Supporting smoking cessation in healthcare: obstacles in scientific understanding and tobacco addiction management

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ABSTRACT

Despite ongoing efforts to reduce tobacco smoking, the smoking prevalence in many countries has remained stable for years. This may be a consequence of either lack of knowledge about effective ways to reduce smoking, or failing treatment of tobacco addiction in healthcare. This study explored gaps in the current understanding of smoking cessation and the challenges facing tobacco addiction management in order to formulate recommendations for future research and healthcare practice. A narrative review was written to determine areas in which more research is needed as well as areas in which sufficient knowledge is already available. Recommendations for future research were prioritised using a Delphi-procedure. Recommendations for healthcare practice were confirmed by expert's assessment. Smoking is not widely acknowledged as an addiction and a relatively small number of smokers ask help from a healthcare professional when trying to stop smoking. Most healthcare professionals recognise the importance of advising patients to stop smoking, but experience certain barriers to actually do this. Overall, healthcare professionals need to be convinced that tobacco smoking is an addiction and should be treated likewise. If all healthcare professionals systematically advise their patients to give up smoking, eventually more smokers will successfully stop smoking.

Keywords: Tobacco Addiction; Smoking Cessation; Smoking Cessation Interventions; Healthcare Practice; Tobacco Control

1. INTRODUCTION

Today almost everyone in the world is aware of the adverse health consequences of smoking, and studies of ways to reduce smoking are numerous. In addition to the health consequences and their associated costs, smoking results in productivity loss by employees that smoke, which also impacts the economy [1,2]. Moreover, smoking threatens to increase the health disparity among socioeconomic classes since a greater number of smok-

ers from higher socioeconomic classes stop smoking, with the consequence that a larger portion of the remaining smokers are from lower socioeconomic classes [3,4].

Despite ongoing efforts to reduce tobacco smoking, the smoking prevalence in the Netherlands and many other developed countries has remained stable for years. This stabilization may be a consequence of either lack of knowledge about effective ways to reduce smoking, or failed treatment of tobacco addiction. In order to find explanations for this stabilization, MIRO began the present study in 2008 to investigate gaps in the current understanding of smoking cessation and the challenges facing tobacco addiction management in the Netherlands. MIRO is a care optimization program in which smoking cessation experts in the Netherlands work together. The MIRO core team is focused on promoting collaboration between all parties involved in tackling tobacco addiction in the Netherlands (with the exception of the first author mentioned, all of the other authors who contributed to this article are members of the MIRO core team).

This study is based on the view that healthcare professionals play an essential role in supporting individuals who are trying to stop smoking. In 2007, 70% of Dutch smokers did not resort to any form of support (cessation aids and/or assistance) during their most recent attempt to stop [5], despite the fact that getting support results in far greater success. The average success rate of stopping without any support is 4% [6]. With support, however, the success rate may rise to 20% [7]. Clearly, receiving assistance from healthcare professionals can help more people stop smoking successfully.

This article outlines the study's principal findings and provides recommendations for follow-up research and healthcare practice. Since the focus of MIRO centres on tobacco addiction management, smoking prevention (primary prevention) is outside the scope of this study.

2. METHODS

A systematic approach according to systematic review guidelines would not be the best method to discover gaps in the scientific understanding of smoking cessation. The subject is too wide-ranging for a systematic review and it would not be possible to determine what knowledge is lacking using such a method. This study therefore employed a broad narrative review [8] created in the manner described below.

2.1. Formulating Research Questions

Experts from the core team designed a smoking cessation process model as illustrated in **Figure 1**. It is based on behavioral modification models and the shared view

that healthcare professionals play an important role in supporting individuals' attempts to stop smoking.

Research questions were created for each phase in the cycle and are listed in **Table 1**.

2.2. Literature Study

The research questions were subsequently used to identify what determines the success or failure of an attempt to stop smoking at a specific juncture, what we already know about this from both Dutch and international literature, and what we have yet to learn. Information was gathered from the "Tobacco Addiction" topic in the Cochrane Database of Systematic Reviews, publications from STIVORO and the Dutch National Institute for Public Health and the Environment (RIVM), as well as from the personal archives of the core team members.

