The Effect of Nicotine Addiction on Quitting Smoking

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INTRODUCTION

Cigarette addiction ranks first among preventable causes of death all over the world. 10 million people died in the 20th century due to the tobacco epidemic. However, the 2000s peaked with the risk burden from the past and now 5.4 million people die every year.

The World Health Organization (WHO) predicts that if urgent measures are not taken, more than 8 million people will die annually by 2030, with 80% of these deaths occurring in developing countries, and one billion people will die throughout the 21st century[1].

Smoking plays a significant role in the development of many fatal diseases. It is the leading cause of lung cancer, one of the deadliest cancers, in both men and women[2].

In order to find a solution to this important public health problem and to control tobacco in society, the WHO Director-General proposed in July 2008 that all countries adopt comprehensive measures aligned with the MPOWER approaches[3]. In the M-POWER program;

M (Monitor) MONITOR tobacco use and prevention policies.

P (Protect) PROTECT people from passive exposure to tobacco smoke.

O (Offer) OFFER help to quit tobacco use.

W (Warn) WARN individuals about the danger of smoking.

E (Enforce bans) ENFORCE bans on tobacco advertising, promotion and sponsorship.

R (Raise taxes) RAISE the amount of tax applied to tobacco.

When determining aid methods for those who want to quit smoking; WHO recommends five major steps (5A) in smoking cessation treatment[4]. The 5 steps starting with the English letter A (Ask, Advice, Assess, Assist, Arrange) are widely accepted.

1- Ask, learn (Ask),

2- Advise him/her to quit (Advice),

3- Assess the willingness to quit within the next month. (Assess),

4- Plan the treatment, help and lead (Assist),

5- Monitor to prevent relapse (Arrange).

Asking every patient who consults a physician about smoking and advising smokers to quit smoking is something that every physician can and should do. However, smoking cessation counseling is a practice that can be successful only if physicians who are interested in this subject and trained in this subject can devote enough time to planning and leading the treatment.

If physicians who spend a very short time with the patient in outpatient clinics do not have the opportunity to follow up and motivate the patient by calling them later to prevent relapse, their chances of success are low. The physician's rush to apply the most effective method in a short time increases the risk of making mistakes. Some articles suggest that some drugs recommended for use in smoking cessation treatment increase suicidal tendencies in users, and this forces physicians to be cautious on this issue[5]. In the treatment of smoking addiction; meeting with the addict, allocating enough time for the physician to lead and direct the treatment, and the physician having interest, knowledge and skills in this regard are key to success. It is an indispensable condition for work. In recent years, physicians have also started utilising alternative treatments in order to allocate sufficient time and encourage addicts to quit smoking[6].

One of these methods is bioresonance. Bioresonance is a method that aims to use the resonance in the body, just like the Magnetic Resonance Imaging (MRI) method that was developed by using the Nuclear Magnetism, which occurs with the movements of protons and neutrons (nucleons) in the atomic nucleus at the cellular level. In this method, electromagnetic vibrations called biophotons can be obtained by contacting flat electrodes on human skin.

Biophotons are weakly coherent electromagnetic vibrations in the range of 10^{14} Hz[7]. Bioresonance devices are an electroacupuncture/electrostimulation method developed to create biphotons specific to substances, to give a stimulus to the body with electrodes, and to ensure that the body responds to this stimulus. Thus, this method aims to regulate the reactions caused by that substance without being exposed to toxic or allergic substances.

In studies conducted for the treatment of allergic diseases, it was found that intolerance to some substances was achieved and it was recommended to try it in smoking cessation treatments[8].

Although bioresonance is one of the unproven treatment methods in terms of efficacy, it was used in this study because it has no side effects, provides a suitable environment for sufficient discussion with the addict, aligns with the sudden smoking cessation method in a single session, and its easy applicability encourages addicts to quit smoking.

