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# Jacobs Journal of Addiction and Therapy

Research article

## Pros and Cons of Long-Term Use of Nicotine Replacement Therapies: A Qualitative Study

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### Abstract

In the last decade, harm reduction has been increasingly suggested as a method to reduce the harm caused by smoking in smokers who are unable or unwilling to quit all nicotine products. One of these methods includes long-term substitution of tobacco with nicotine replacement therapies (NRTs). The aim of this study is therefore to gain insight into the perceived pros and cons of the long-term use of NRTs. We conducted 19 semi-structured interviews with long-term users of NRTs, 16 ex-smokers and 3 dual users of tobacco and NRTs. Participants were asked about their reason for using NRTs, including perceived pros and cons of using NRTs, the risk of relapse to smoking and their motivation to quit using NRTs. The results identified five major themes that entailed pros and cons of the long-term use of NRTs. These were the non-nicotinic factors of NRTs, health risks of NRTs vs. smoking, intrapersonal processes, the social environment of smoking vs. NRTs and finances. None of the ex-smokers feared to relapse to smoking, and few were motivated to quit NRTs. Non-nicotinic factors were found to have an important role in developing an addiction to NRTs. The use of NRTs yields some of the expected benefits and helps avoid some of the expected drawbacks of smoking. However, the drawbacks of using NRTs were still a concern regarding long-term health effects and continued addiction.

**Keywords:** Harm Reduction; Nicotine Replacement Therapy; Long-Term; Addiction; Qualitative Study

### Abbreviations

NRTs: Nicotine Replacement Therapy Products;

INT: Interviewee

### Introduction

Smoking has long been known to be the single most important preventable cause of premature death in developed countries [1,2]. To combat mortality rates caused by smoking, several activities and campaigns have been launched in the western world, and as a result, the prevalence of smoking has decreased drastically since the 1960s. However, the decrease has become stagnant in recent years [1]. An action to counter this stagnation has been the introduction of the concept of harm reduction in the UK, targeting smokers unable or unwilling to quit all nicotine products, e.g., the possibility of substi-

tuting tobacco with long-term nicotine replacement therapy products (NRTs) [3]. A gradual expansion of the marketing licenses of NRTs has occurred since the early 1980s when nicotine gum was first marketed and sold by prescription only. Nicotine was thought to be, if not the sole cause, at least the primary cause of addiction to smoking. Concerns, therefore, included NRTs posing an addiction liability and the risk that prolonged use might cause adverse health effects [4,5].

However, with no serious adverse effects of NRTs yet proven

[6,7], the shift from smoking cessation as the ultimate and only goal to a compromise of harm reduction seemed possible [4,8-12]. To increase the effectiveness of NRTs, the products needed to be as easy to access as cigarettes, resulting in a switch first from prescription-only drugs to over-the-counter availability and then to a variety of NRTs made available for retail sale [13]. Likewise, the indication for use of NRTs has expanded from an initial treatment course entailing three months use upon smoking cessation to now including use to achieve smoking reduction and long-term use if the alternative is relapsing to smoking.

The prevalence of long-term use of NRTs following smoking cessation attempts has been estimated to be approximately 1% in the USA [13]. In Denmark, the results from a national survey in 2012 on the smoking habits of the Danish population showed that 1.3% of the adult Danish population had used NRTs for more than 12 months [14].

Early research regarding the long-term use of NRTs primarily focused on prevalence, safety and the characteristics of long-term users, estimating that heavy smokers were more liable to become long-term users of NRTs [6,15-17]. Research also showed that long-term use was positively related to the speed of nicotine delivery from faster-acting NRTs [10]. With the absence of proof regarding serious adverse effects of NRTs, more recent research has focused on harm reduction in terms of smokers' willingness to substitute smoking with NRTs or smokeless tobacco and the effect of dual use of cigarettes and NRTs on smoking cessation [18-22]. Perceived benefits of smoking cessation include improved health, well-being, self-esteem, finances, physical appeal and social approval, whereas perceived risks are weight gain, negative affect, decreased concentration, social ostracism, loss of enjoyment and craving [23-25].

