Scientific Electronic Archives
Issue ID: Vol.19, January/February 2026, p. 1-7
DOI: http://dx.doi.org/10.36560/19120262133
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ISSN 2316-9281

Pharmaceutical care in smoking cessation

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Abstract. Smoking is one of the leading preventable causes of disease and death worldwide and is classified as a chronic disease due to nicotine dependence. In this context, pharmacists have proven to be essential professionals in smoking cessation efforts, working directly in primary care and public health programs. This study aimed to assess the degree of nicotine dependence among students at the Federal University of Mato Grosso (UFMT) – Sinop Campus, using the Fagerström Test, and to discuss the pharmacist's role in this context. This is an investigative study approved by the Research Ethics Committee (Opinion No. 4.471.865/2020). The target population consisted of 136 students over 18 years of age, randomly selected. Data were collected through an electronic form containing demographic information and the Fagerström Test. The data were organized into tables and graphs and analyzed using Microsoft Excel. Most participants (70.6%) were between 18 and 24 years old. It was observed that 71.3% did not use any type of cigarette, and among smokers, 19.1% used electronic cigarettes. Nicotine dependence was classified as low to moderate in most cases, with only 2.9% of participants reporting smoking within the first five minutes after waking up — an indicator of high dependence. The analysis also showed that 1.5% reported difficulty giving up the first cigarette of the day, while 46.2% reported difficulty giving up any cigarette, suggesting a consolidated habit. The study demonstrated that the application of the Fagerström Test is a useful tool for identifying the degree of nicotine dependence, contributing to the development of effective intervention strategies. The pharmacist's role is fundamental both in administering the test and in providing clinical, educational, and motivational support to patients. Their involvement in smoking cessation through counseling, pharmacotherapeutic follow-up, and participation in health campaigns is essential for the success of treatment and prevention of relapse, promoting significant improvements in quality of life and public health.
Keywords: smoking cessation, nicotine dependence, Fagerström.

Introduction

Smoking is considered one of the main preventable causes of illness and death worldwide, and it is regarded as a major public health problem.

Tobacco originates from the plants *Nicotiana tabacum* and *Nicotiana rustica*, native to the Andes in South America. These species had been used by Indigenous peoples for thousands of years, mainly in religious rituals and for medicinal purposes, such as the preparation of teas and ointments. With the arrival of European colonizers in the Americas, tobacco was taken to Europe, where it quickly spread and became popular among the nobility. Industrial cigarette production began in the 19th century, and its consumption greatly increased during World War I. In the 1950s and 1960s, smoking was widely accepted socially. However, starting in the 1970s, scientific studies began to demonstrate the harmful effects of smoking on health, such as the increased incidence of lung cancer and other chronic diseases (BALBANI; MONTOVANI, 2005).

The World Health Organization (WHO) reports that tobacco causes more than 8 million deaths per year. Of these, over 7 million are among smokers, and about 1.2 million are among non-smokers exposed to second hand smoke. The WHO also states that 80% of the world's smokers live in low- and middle-income countries, where the health problems caused by tobacco use are even more severe (INCA, 2022).

In recent years, instruments for identifying nicotine dependence have become valuable research tools. Ideally, these instruments provide precise, reproducible, and relevant measurements (MENESES-GAYA, 2009).

To better understand this level of dependence, several tools have been developed, among which the Fagerström Test for Nicotine Dependence stands out as a validated and widely

used instrument in clinical practice (CARMO; PUEYO, 2002).

The total score allows the classification of nicotine dependence as very low, low, medium, high, or very high. This classification helps healthcare professionals choose the most appropriate therapeutic approaches, including the use of medications, nicotine replacement therapies, and behavioral interventions (BRASIL, 2020).

In this context, pharmacists have taken on an increasingly active role in primary care and health promotion, integrating multidisciplinary care teams and working directly in smoking cessation programs. According to Resolution No. 585/2013 of the Federal Pharmacy Council (CFF), pharmacists are qualified to provide clinical services, which may include monitoring smokers, applying tests such as the Fagerström Test, making pharmacological recommendations according to clinical protocols, and offering motivational support. These professionals are present in primary health care units, clinical pharmacies, and public programs such as the National Tobacco Control Program (PNCT). Their participation is essential for treatment adherence, monitoring possible adverse effects, providing guidance on the correct use of medications, and offering motivational support to patients. In addition, pharmacists play an important role in health education, helping to prevent relapse and strengthen individual autonomy during the cessation process (BRASIL, 2013; BRASIL, 2020; BRASIL, 2023).

Therefore, this study aims to assess the degree of nicotine dependence using the Fagerström Test and to discuss the role of pharmacists in smoking cessation, emphasizing their importance in public health actions and in improving patients' quality of life.

Material and Methods

Study period, location, and type

The study was conducted at the Federal University of Mato Grosso – Sinop Campus. Data collection took place from August 12, 2024, to October 9, 2024. This was an investigative study.

Inclusion and exclusion criteria

As inclusion criteria, smokers from the target population who agreed to complete the questionnaire were included. As exclusion criteria, participants under 18 years of age were excluded.

Ethical considerations

The research began after approval by the Research Ethics Committee (CEP) under opinion No. 4.471.865/2020. Ethical principles were observed, protecting the rights of the volunteers in accordance with the "Guidelines and Regulatory Norms for Research Involving Human Beings" established by Resolution 466 of December 12, 2012, of the National Health Council – CNS (BRASIL, 2012).