MATERIALS AND METHODS

Between 2009 and 2011, 1562 cigarette addicts were included in the study. An initial interview of approximately 45 minutes was planned for the cases in order to implement the sudden smoking cessation method. Following that, 3 phone calls and motivation and support were scheluled on the 3rd day, at the end of the 1st week and at the end of the 1st month. At the first meeting, in order to standardize the treatment and capture the interest of the subjects; bioresonance application was planned with a yet unproven effectiveness but a widely used medical treatment device. All smokers were informed about the method at the first meeting and signed an informed consent form (BOF). The internationally recognized Fagerström Nicotine Dependence Test was administered. Detailed

information such as identity information, the age of starting smoking, and types of cigarettes smoked over the years was recorded in the form (Table 1).

Before the study, participants were allowed to smoke their last 2 cigarettes, and then the Mora bioresonance application, which took an average of 45 minutes, was carried out. The bioresonance application was conducted using the MORA SUPER+ medical treatment device, which is approved by the European Union and the Turkish Accreditation Agency (TÜRKAK), has a CE certificate, and is registered in the T.C. Drug and Medical Device Information Bank under the Global Medical Device Nomenclature (GMDN) as a biofeedback system. During the application, the smoker was seated comfortably in a chair and connected to the system through electrodes on their hands and feet, receiving the system's electromagnetic stimulation without any physical discomfort or pain. The system was programmed and performed in a way to generate different bioresonance specific to the electromagnetic properties of each participant's last 2 cigarettes.

Table1. Fagerstörm Nicotine Addiction Test

Question	**Point**
1. How many cigarettes do you smoke per day?	
a) 10 or less	0
b) 11–20	1
c) 21–30	2
d) 31 and over	3
2. How soon after you wake up do you smoke your first cigarette?	
a) After 0–5 minutes	3
b) After 6–30 minutes	2
c) After 31–60 minutes	1
d) Later	0
3. Do you find it difficult to refrain from smoking in places where smoking is not allowed (e.g. hospitals, government offices, cinemas, libraries etc)?	
a) Yes	1
b) No	0
4. Do you smoke more during the first hours after waking than during the rest of, the day?	
a) Yes	1
b) No	0
5. Which cigarette would you be the most unwilling to give up?	
a) First cigarette in the morning	1
b) Any other	0
6. Do you smoke even when you are very ill?	
a) Yes	1
b) No	0
Total	

Rating : 0-3 point: Low nicotine dependence
4-6 : Moderate dependence
7-10 : High dependence

During the application, physician interview was held with all addicts to strengthen the desire to quit smoking by providing motivation in accordance with the 5R rule. The 5 digits starting with the letter R in English consist of;

1-RELEVANCE

2-RISKS

3-REWARDS

4-ROADBLOCKS

5-REPETITION

After the first application, three follow-up phone calls were made with the addict on the 3rd day, 1st week, and 1st month to give information about the interview plan. Patients struggling were invited back to the center for an additional 20-minute bioresonance session for motivational support. The program was concluded at the end of the 1st month..

RESULTS

A total of 1562 cigarette addicts, 1013 men (64.9%) and 549 women (35.1%), were included in the study. 95.26% of addicts were in the 21-60 age group. Among those included in the study, 20 cases in the 0-20 age group, 847 cases in the 21-40 age group, 641 cases in the 41 to 60 age group and 54 cases over 61 years of age were evaluated.

Of the addicts, 79 had low, 487 had moderate, and 996 had high nicotine dependence. No significant difference was detected between male and female gender in the distribution of addiction severity (Table 2).

Table 2. Distribution of Nicotine Addiction Degree by Gender

Gender	**Nicotine Addiction**			Total
	Low	Moderate	High	
Women	31 (%5,65)	173 (%31,51)	345 (%62,84)	549 (% 100)
Men	48 (%4,74)	314 (%31)	651(%64,26)	1013 (% 100)
Total	79 (%5,06)	487(%31,18)	996 (%63,76)	1562 (% 100)

Regarding the duration of smoking among participants, 10.05% of the addicts included in the study were smokers for less than 10 years, while 89.95% had smoked for 11 years or more. Among these, 44.37% were addicts who had smoked between 11 and 20 years, and 45.58% had smoked for more than 21 years. The rate of high nicotine dependence was 36.95% among those who had smoked for less than 10 years, 58.59% among those who had smoked for 11-20 years, and 74.72% among those who had smoked for more than 21 years ($P<0.001$). The rate of low nicotine dependence was 5.06% overall, with little change based on smoking duration: 5.73% for those who had smoked for less than 10 years, 5.91% for those who had smoked for 11-20 years, and 4.07% for those who had smoked for more than 21 years.