Quitting the use of NRTs may entail a risk of relapsing to smoking. Etter [26] found that of 302 ex-smokers using nicotine gum for more than 3 months, 42% feared to relapse to smoking if they quit using the gum, whereas 82.8% reported feeling addicted to nicotine gum [26]. In addition, a study by Borup et al. [27] found that among 92 ex-smokers who used NRTs for more than 12 months, 88% wished to quit using NRTs because of product costs, addiction and concerns regarding adverse health effects [27]; hence, the use of NRTs does not appear to be entirely unproblematic.

With tobacco addiction being recognized as a relapsing chronic illness [28], the idea of achieving harm reduction with NRTs as substitutes for cigarettes seems appropriate if long-term use prevents relapse [29]. However, with previous research showing that the use of NRTs is not solely motivated by the prevention of relapse to smoking and that a vast majority of individuals would like to quit using NRTs, the aim of this study was to investigate the experiences of long-term NRTs users in

regards to the pros and cons of NRTs use, the risk of relapse to smoking and the motivation to quit NRTs. To the best of our knowledge, these questions have not previously been investigated qualitatively.

## Method

The design of the study consisted of semi-structured interviews to explore in depth perspectives on individual NRTs use yet also allow for comparability across the interviews [30,31]. Both former smokers now using NRTs and current smokers also using NRTs (dual users) were eligible for the study in order to capture experiences and difficulties with using NRTs, to highlight the obstacles of quitting smoking for dual users despite the use of NRTs, and to explore the reasons for relapsing in order to gain insight into experiences not mentioned or considered by the ex-smokers.

The first author (GB) conducted the interviews, either in the participants' homes or workplace or at the university campus, based on the participant's preference. The interview guide consisted of four themes: 1) the timeline from when the participants had begun using NRTs, 2) how the smoking cessation process had been experienced, 3) how they experienced using NRTs at the current time, and 4) what they expected the future to hold concerning their NRTs use. Similarly, the dual users were asked to recount their decision to begin using NRTs, their current use and their prospects for the future concerning smoking and NRTs.

The construction of the interview guide was based on the guidelines given in Smith, Flowers and Larkin (2009), recommending open and expansive questions that allow participants to talk freely, providing in-depth knowledge of thoughts and experiences. Probing was applied to elaborate on experiences that seemed especially important to the individual participant [32].

Furthermore, fixed questions were applied in each interview regarding the age of the participants, the amount of NRTs used per day, and former smoking history.

## Participants

The initial recruitment was based on the participant list from a former survey study of long-term users of NRTs in Denmark, where participants willing to participate in further investigations were requested to state their contact information [27]. Participants were purposefully selected [33] based on the criteria that 1) they were former smokers, 2) they were at least 18 years of age, and 3) they had used NRTs for more than 12 months on a daily basis to ensure that they had adequate experience. From the survey, 18 participants who met the inclusion criteria were contacted, and nine participants agreed to participate in the study. Three dual users were included in

the study. An additional round of recruitment was conducted to obtain enough participants to ensure saturation of results [34]. Additional recruitment techniques included snowballing, i.e., recruitment from other interviewees, friends, and colleagues who knew long-term users of NRTs (9 participants) and recruitment from pharmacies (1 participant) [33,35].

Ethical approval was not required in the Danish setting, as the primary purpose of this investigation did not entail questions on sensitive topics. The study followed guidelines of the National Committee of Health Research Ethics Guidelines, which complies with international standards. All participants were informed of the purpose of the study either verbally or in writing, and all of them gave their oral consent to participate.

### Data Analysis

The interviews were recorded and transcribed verbatim. The analysis of the transcription from the initial nine interviews was hereafter based on the guide given by Smith, Flowers, and Larkin, following an iterative and inductive cycle [32,36]. Tables for primary analysis for each participant were produced, containing initial notes, and emergent themes. These emergent themes were subsequently assembled to superordinate themes for each participant. When the individual analyses for the first nine participants were concluded, a master table of themes was drawn, highlighting similarities between the themes. The remaining ten interviews were then analyzed deductively, supplementing existing superordinate themes aiming at saturation while maintaining an openness to new themes [34]. The two co-authors read interview transcripts and commented on the conducted analysis to reach consensus.