Regarding confidentiality, participants' privacy was ensured since no personal information such as name, address, or phone number was requested.

Target population and form evaluation

The forms were distributed through messaging apps (WhatsApp), email, and in-person announcements.

The sample was randomly selected among students from UFMT/Sinop who participated in the study. A total of 136 responses were obtained from individuals aged 18 and over, distributed as follows: 18–24 years (70.6%), 25–34 years (22.8%), 35–44 years (3.7%), 45–54 years (1.5%), and over 55 years (1.5%).

As for risks, participants might experience discomfort when answering the test; however, they had the right to withdraw at any time without consequences and were assured immediate assistance if necessary.

Data collection

Data collection took place after CEP approval. An electronic pre-established questionnaire - the Fagerström Test - was used via Google Forms.

The questionnaire included multiple-choice questions divided into two parts. The first part contained three questions:

1) Participation is voluntary. Please select "YES" to participate or "NO" to decline before proceeding;
2) What is your age? (18–24, 25–34, 35–44, 45–54, 55+ years);
3) Which type of cigarette do you smoke? (select one or more): traditional cigarette, electronic cigarette (vape, pen drive, pod), straw cigarette, marijuana cigarette, or "I do not smoke."

The second part consisted of the Fagerström Test itself, containing six questions with specific scores assigned to each answer:

4) How soon after waking do you smoke your first cigarette? after 60 minutes; between 31–60 minutes; within 6–30 minutes; within the first 5 minutes; I do not smoke;
5) Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., churches, workplaces, cinemas, shopping malls)? yes; no; I do not smoke;
6) Which cigarette would you hate most to give up? the first one in the morning; any other; I do not smoke;
7) How many cigarettes do you smoke per day? fewer than 10; 11–20; 21–30; more than 30; I do not smoke;
8) Do you smoke more frequently during the first hours after waking than during the rest of the day? yes; no; I do not smoke;
9) Do you smoke even when you are so ill that you stay in bed most of the day? yes; no; I do not smoke.

Data organization

After data collection, the responses were organized and analyzed using Microsoft Excel 2010.

Results and Discussion

This study obtained a total of 136 responses. Most participants were aged 18–24 years (70.6%), followed by 25–34 years (22.8%). Older age groups were less represented: 3.7% were 35–44 years, 1.5% were 45–54 years, and 0.7% were 55 years or older.

Among the 136 students, 97 (71.3%) did not use any type of cigarette. Analysis showed that 11.8% reported smoking traditional cigarettes, while 38.2% reported using electronic cigarettes (vape, pen drive, pod, or hookah).

Regarding the difficulty of avoiding smoking in public places, most smokers (94.9%) reported no difficulty refraining from smoking in restricted areas, while 5.1% found it difficult.

The study also found that 82.1% (32 participants) did not smoke when ill—meaning that, despite being smokers, they avoid smoking in such situations. Only 7.7% (3 participants) smoked even when bedridden, indicating high dependence.

Concerning the time of day of the first cigarette, 16.3% smoked within the first five minutes after waking, which indicates high dependence. When asked which cigarette was hardest to give up, 10.3% mentioned the first of the day, suggesting that most participants had a low to moderate level of dependence. However, 56.4% found it difficult to give up any cigarette, which may indicate a well-established habit but not necessarily severe addiction.

The present study, conducted primarily among young adults aged 18–24 years, found that this group tends to have low to moderate nicotine dependence. However, dependence may increase with age.

According to the literature, older individuals tend to show higher levels of nicotine dependence. Goulart et al. (2010) reported that smokers over 50 years old exhibit greater nicotine dependence, have smoked for longer periods, and consume more cigarettes daily, facing more health problems related to smoking and greater difficulty quitting.

Pharmacists play an essential role in assessing, guiding, and monitoring individuals who wish to quit smoking. They can provide technical and motivational support, participate in educational and health campaigns, and ensure the correct use of medications when necessary. This role is particularly important in Primary Health Care, where pharmacists, as part of multidisciplinary teams, can work closely with the community to promote continuous and effective interventions.

Furthermore, pharmacists' involvement in smoking cessation programs contributes to reducing the burden of tobacco-related diseases, such as respiratory, cardiovascular, and various cancer conditions. Their participation in educational campaigns, counselling on smoking risks, and pharmacotherapeutic follow-up reinforces the importance of pharmacists in promoting public health.

Pharmacists also play a key role in the early identification of nicotine dependence, enabling more effective and preventive approaches. Using tools such as the Fagerström Test allows professionals to outline the patient's profile and adopt individualized strategies, increasing the chances of successful cessation.

Conclusion

The assessment of nicotine dependence using the Fagerström Test proved to be an effective tool for identifying smoking patterns among students at the Federal University of Mato Grosso – Sinop Campus. The results showed that, although the proportion of daily smokers with high dependence was low, the use of devices such as electronic cigarettes has increased among young people, representing an emerging challenge for public health policies.

Thus, it is concluded that combining nicotine dependence assessment with pharmacists' professional interventions significantly contributes to the success of smoking cessation actions. This integration is essential to improving quality of life, reducing healthcare costs related to tobacco-induced diseases, and strengthening public health as a whole.

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