respondent level by means of a computer software randomization device, which allocates approximately half of the PNs to each group. Blinding of the PNs is not possible, since they are aware of their access to the different modules of the web-based CT program after they have completed the baseline questionnaire.

2.4. Recruitment of smokers

Recruitment of smokers is important for the evaluation of smokers' abstinence rates and number of quit attempts, which is a secondary aim of the trial. Every smoking patient who visits the general practice and receives smoking cessation care from a PN participating in the trial is invited by his/her PN to participate. PNs are provided with a recruitment letter (i.e. sent to the PN via email by the research team and accessible via the module with project information of the web-based program) that can be used to inform smokers about the trial. Individuals eligible for participation should smoke at the start of the study and should receive individual smoking cessation counseling from a PN who is enrolled in the study. Furthermore, smokers must be 18 years