### Results

The study comprised 16 ex-smokers and 3 dual users of tobacco and NRTs. The interviews lasted from 40 to 75 minutes. An overview of the interviewees is provided in table 1. The ex-smokers consisted of eight men and eight women with an average age of 54,2 years (range: 37-68). The ex-smokers were primarily former heavy smokers with an average smoking history of 19.6 cigarettes per day (range 6.5-30, N=15); one was a former pipe and cigar smoker. The NRTs used were primarily 2 mg nicotine gum (N=14), with one person using 2 mg sublingual tablets and one using a nicotine inhaler. The mean use of NRTs per day was 13.2 (range 6-22,5), and the mean number of years of NRTs use was 8.5 (range: 2-15). None of the ex-smokers feared to relapse to smoking. The dual users consisted of one man and two women who were all 40-49 years of age. Their current average use of NRTs was 6 NRTs per day (range 3.5-10), and their current smoking habit included 7.8 cigarettes per day (range 3.5-10). All dual users used 2 mg nicotine gum. Interviewees were predominantly middle-class citizens.

### Non-nicotinic factors and the importance of taste, texture and the process of chewing

Some interviewees used NRTs for several years before quitting smoking entirely. The use of NRTs was often described as a necessity to be able to endure a day's work without becoming unfocused, and where smoking was experienced and remembered as enjoyable, the use of NRTs was described in terms of need. The substitution had demanded extreme willpower for some, with NRTs failing to stimulate all the senses that smoking did and lacking the social element.

INT13: Two very different things. Is it out of need right? The other (smoking red.) was out of desire. This is not desire; it's need because I have decided that I don't want that smoke in my lungs. However, there are many... There is a lot of delight in smoking a cigarette and having a cup of coffee... And sitting with some nice people and smoking a cigarette, one thought, then... (...) Eh, and that's not at all the same... not... you can't even compare the two things (p. 16)

For some of the interviewees, the transition had, however, been experienced as quite easy, describing how the final decision to quit smoking had left no room for relapse, and they, therefore, managed to quit overnight.

Taste, texture, the presence of gum in the mouth, the 'process of chewing' and the 'strong sensation' of nicotine were important aspects of using NRTs. The majority of the interviewees used only their favorite taste and product, which made it quite clear that the process of using nicotine gum entailed elements other than extracting the nicotine from the gum alone. Some participants described having a clear need for the stimulant effect, whereas others speculated that it was less about the need for nicotine than about the 'taste'. However, substituting the nicotine gum with regular gum was not straight forward, as nicotine gum was experienced as maintaining flavor significantly longer, and regular gum lacked the right texture and the 'strong sensation' caused by the nicotine. The chewing had also become constant for some, who did not allow the gum to rest on the cheek as it is intended to, and with one piece of gum replacing the other in an automated fashion.

INT9: It's a habit to chew. That's also a habit that I have developed. I have to chew. I need to chew.

The worst case scenario was described by one interviewee, whose favorite gum had been taken off the market for a while, resulting in a relapse to smoking because the interviewee disliked the other tastes available. Interestingly, one of the dual users, INT18, had developed a co-dependency on cigarettes and NRTs using nicotine gum immediately after smoking, not so much for the extra nicotine but, again, because of a preference for the taste and texture. When asked what would happen if INT18 depleted the supply of NRTs, the answer was that she would smoke fewer cigarettes because of a dislike of the after-taste.