In order to ensure that no essential publications were overlooked, a search was performed using Medline for every research question encompassing the past 15 years (1993 - September 1, 2008), using the term "smoking cessation" in combination with each of these terms: "tobacco control", "parenting", "peers", "school-based", "worksite", "primary care", "hospital setting", "healthcare professionals", "genetics", "public health", "guideline", "behavioral treatment", "pharmacological treatment", "harm reduction" and "relapse".

The search for literature resulted in 30 relevant articles and reports [5,7,9-36].

2.3. Expert Assessment

After writing the literature review, each member of the core team suggested additions and provided critiques based on his or her own expertise. The core team as a whole then considered these comments. After completing this process, a consensus was reached on the narrative review.

2.4. Recommendations for Follow-Up Research: Delphi Procedure

The realization that certain information was lacking resulted in recommendations for follow-up research. These recommendations were prioritized using a Delphi procedure.

Each member of the core team was given a list with all of the recommendations for follow-up research appearing in the review. During the first round of the Delphi procedure, each core team member individually produced his or her own top-10 list of recommendations. From that, a top-15 list of recommendations was compiled. Each of the twelve core team members then judged these recommendations based on three dimen-
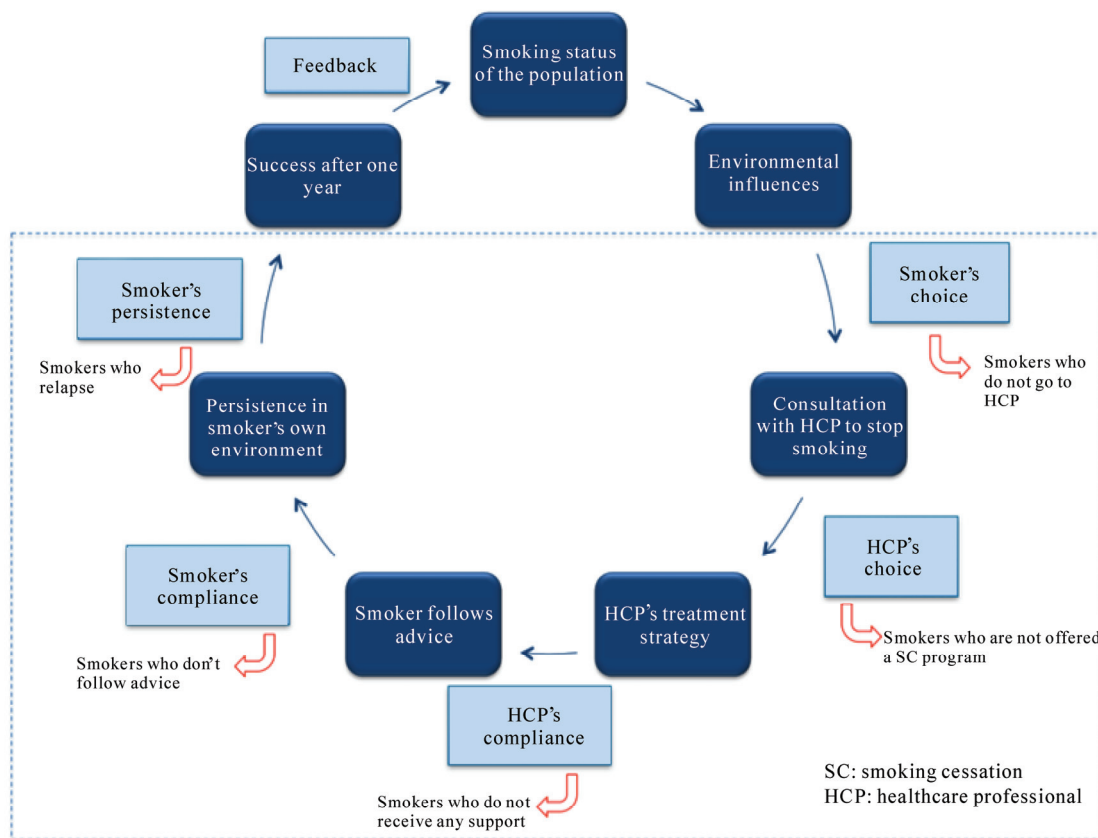
Openly accessible at http://www.scirp.org/journal/HEALTH/

Figure 1. Optimal smoking cessation process according to the MIRO core team [*Clockwise, starting at noon*].

sions, *i.e.* speed, importance, and impact, during a second round. Speed refers to how quickly the recommendation will lead to relevant results (more successful smoking cessation attempts). Importance relates to its overall importance to society, and impact refers to what effect it will have on an individual level. The recommendations were grouped according to speed in short-term (< 2 years), medium-term (2-4 years), and long-term (> 4 years) research. Prioritization was based on the (importance * impact) score.

