Tobacco prevention and reduction with nursing students: A non-randomized controlled feasibility study

Anneke Bühler, PhD [a,*], Katrin Schulze [a], Christa Rustler [b], Sabine Scheifhacken [b], Ines Schweizer [c], Mathias Bonse-Rohmann, Prof PhD [d]

[a] IFT Institut für Therapieforschung, München, Parzivalstr. 25, D-80804, München, Germany
[b] Deutsches Netzwerk rauchfreie Krankenhäuser (DNrfK), Pettenkoferstrasse 16-18, D-10247, Berlin, Germany
[c] Hochschule Esslingen, Flandernstr. 101, D-73732 Esslingen a.N., Germany
[d] Hochschule Hannover, Blumhardtstraße 2, D-30625, Hannover, Germany

ARTICLE INFO

ABSTRACT

Background: Prevalence of tobacco use among nurses and nursing students is disproportionally high in Germany. However, from a public health perspective they are considered to be an important group for delivering smoking cessation interventions. As delivery of tobacco-related treatment depends on own smoking status, smoking prevention and cessation among the nursing professions is indicative for improving nurse and public health.
Objective: To evaluate the feasibility and effects of a comprehensive tobacco prevention and reduction program on psychosocial and environmental factors related to smoking behavior of nursing students.
Methods: Between 2014 and 2015, a non-randomized, controlled feasibility study was conducted in 12 schools of nursing with 397 nursing students in Germany. Students in the intervention group received a program (ASTRA) consisting of an introductory session, steering committee workshop, stress prevention lessons, evidence-based smoking cessation intervention, and action project. Six months after baseline assessment, change in smoking-related protective and risk factors was determined. Secondary endpoints included smoking behavior.
Results: The program was implemented in total in 5 of 7 intervention schools. About one third of smoking nursing students participated in a cessation intervention. The program seems to do better than a minimal intervention booklet in four primary outcomes: perceived descriptive, subjective, and injunctive norms towards smoking and nursing as well as perceived social support. As anticipated, there was no change in smoking behavior.
Conclusions: The applied approach is feasible and able to improve important smoking-related norm perceptions of student nurses and perception of social support. However, additional context measures to influence the settings of nursing education currently rather supporting smoking seem to be necessary in order to promote smoking cessation among nursing students and to scale up implementation of the program.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

To stop or not to start smoking is a significant if not the most effective health-related decision a person can take. Smokers are estimated to die ten to 11 years earlier than non-smokers (Doll et al., 2004;Pirie et al., 2012). Quitting smoking at any age is beneficial. The earlier this is accomplished the more substantial are reductions in overall mortality and morbidity at any given age compared to continuous smokers (Doll et al., 2004; Pirie et al., 2012).

From a public health perspective, nurses are an extraordinary target group when it comes to tobacco-related intervention. They play an "instrumental role" in tobacco reduction among the general population (Schultz, 2003, p.571) as nurses' advice is effective in supporting patients to quit (Rice et al., 2013). At the same time, prevalence of smoking is high among the nursing population itself. In Germany, rates range from 31% in health care nurses to 42% in elderly care nurses (Statistisches Bundesamt, 2014). Nurses mostly initiate smoking before they start their nursing education (Kolleck, 2004). It is estimated that about every second nursing student uses tobacco at the beginning of their vocational career (Hirsch et al., 2010; Vitzthum et al., 2013). Given the fact that own smoking behavior impedes cessation support by nursing staff (Vitzthum et al., 2013; Sarna et al., 2014) any intervention which leads to a lower proportion of smoking nurses will improve nurse and public health.

* Corresponding author.
E-mail addresses: buehler@ift.de (A. Bühler), schulze@ift.de (K. Schulze), christa.rustler@rauchfrei-plus.de (C. Rustler), sabine.scheifhacken@rauchfrei-plus.de (S. Scheifhacken), Ines.Schweizer@hs-esslingen.de (I. Schweizer), mathias.bonse-rohmann@hs-hannover.de (M. Bonse-Rohmann).

Tobacco control in Germany compares unfavorably to many European countries (Schaller and Pötschke-Langer, 2012). Only one tobacco prevention and cessation measure with nursing students has been initiated and evaluated (Rapp et al., 2006). By learning brief cessation counseling in school, nursing students were expected to quit smoking. The applied approach improved student nurses' medical knowledge and promoted their competence in giving advice to smokers, but had no effect on their own smoking behavior (Rapp et al., 2006). Reviving the Federal Drug Comissioner's statement about the importance of health care professionals in tobacco control (Die Drogenbeauftragte, 2008), the Federal Health Ministry supported the development of an intervention to prevent and reduce tobacco consumption among nursing students. This manuscript describes the intervention ASTRA and reports results from the feasibility study.

2. Background

In order to effectively change psychosocial and environmental factors related to smoking behavior in the short-term and prevent and reduce nursing students' smoking behavior in the long-term, the design of the intervention is based on research and best-practice from several areas.