		Age		Years used NRTs	Mean use (NRTs/day)	Smoking history (cigs/day)	Description
INT1 <sup>*#</sup>	Woman	66	Gum (2 mg)	10	20	20	Clear health improvement, does not fear AEs after consult with doctor, dislikes displaying nervousness, and views NRTs as a permissible treat.
INT2 <sup>*#</sup>	Man	59	Gum (2 mg)	3	15	25	Clear health improvement, does not fear AEs but was worried that NRTs caused nausea during a stressful period, enjoys NRTs and celebrates freedom of choice. No intention of quitting NRTs.
INT3 <sup>*#</sup>	Man	60	Inhaler (cartridges)	10	6	Pipe and cigars	Needs NRTs to function in life. Views self as an addict and NRTs as a crutch but accepts this as fact. Is not tempted to smoke and enjoys the freedom without temptation. No intention of quitting.
INT4 <sup>#</sup>	Man	68	Gum (2 mg)	10	10	30	Dislikes the need for NRTs to control emotions, feels it alters personality, too expensive, motivated to quit.
INT5 <sup>#</sup>	Man	47	Gum (2 mg)	3	15-30	25-30	Feels highly addicted and wants to be free of addiction, has no control over NRT consumption due to lack of physical restrictions. Motivated to quit.
INT6 <sup>#</sup>	Woman	51	Gum (2 mg)	3	10	20	Only feels addicted to taste, could manage with nicotine-free substitute, has to be certain not to substitute with another 'bad' habit.
INT7 <sup>*#</sup>	Woman	60	Gum (2 mg)	6-7	10	20	Felt stigmatised as a smoker, enjoys using NRTs, feels less dependent, 'lacks backbone', a personal choice, confirmation of safety from a pharmacist.
INT8 <sup>*#</sup>	Man	45	Gum (2 mg)	14	10	10	Uses more at work when stressed, addiction as an integral part, lesser evil, fears additional weight gain, envies those who are capable of quitting but has no immediate intention to do so.
INT9 <sup>*#</sup>	Woman	61	Gum (2 mg)	13	16-18	25-30	Highly addicted, 'the gum is my friend', increased use because of nice taste, fears cardiovascular side effects and thinks heart palpitations are caused by NRTs, would feel proud if capable of quitting but has no intention to do so.
INT10 <sup>*#</sup>	Woman	37	Gum (2 mg)	2	5-8	10-15	Less addicted, would like to be free of addiction, NRT use reduces excessive eating/sweets. Thinks she ought to quit to avoid possible health risks.
INT11 <sup>*#</sup>	Woman	48	Gum (2 mg)	12	24	15-20	Enjoys the gum, views self as addicted but does not experience withdrawal, easier/more convenient addiction, fears mouth cancer because of excessive use, worried about gaining weight if quitting.
INT12 <sup>*#</sup>	Man	55	Micro-tabs (2 mg)	15	10	20	Will always be 'a non-smoking smoker', and use of NRTs is the closest he will come to not smoking; needs the stimulant effect, helps perform at work, absence causes problems concentrating, not worried about AEs because there are many other worse risk factors in life.
INT13 <sup>*#</sup>	Woman	63	Gum (2 mg)	10-12	24	20	Felt stigmatised as a smoker, 'forgot to quit NRTs', dependent on taste and texture as well, afraid of gaining weight, dislikes and avoids conversations about NRT use, would feel proud if succeeding in quitting but has no specific plan to do so.
INT14 <sup>*#</sup>	Man	41	Gum (2 mg)	13	6-8	3-10	Views NRTs as a method to improve/optimize self, helps avoid sweets (which is more important), improvement in health implied that NRTs are safe; however, residual worry is present, dislikes displaying lack of control/not being in control of self, NRTs are a lesser evil than smoking, no intention to quit.



INT15 *#	Man	40	Gum (2 mg)	9	12	20	NRTs as a convenient nicotine source, in doubt about whether it is the nicotine or the taste that is the source of addiction, does not fear AEs, thinks quitting would increase weight, has no other vices, which facilitates NRT use. Finances might motivate to quit but no immediate plans to do so.
INT16#	Woman	66	Gum (2 mg)	2.5	6	15-20	Addicted to the stimulant effect, gets agitated in the absence of NRTs, would like to be free of addiction, concerned about long-term effects, intends to quit in the near future.
INT17	Man	46	Gum (2 mg)	6	4-5	10 (currently smoking)	Relapsed to smoking after 5 years of using only NRTs, thinks the use of NRTs made it easier to relapse, uses NRTs to reduce smoking, intends to quit smoking again but not to quit NRTs because of belief in genetic predisposition.
INT18	Woman	45	Gum (2 mg)	5	10	10 (currently smoking)	Relapse after two years using NRTs, has developed synergetic use of NRTs using gum directly after smoking to remove smoking taste. Uses smoking as 'a break'. Wants to quit all nicotine products but lacks motivation at this point.
INT19	Woman	41	Gum (2 mg)	1 (and on and off previously)	3-4	3-4 Currently smoking)	Relapse to smoking after 5 months, uses NRTs to reduce smoking, smokes only 'key cigarettes', motivated and confident in success.

\*Not motivated/no intention of quitting NRTs

#Does not think relapse to smoking is possible

**Table 1.** Overview and description of interviewees.

### Health risks associated with smoking vs. NRTs

Some of the interviewees had developed deterioration of their lung capacity, suffering from repeated pneumonia and bronchitis while still smoking, and these problems were alleviated when they substituted NRTs. Others expressed being able to breathe more easily and an alleviation of their 'smokers cough'. The experience of improved health therefore not only increased the satisfaction of having achieved smoking cessation but also diminished the belief in NRTs being hazardous.