2.5. Recommendations for Healthcare Practice: Expert Assessment

Recommendations for healthcare practice were formulated for areas in which adequate knowledge was available, and the experts in the MIRO core team subsequently checked these. The main focus was on recommendations addressed to healthcare professionals that could result in more people stopping smoking in a short period of time once implemented.

3. RESULTS

The results of the literature study on healthcare re-

search and healthcare practice are discussed below, restricted to the outlined phases of the cycle in **Figure 1** (from *Smoker's choice* to *Smoker's persistence*).

3.1. Asking Healthcare Professionals for Help

Smoking is an addictive illness that makes stopping extremely difficult for many people. However, many people, including smokers and healthcare professionals, still regard it as merely a bad habit. This reinforces the idea that smokers do not actually need help when trying to stop.

Remarkably few people in the Netherlands seek advice and/or support from a healthcare professional when trying to stop smoking. This is worrying for many reasons including the fact that smokers are dependent on a physician for many pharmacological resources. In 2006, only 5% of those trying to stop in the Netherlands sought assistance, in comparison to the European average of 18%. No less than 41% of individuals attempting to stop in England sought help. The figure in Belgium was 25%.

There are a number of explanations as to why smokers do not seek help from healthcare professionals, including: 1) smokers' ignorance of the support which healthcare

Table 1. Research questions.

Smoking status of the population

Q1.Why is focusing on and investing in smoking cessation so important?

Environmental influences

Q2. How is a person influenced by his or her environment?

Q3. What are the effects of interventions carried out by people from the smoker's environment?

Q4. How can the influence of a person's environment be better utilized?

Consultation with a healthcare professional to stop smoking

Q5. Why is it important for a smoker to see a healthcare professional?

Q6. How many smokers are currently seeing healthcare professionals?

Q7. Why aren't more smokers seeing healthcare professionals and how can this situation be improved?

Healthcare professional's treatment strategy

Q8. Why is it important to create a smoker's profile?

Q9. How effective are the various smoking cessation methods and which one is the best?

Q10. What are healthcare professionals currently doing?

Q11. Why aren't healthcare professionals doing more and how can this be improved?

Smoker receives support and follows advice

Q12. Why is support from a healthcare professional important?

Q13. How often are people who have stopped smoking supported by healthcare professionals and why does this not happen more frequently?

Q14. How can we increase the percentage of people who attempt to stop smoking receiving support?

Persistence in smoker's own environment

Q15. How many people who attempt to stop smoking persist in their own environment?

Q16. What challenges do people who attempt to stop smoking face?

Q17. How can we increase the percentage of people who have stopped smoking managing to persist in their own environments?

Evaluating the success after one year

Q18. Why is it important to evaluate the smoking cessation policy and its results?

Q19. What are healthcare professionals currently doing?

Q20. Why aren't healthcare professionals evaluating their policies and their results more and how can this situation be improved?

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professionals can provide, 2) negative experiences with healthcare professionals in relation to attempts to stop smoking, 3) smokers' denial of their own addiction (and their desire to stop smoking using their own willpower), and 4) the cost smokers incur by receiving support from a healthcare professional.

A study by Kaper *et al.* showed that having health insurance which provides complete financial reimbursement for smoking cessation support (nicotine replacement products, bupropion, and behavioral treatment) is an effective incentive for smokers to seek help from a healthcare professional and can eventually lead to an increased number of people who are able to successfully stop smoking.

3.2. Available Smoking Cessation Methods

Healthcare professionals can employ a variety of interventions to support smokers who want to stop. Behavioral interventions that have proven to be effective in smoking cessation attempts, when compared to attempts without any support are: brief advice on stopping smoking, telephone support, individual support, and group therapy.

Effective pharmacological interventions (which work best when used in combination with behavioral treatment), in comparison to not using any drugs or using a placebo, are: nicotine replacement therapy (NRT: patches, gum, microtabs, lozenges), bupropion, varenicline, and nortriptyline. All of these interventions appear to be cost-effective; initial investments in smoking cessation support will in the long term reduce the total costs of smoking-related illnesses.