In the telephone conversations made on the 3rd day of the study; it was determined that 1471 of 1562 cases (94.1%) complied with the study and were trying to get rid of smoking addiction. 5.9% of the cases had relapsed within the first 3 days and smoked again, but none reported any side effects related to the application.

The rate of relapses in the first week of the study was found to be 19.4%. However, no relationship between relapses and the degree of nicotine addiction could be determined; 303 people smoked within the first week and were unable to quit. The number of addicts who never smoked was found to be 1259 (80.6%).

At the end of the first month, it was not possible to reach 413 of the cases by phone. Among the 1,338 participants who were contacted, 925 (69.13%) had not smoked at all and were considered to have quit smoking. The smoking cessation rate was 73.98% for those with low nicotine addiction while 76.82% for those with moderate and 64.99% for those with severe nicotine addiction. No significant relationship between relapses and the degree of nicotine addiction was detected in the distribution of relapse cases who failed to quit smoking at the 1st week and 1st month (Table 3).

Table 3. Relapse Rates According to Nicotine Dependence Degree at 1st Week and 1st Month

	Nicotine Addiction			
	Low	Moderate	High	Total
1st Week	18/79 (22,8%)	76/487 (15,6%)	209/996 (20,98 %)	209/996 (20,98%)
1st Month	19/73 (26,02%)	96/414 (23,18%)	298/851 (35,01%)	413/1338 (30,87%)

In the first month of the study, 224 (14.34%) of the addicts could not be reached. The rate of unreachable participants was 7.5% for those with low nicotine dependence, 14.98% for those with moderate dependence, and 14.55% for those with high dependence (average 14.34%) (Table 4).

Table 4. Distribution of Patients Who Could Not Be Reached in the 1st Month According to the Degree of Nicotine Dependence

	Nicotine Addiction			
	Low	Moderate	High	Total
Total	79	487	996	1562
Unreachable	6	73	145	224
Rate	7,5%	14,98%	14,55%	14,34%

Regarding the distribution of participants who quit and continued smoking by age groups, the rate of smoking cessation in those under 20 years of age is 25%. It was observed that the rate was low and 45% could not be reached at the end of the first month. The smoking cessation rate increased with age: 56.9% in the 21-40 age group, 62.7% in the 41-60 age group, and 66.7% in those over 61 years old. While 480 of the 925 addicts who quit smoking were able to do it in a single session, 445 applied for supportive treatment. While all (100%) of those who quit smoking under the age of 20 received support, this rate varied between 52.23% and 52.77% in other age groups (Table 5).

Table 5. Smoking Quit Rates and Support Recipients by Age Groups at the End of the 1st Month

Age Group	**0-20**	**21-40**	**41-60**	**OVER 61**	**TOTAL**
Keeps On Smoking in the 1st Month	6 (%30)	228 (%26,9)	168 (%26,2)	11 (%20.4)	413 (%26,4)
Could not be reached in the 1st Month	9 (%45)	137 (%16,2)	71 (%11,1)	7 (%13)	224 (%14,4)
Did not smoke in the 1st Month	5 (%25)	482 (%56,9)	402 (%62,7)	36 (%66.7)	925 (%59,2)

Support among non-smokers	5 (%100)	210 (%52,23)	211 (%52,48)	19 (%52,77)	445 (%48,10)

DISCUSSION

It is accepted that the classical methods applied in smoking cessation clinics are not sufficient for the solution, and there is a need to develop new treatment methods[9].