INT14: Yes definitely. Huge. A huge difference. You know, I can feel that NRTs don't tire out my body. I feel that I don't, eh, hurt my lung capacity, so I don't ruin my physique by using NRTs. While it only took about 6-8 cigarettes, it literally ruined my shape. (...) Where nicotine gum didn't... I haven't noticed that it affects my immune system in any way. Eh, so that was a huge – and that is probably also why, in reality, the 'yes-ish' feeling that you don't smoke. And perhaps even a 'thank you, nicotine gum' sense of 'I don't have to quit using you' or something like that.

Most interviewees had not discussed their use of NRTs with any healthcare professionals, and the overall impression was that physicians did not care much about the use of NRTs as long as the interviewees had quit smoking. Information on adverse effects was primarily obtained from the package leaflet or the Internet. A couple of the interviewees who had spoken to their physicians had received conflicting messages. INT1 had suffered a stroke a couple of years earlier, and the physician responsible for follow-up treatment had reassured her that the use of NRTs would not impact her health negatively

and that NRTs had not contributed to the stroke. Contrarily, INT9 was told from her primary physician that the prolonged use of NRTs was bad for her heart. This information caused INT9 to halve her consumption of NRTs but did not make her quit using the products, as another physician had previously told her that NRTs were not harmful. Short-term use of NRTs was regarded as safe by all, but the long-term use of nicotine was suspected to be potentially harmful.

INT10: Because basically I have an assumption that it's not the nicotine that's the dangerous part of smoking, and it's the tar and all the other additives, eh, but I am aware that it may not be healthy to use for the next 10-15 years, and you know (...) I at least don't have enough knowledge concerning whether its harmful or not. And that is what makes we wish that I wouldn't. (p. 5)

Several interviewees agreed that the underlying fear of NRTs causing harm was the fact that nicotine is derived from tobacco. These uncertainties also led to some of the interviewees interpreting bodily symptoms as being caused by NRTs. The symptoms described were nausea, heart palpitations and a tightening sensation in the chest. The interviewees' reaction to the symptoms was to reduce NRTs for a short period and wait for the symptoms to cease and then return to a normal level of NRTs use. However, the interviewees exhibited a pragmatic approach to the valuation of the potential harm of NRTs, considering NRTs to be not much worse than other stimulants, such as sugar, caffeine, and alcohol, or not more carcinogenic than breathing in pollution while living in a big city. All the ex-smokers agreed that proof of serious adverse effects of NRTs would be needed to motivate them to quit.

## Intrapersonal processes

The interviewees' thoughts on addiction deduced from their use of NRTs and prior smoking gave rise to many contradicting statements where addiction in itself largely was considered a highly negative thing that all interviewees would like to eliminate. A majority of the interviewees had a presumption of being prone to addiction. A few mentioned their belief that they were genetically predisposed, whereas others seemed to think of it more in terms of a personality trait. In practice, this predisposition for addiction meant that quitting NRTs would include transferring the addiction to something else.

INT8: I can't picture myself as an alcoholic, right? And I can't picture myself as a smoker either right? But, then, what is it? I still take something that I am addicted to. So I have that concern... if you have to be addicted to something. I also know that it isn't just... I, of course, meet those once in a while – people other than myself, that I can see – why is it that they don't just quit this (smoking red.), right? I think that is strange. They are... many of them are of course essentially reasonably sensible people in all other respects. And can use their heads in all sorts of other stuff, but then why do they become addicted to something? It can be a very strange thing to understand, and I don't understand it myself. And I can't see how I am supposed to solve it really. And then I'm thinking that I found a very good path really if that's the way it is. (p.10)

The overall argument was therefore that if the sum of all voices is constant and if one had to substitute smoking with something else, then the use of NRTs was acceptable, a lesser evil.

Furthermore, NRTs had assisted the interviewees in quitting smoking, and it now helped them to avoid being tempted to smoke at social gatherings, helped them concentrate and control negative affect, and prevented some of the interviewees from eating excessively or acted as a substitute for sweets. Use of NRTs was described as convenient and discrete, as NRTs could be used everywhere, making it unnecessary to go outside to smoke or to wait for a break during a long meeting. Several of the interviewees also described the need for NRTs to be less urgent than the need for smoking had been. This reduced urgency also increased the experience of control, as many of the interviewees described being able to go without NRTs for longer periods of time than they could endure when still smoking.