It is not possible to simply state what the best smoking cessation intervention is, since individual factors such as motivation, self-confidence, degree of addiction, age, and socioeconomic status all influence attempts to stop smoking. Theoretically, these specific elements could be used to create an improved, tailored treatment. For instance, providing intensified support using pharmacological resources for smokers who have a lower chance of success. Increasing knowledge about genetic disposition to smoking addiction may make it easier to choose individualized treatment in the future.

3.3. Opportunities for Healthcare Professionals

If a healthcare professional advises a smoker to stop, this carries more weight than when such advice comes

from an individual not working in healthcare. Systematically giving patients brief advice on stopping is a small yet effective measure that results in 3-4% more smokers successfully stopping.

General practitioners and medical assistants, dentists, cardiologists, pulmonary physicians, general and pulmonary nurses, and physicians specialized in dealing with additive behavior, can play a role in supporting patients attempting to give up smoking. General practitioners and dentists have contact with the largest group of smokers, including a relatively large number of young and 'healthy' smokers. Pulmonary physicians and cardiologists most often see patients with medical problems resulting from smoking.

It is largely unclear how structural care for smokers can be embedded in the Dutch healthcare system. It would be useful therefore to study which healthcare professionals or combination thereof, and at what specific time, would have the strongest influence on patients who smoke and be able to provide the best support in helping them to stop.

3.4. Motivation and Obstacles for Healthcare Professionals

An attitude study covering various medical disciplines reveals that Dutch general practitioners, dentists, pulmonary physicians, and cardiologists all feel that it is important to provide patients with either solicited or unsolicited recommendations to stop smoking. The percentage of healthcare professionals who actually do this varies between specialists, from 18% of dentists to 90% of cardiologists.

General practitioners are the least convinced that smoking is an addiction that requires the help of healthcare professionals, compared to cardiologists, pulmonary physicians, pulmonary nurses, and medical assistants. Many cardiologists and pulmonary physicians feel it is important to recommend stopping smoking, but consider providing support for attempts to do so more of a task for the general practitioner. It is not known to what extent they actually refer their smoking patients to a general practitioner.

Healthcare professionals most often cite lack of time as the main obstacle keeping them from supporting patients in their attempts to stop smoking. For many, treating smoking addiction is not a top priority, possibly due to a lack of adequate funding.

3.5. Relapse

Overcoming a tobacco addiction is typically accompanied by physical and psychological withdrawal symptoms that increase the likelihood of a relapse. As stated

before, the success rate of attempts to stop smoking varies between 4% and 20%, and it takes most smokers several attempts before they completely stop smoking. The available data on methods to prevent relapses from occurring is limited and inconclusive, and therefore further study needs to be done on this topic.

3.6. Recommendations for Follow-Up Research - Delphi Procedure

Based on the literature study, various recommendations for follow-up research were formulated. A Delphi procedure was used to create a top-15 list of recommendations. Using scores for speed, the recommendations were grouped into short-term (speed score > 3.5), medium-term (speed score 2.5-3.5), and long-term research (speed score < 2.5). Prioritization was done using the (importance * impact) score. **Table 2** shows the results of the Delphi procedure.

3.7. Recommendations for Healthcare Practice - Expert Assessment

The literature study also revealed areas in which sufficient knowledge is available, but not put into practice. The experts confirmed the following recommendations for healthcare practice: first, both smokers and healthcare professionals need to fully recognize that smoking is an addiction, which means that stopping can be very challenging. Patients attempting to stop smoking should be well prepared and realize that it is possible they may have a relapse. Second, each and every healthcare professional should be committed to systematically advising their smoking patients to stop and should point them to available resources and organizations that can help them achieve that goal. This takes little time and will eventually lead to more people stopping smoking.

4. DISCUSSION

The information obtained from the present literature study has led to a number of recommendations for follow-up research, which were subsequently prioritized using a Delphi procedure.

In the smoking cessation cycle, presented in figure 1, three phases seem to be essential in the success of an attempt to stop. First, it is important that smokers turn to a healthcare professional to obtain support in stopping smoking. Since the number of smokers who ask for help is currently relatively small, it is important to find ways to have more smokers recognize that they need help from a healthcare professional in overcoming their addiction, and actually ask for help. Second, care for smokers should be structurally embedded in the health-

Table 2. Top 15 recommendations for follow-up research prioritized by (importance * impact) score.