In our study, the issue of cigarette addiction has been accepted as a problem that can be solved by making an evaluation based on the "biopsychosocial model", which assesses psychiatric disorders, and genetic, psychological, and social dimensions.

Education and motivation were used together. It is not sufficient for an individual to be merely educated to quit smoking. In a study conducted in a group with the same level of education, it was determined that teachers who are addicted to cigarettes and teachers who do not smoke even have very different views on anti-smoking laws[10].

Despite the widespread acceptance that smoking addiction is essentially nicotine addiction, using nicotine forms alone as a smoking cessation treatment only doubles the success rate compared to a placebo[11].

In the currently widespread methods, only 3% of the patients remain non-smokers after one year, even with the prescription of proven-effective preparations such as nicotine products, varenicline, and bupropion[12]. The physician's active role in the treatment, allocating the necessary and sufficient time, motivating and supporting the addict, and applying cognitive and behavioral treatments increase the success of the treatment[13] .

In our study, we tried a method where we could apply these principles without using pharmacological treatments and evaluate cigarette addiction and addicts in line with the recommendations of the World Health Organization. We added bioresonance to our study in order to create an environment where we could use sufficient time for this method.

Bioresonance is one of the alternative methods used in the treatment of cigarette addiction in recent years[14]. It is considered at the discretion of the relevant clinician under what circumstances and on which individuals the Mora super plus, a bioresonance device, an electroacupuncture/electrostimulation method, will assist in smoking cessation. We did not detect any side effects in our application.

We found that 1471 (94.1%) of the 1562 cases we included in the study were affected by the application.

The initial interview lasting about 45 minutes provided the necessary and sufficient time for effective physician support. During the process, motivational interviews that started face-to-face in the initial interview and continued with phone calls later were conducted with care in establishing empathy, relating smoking to health, economy, children, and other topics that matter to the patient, reducing resistance to quitting smoking, and increasing personal efficacy as recommended in the guidelines[15].

Although the half-life of nicotine absorbed when smoking ranges from 1-4 hours, the average is around 2 hours, and when not smoking, withdrawal symptoms develop in a short time and peak especially within the first 7 days after quitting and relapse mostly occurs in this period[16]. In our study, the relapse rate on the 7th day remained at 19.4%. The fact that 80.6% of the cases were coping with nicotine withdrawal symptoms suggests that success can be achieved in treatment without using nicotine preparations.

In our study, it was found that the rate of severe nicotine addiction was 36.95% in those who smoked for less than 10 years, increased to 58.59% in those who smoked for 11-20 years, and reached high rates like 74.72% in those who smoked for 21 years or more.

The increase in the severity of nicotine addiction was found to be directly proportional to the smoking duration.

The method allowing for sudden cessation rather than gradual reduction of smoking was found successful as it created a group with a high rate of 69.13% non-smokers at the end of the first month.

While this rate decreased to 64.99% in severe nicotine addicts, it was 76.82% in moderate nicotine addicts and 73.98% in mild nicotine addicts.

Although these rates did not cause a statistically significant correlation, treatment success in those with severe nicotine addiction was found to be lower than in those with moderate and mild nicotine addiction.

In our study, The low rate of smoking cessation (25%) in those under 20 years of age and the high rate (45%) of cases that could not be reached at the end of the first month suggested that this age group was the least affected by the method we applied. However, since only 1.28% of the cases included in the study were in this age group, it suggested that studies with more cases were needed to make a statistically significant evaluation.

In our study, we concluded that the degree of nicotine addiction increases with the amount and duration of cigarettes smoked and that advanced nicotine addiction negatively affects the success of smoking cessation treatment. However, despite this negative effect, the rate of smoking cessation increased with age, reaching 56.9% in the 21-40 age group, 62.7% in the 41-60 age group, and 66.7% in those over 61 years thanks to sufficient support and motivation. When effective methods for coping with nicotine withdrawal symptoms are applied, successful results can be achieved in smoking cessation treatment without nicotine replacement.

REFERENCES