INT2: When you smoke 25 cigs, and that's a lot to smoke. It's the first thing you do when you get up, and it's the last thing you do before you go to bed. And, all the time, 'oh those bloody meetings', 'can't we take a break' and all that.

The use of NRTs was also described as something private and as an expression of personal freedom and choice. The cons of using NRTs included depleting the supply of NRTs, which still

triggers feelings of anxiety, similar to that experienced while still smoking, thus underscoring the prevalence of addiction.

## Social environment of smoking vs. NRTs

All the ex-smokers were convinced that they would not relapse to smoking even if they quit using NRTs. In addition to the major health risks associated with smoking, statements regarding physical aversion to the taste and smell of smoke were given, and the participants did not want to be the object of the social stigma associated with smoking were mentioned.

INT11: No. I probably did the first 5 years (felt tempted to smoke red.). But now, it has also become associated with being a loser. Well, it's also really inconvenient and associated with losers and... Well. No. I really can't see it.

For all of them, an unsuccessful quit attempt would most likely result in a relapse to NRTs rather than smoking. Although most of the interviewees described not being ashamed of using NRTs, several described the discomfort of drawing attention to themselves and their NRTs use. Some discussed their dependence on NRTs as something they would not want to signal a lack of control in front of colleagues who did not share the same dependence.

INT 14: It has something to do with wanting to present an image of being in control. Eh, and sitting there chewing gum, it – that is, nicotine gum – well, that's an addiction. Well, eh, and that you don't want to signal... that I am dependent on something (...) You know, if you take the gum in a situation related to work, for example. Then, its... well, I think I take the gum because I feel some kind of unease. That, of course, is not something you want to display in a working situation, that you have some kind of unease in your body. So, for me, it's like... well, I would say that I actually hide mine (...) that it, eh, that, of course, one wants to be perfect. Eh, or completely in control. And, eh, I think that I'm lacking in that bit.

As a solution, some of the interviewees re-packaged their gum in small boxes to give the impression of containing regular gum, circumventing the noise of the blister packs. Some interviewees had experienced being confronted by others about their use of NRTs and being labeled as 'still addicted'. Others felt they were met with praise for having succeeded in quitting smoking, and no negative value was given to their continued use of NRTs.

## Finances

Although all interviewees agreed that the use of NRTs entailed a cost, some estimated that they spent less money on NRTs than on smoking and, in that sense, saved money compared to their earlier experience; by contrast, others viewed NRTs as a very expensive vice. Those contemplating substituting NRTs

with regular gum argued that this was almost as expensive as NRTs. Therefore, the cost of NRTs motivated only one of the interviewees to quit.

### The dual users

All three dual users had succeeded in quitting smoking previously, also by using NRTs. Common for all three users was that they had relapsed to smoking during periods of their lives that entailed major emotional stress, including the death of a parent, divorce and work-related stress, and NRTs had been experienced as insufficient. INT17, who had quit smoking for 5 years before relapsing, felt that the sustained use of NRTs had eased the relapse to smoking, as the addiction to nicotine was still present. Hence, the gap had not been as wide as it would have been if INT17 had quit all nicotine products. Two interviewees described the difficulty in reaching a level of motivation to quit again that was the same as the level initially leading them to quit in their previous attempt, whereas the third interviewee felt confident that success was possible in the near future.

### Discussion

This study aimed at investigating the perceived pros and cons of long-term NRTs use, the risk of relapse to smoking and the motivation to quit NRTs. The non-nicotinic factors of using NRTs were found to play a significant role in the continued use of NRTs. Despite the conviction that NRTs were less harmful than smoking, participants still had uncertainty regarding the safety of NRTs. Additionally, the convenience of using NRTs and the view of NRTs as a 'lesser evil' permitted their continued use. The primary drawback was the experience of addiction, and the cost of NRTs was a minor drawback. None of the ex-smokers feared to relapse to smoking.