Description	Speed	Importance	Impact	I * I
Implementation of the smoking ban in hotels, restaurants and cafés in the Netherlands as of July 1, 2008 (combined with an increase in excise duty) provides an excellent opportunity to study the effect that this measure has on passive and active smoking and health.	4.33	4.75	3.67	17.43
In order to encourage more smokers to seek help from a healthcare professional, more study needs to be done on how this perception can be used to motivate smokers to visit healthcare professionals.	3.75	4.17	4.17	17.39
Research should indicate whether Motivational Interviewing is an effective smoking cessation method (by phone and/or face to face) and which healthcare professionals could use this technique in practice.	3.33	3.92	4.33	16.97
Research should reveal which healthcare professionals or combination thereof reach the largest group of smokers, which are most able to influence smoking patients, and which can provide the best support for patients attempting to stop smoking.	2.17	4.50	3.67	16.52
Research should reveal whether financial compensation for smoking cessation interventions results in more involvement from healthcare professionals and how the quality of the care provided can be guaranteed.	3.42	4.00	4.08	16.32
Randomized controlled trials (RCTs) on the effects of financial compensation for healthcare professionals who carry out proven effective interventions are needed to identify whether this leads to more involvement in smoking cessation attempts and increased numbers of people who successfully stop smoking.	3.42	3.92	4.00	15.68
In order to make optimum use of the influence exerted by healthcare environments, more study needs to be done on which healthcare professionals have the most opportunities to effectively support patients in their efforts to stop smoking.	2.25	3.92	3.92	15.37
In regard to relapses, it would be helpful to study what behavioral interventions contribute to better resisting difficult situations.	2.75	3.42	4.33	14.81
In order to encourage more smokers to seek out help from healthcare professionals, more study needs to be done on how smokers from various target groups perceive their own smoking behaviour and how a healthcare professional can help them.	2.42	3.27	4.25	13.90
Research should reveal whether financial compensation for smoking cessation interventions results in more involvement from healthcare professionals in smoking cessation attempts and more people who successfully stop smoking.	4.08	3.83	3.50	13.41
In order to encourage more smokers to seek help from healthcare professionals, more study needs to be done on how smokers perceive healthcare professionals and the help they can provide when it comes to stopping smoking.	3.25	3.42	3.58	12.24
In regard to relapses, it would be helpful to study what role self-identity and the expectation to succeed play and how this can be used in relation of prevention measures.	2.58	2.75	3.50	9.63
In order to encourage more smokers to seek help from a healthcare professional, more study needs to be done on which forms of communication should be used to best reach smokers.	3.58	3.25	2.92	9.49
In regard to relapses, it would be helpful to study when follow-up contact is most effective based on the symptoms table.	3.58	2.50	3.58	8.95
Further research should focus on the effectiveness of physical exercise in relation to smoking cessation as well as its potential for practical use.	2.33	2.25	2.67	6.01

care system. To achieve this, further research should indicate which healthcare professionals have contact with the most smokers and are best able to provide support in smoking cessation. Healthcare professionals who already are involved in smoking cessation support experience various obstacles. Future research is needed to find ways to overcome these obstacles, for instance by investigating the effect of adequate funding for smoking cessation support. Third, further research needs to be done into relapse prevention, a research area that is still relatively poorly explored.

In addition to revealing gaps in the current understanding of smoking cessation, our study showed that although sufficient knowledge is in fact available for a number of areas, this knowledge is not - or at least not effectively - being applied in practice. This has resulted in two recommendations for healthcare practice, each confirmed by the experts from the MIRO core team. The fact that smoking is an addictive disease needs to be recognized by both smokers and healthcare professionals. Healthcare professionals should also systemically advise their patients who smoke to stop and offer smoking ces-

sation support.

When interpreting the recommendations above, the reader should take into consideration the limitations of this study. As outlined earlier, this publication focuses on the role of healthcare professionals, and therefore other solutions to reduce smoking were not given a great amount of attention. The authors feel strongly that the greatest short-term gains in discouraging tobacco use can be made through healthcare professionals. After all, every person who wants to stop smoking has a right to the most appropriate, customized treatment for his or her addiction.

5. CONCLUSIONS

Overall, healthcare professionals need to be convinced that tobacco smoking is an addiction and should be treated likewise. If all healthcare professionals systematically advise their smoking patients to give up smoking, eventually more smokers will successfully stop.

6. COMPETING INTERESTS

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