2.1. Environmental Measures

Currently, nursing education in Germany is perceived as a context characterized by smoking-friendly norms and regulations (Kolleck, 2004). Social-cognitive models of behavior emphasize the importance of perceived descriptive, subjective and injunctive norms as well as self-efficacy to be able to behave in a certain way (Bandura, 1989; Ajzen, 1991). If smoking is perceived as being common and accepted in a given setting, then initiation and maintenance of tobacco use is more probable (Riou França et al., 2009; Freedman et al., 2012). In contrast, perceived incompatibility of professional self-concept as nurse and smoking indicates cognitive dissonance towards smoking which is associated with less smoking behavior (Pericas et al., 2009). Finally, in a smoking-restricted context students may be likelier to believe they can resist tobacco use and therefore smoke less. Resistance self-efficacy predicts smoking cessation in young adults (Cengelli et al., 2012).

An audit tool developed by the ENSH-Global Network for Tobacco Free Health Care Services has been adapted for the ASTRA workshop to guide the way to smoke-free nursing education (ENSH-Global, 2011). Introduction of the ENSH-process has been shown to produce a substantial increase in smoke-free policy at hospitals and service volume of smoking cessation (Huang et al., 2015).

According to substance abuse prevention research, increased student participation, improved relationships and positive school ethos is associated with reduced drug use (Fletcher et al., 2008). Thus the ASTRA action component gives nursing students the opportunity to actively improve their school social and physical environment and make it a healthier place.

2.2. Psychosocial Measures

Turning to the behavioral level, ASTRA takes into account evidence which points to the importance of stress coping skills and break management for successful smoking cessation among nurses (Sarna et al., 2005; Perdikaris et al., 2010). Activating social support seems to be crucial. Reeve et al. (2013) report that nursing students experience high levels of anxiety, worry and depression in response to stress and cope through utilizing social support from fellow nursing students rather than from faculty staff. In their review on stress prevention measures Galbraith and Brown (2011) conclude that the most successful professional interventions with student nurses are theory-based and incorporate skills to enable cognitive reappraisal of maladaptive cognitions, as well as relaxation. In line with these conclusions, the theoretical basis of ASTRA's stress prevention component is Lazarus and Folkman's (1984) work on stress, reappraisal and coping.

The most effective smoking cessation strategies with young adults were found to be cognitive-behavioral and social-cognitive approaches as well as motivation enhancement (Villanti et al., 2010). In order to overcome well known recruitment difficulties (Bühler and Thrul, 2012), ASTRA offers three formats based on these approaches: group format, quit line, and web-based cessation.

This background guided development of the intervention as well as its evaluation in the feasibility study. The aim of the evaluation was to explore change processes initiated by ASTRA. Evaluation outcomes need to be realistic (EMCDDA, 2011). Considering the current context of nursing education which rather supports tobacco use, primary outcomes were psychosocial and environmental factors related to smoking behavior rather than smoking behavior itself.

3. Method

3.1. Intervention Model, Content and Delivery Method

Fig. 1 depicts the intervention model of the ASTRA program. ASTRA aims at changing intermediate, proximal and distal predictors of smoking behavior through five environmental or psychosocial components.

The ASTRA program implemented in nursing schools during the first year of school consists of an introductory session, a steering committee workshop, four stress prevention lessons including after care text messages, an offer of three evidence-based smoking cessation interventions, and an action project (www.astra-programm.de). The introductory session (90 min) informs all stakeholders about the program, gives general and nursing-specific information about smoking and aims at promoting motivation for a smoke-free nursing education. In the ASTRA workshop (120 min) school administration, teachers, practice mentors reflect on the school's tobacco and health policy along the ten ASTRA tool dimensions (adapted from ENSH-Global, 2011). Five goals are priorized and three goals are set to be achieved during the next three months. In the stress prevention lessons (adapted from Müller, 2013) students analyze their stressful situations and social support resources. Three coping strategies, self-rewarding techniques, and assertive behavior are trained in simulated nursing and smoking situations. In addition, a buddy support system is introduced and participants are sent supporting text messages during their following practice semester. Students are offered evidence-based cessation interventions in terms of a group format (Wenig et al., 2013), helpline (Lindinger et al., 2012) and online-program (Zeidler and Kleiber, 2016). Students not attending the smoking cessation group participate in the action project. Here, the topic health promotion is addressed and school-specific environmental health or smoke-free initiatives are developed and implemented by the students (e.g. new lounge area for break time). The program components were delivered by program developers during school lessons.

3.2. Design

A three wave non-randomized controlled trial with waiting list control condition was conducted in the three project regions in Germany (around Munich, Berlin and Hamburg, and Esslingen). A convenience sample of 12 nursing schools with $N = 584$ first year students agreed to participate in the study when asked because of their proximity to study centers and/or because of established cooperation. In order to reach a heterogeneous sample, health care and elderly care nursing schools, small and large schools as well as urban and rural schools were approached. Schools chose to whether be part of the intervention group (IG) or control group (CG) with the option of receiving the intervention after final data assessment of first study phase. All first year students were eligible for study participation.

Finally, four treatment conditions were compared pre- to post-test (T0-T2) in this feasibility study. CG students took part in the assessment