### Non-nicotinic Factors

Non-nicotinic factors have been described as being important obstacles to quitting smoking [37,38]. An important finding of this study was, therefore, the detailed description of the non-nicotinic factors associated with feeling addicted to nicotine gum. These factors, including favourite taste, texture, the presence of the gum in the mouth and the 'strong' sensation caused by nicotine, contributed not only to sustained use of NRTs but also to increased use or, in the worst case, to a relapse to smoking if a participant's favourite taste were withdrawn from the market. It is possible to obtain free samples without nicotine at pharmacies, but they cannot be purchased in retail stores. Better access to nicotine-free gums would be an appropriate option for users wanting to reduce their nicotine intake. The importance of these non-nicotinic factors, in association with the use of NRTs, has yet to be investigated further. Contrary to the new dependencies on non-nicotinic fac-

tors via the gum, an aversion to the taste and smell of tobacco smoke had developed in these users and was used, in addition to the health risk of smoking, as an argument to not relapse to smoking.

### Benefits and drawbacks of using NRTs

The benefits of using NRTs were enjoyment, convenience, improved health, increased concentration, prevention of weight gain and social acceptance. The drawbacks were primary concerns regarding long-term health risks and the sustained addiction and, to a lesser extent, the financial cost. Research on smokers' expectancies for abstinence has identified perceived benefits as improvements in long-term health, well-being, self-esteem, finances and social approval. Identified perceived drawbacks include weight gain, negative affect, difficulty concentrating, loss of enjoyment, craving and increased use of other stimulants [23-25]. It, therefore, seems that the long-term use of NRTs yields the expected benefits of quitting smoking to some extent while still avoiding some of the expected drawbacks. However, health and social acceptance are ambiguous, perceived as both benefits and drawbacks.

Several studies have found that smokers believe NRTs to be harmful to health and cause addiction. These beliefs, however, decrease with increasing socioeconomic levels, number of cessation attempts and former experience with using NRTs [39-41]. Our study, therefore, shows that residual worry remains in long-term users. However, the possible harm is not interpreted as worse than many other risks we encounter in everyday life, and in the absence of solid proof of NRTs being harmful, this fear has not motivated cessation. However, the interpretation of bodily symptoms being caused by NRTs may in worst-case scenarios mask serious illness and cause delays in seeking medical attention. More clear communication from a credible source on the benefits of using NRTs and encouragement to seek medical advice should be provided.

### The continuance of addiction

Three negative aspects regarding the continued addiction were described. One was the predisposition to addiction, the second was the appearance of lacking control, and the third was the social reaction and the label of an addict. In Stuber et al. [42], stigmatisation in regards to genetic predisposition to a negatively valued quality, such as addiction, is explained in terms of the perception of the individual being fundamentally different from others and the idea that the problem is serious and persistent [42]. This may explain the self-reproach and the dislike of drawing attention to the use of NRTs, as some stigma is adherent to 'addiction' and not only to smoking, even though the experienced stigma was less than that associated with smoking. However, Keane [43] argues that the liberalisation of NRTs and the conversion of medical control to consumer products may lead to a normalised version of addiction, and



a transformation of NRTs users as rational consumers who are responsible and prudent enough to choose the 'safe' product to remedy their condition [43]. Based on this study, however, this level of acceptance has not yet been reached. However, individuals continued their addiction rather than being motivated to quit, given the discreteness of NRTs and the lesser stigma associated with NRTs.

### Strengths and limitations

Although the participants were selected to compose a homogenous group, this approach did not intentionally require most of the participants to be over the age of 40. This similarity in age may, therefore, limit the transferability of the study to other age groups [44]. However, from former studies involving long-term users of NRTs, it seems that long-term NRTs users are primarily middle-aged users; hence, the participants in the present study may very likely represent the bulk of long-term NRTs users [21,26,27]. Hence, transferability to other age groups may not be that important at this point. The strengths of the study were the quality of the empirical data, as the interviewees were open to telling their stories in an honest and reflective manner, and the attention that was given to the analysis of each interview before focussing on similarities across the interviews [32]. The inclusion of dual users contributed additional understanding of the experience of long-term use and the risk of relapse, but the focus of the dual users was primarily on how to regain motivation to quit smoking and less on the use of NRTs. A study on relapsed dual users alone may, therefore, provide a better understanding of this experience.

### Conclusion

None of the ex-smokers feared to relapse to smoking. Non-nicotinic factors were found to play an important part in developing an addiction to NRTs. The use of NRTs yields some of the expected benefits and helps avoid some of the expected drawbacks of smoking cessation in terms of contributing enjoyment, convenience, improvements in health, better concentration, and avoidance of weight gain. However, the drawbacks of using NRTs were still a concern in terms of long-term health effects and continued addiction.

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