Tobacco dependence and motivation to quit during confinement in Morocco

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ABSTRACT

INTRODUCTION Research has shown divergent results in terms of nicotine dependence and motivation to quit before and during confinement. Thus, the overall impact of COVID-19 on tobacco dependence and motivation to abstain requires further investigation. The aim of this study is to assess tobacco dependence and measure the motivation to quit before and during confinement in cigarette smokers in Morocco.

METHODS This was a descriptive and analytical cross-sectional study that included 478 smokers from the 12 regions of Morocco. Data were collected via a questionnaire survey. The Fagerström test for nicotine dependence (FTND) was used to assess tobacco dependence, and the Q-MAT test was used to measure motivation to quit. The questionnaire was distributed between 9 May and 11 June 2020 via e-mail and social networks. Data processing was carried out using Jamovi software.

RESULTS The participants were predominantly male (95%) and more than half were married (54%) and aged 26–45 years (54%). The smoking profile was characterized by a high proportion of quit attempts (81%), 77.5% of which were without medical help. Co-consumption of alcohol and cannabis was found in 28% and 20% of participants, respectively. The percentage of participants with moderate and strong dependence was significantly reduced from 26% and 13% to 15% and 9%, respectively. As for the assessment of motivation, participants with a good motivation to stop smoking increased from 34% before confinement to 49% during confinement. This finding was statistically significant ($p<0.001$).

CONCLUSIONS The results clearly indicated that confinement in Morocco in 2020 had a positive impact on tobacco dependence and motivation to quit. These results should be an opportunity for health stakeholders to promote smoking cessation and encourage healthier behaviors during periods of crisis such as confinement.

INTRODUCTION

All countries in the world have declared a state of health emergency in order to limit the spread of the COVID-19 virus. Morocco is no exception, having introduced a radical and emblematic operation to confine the population and declared a state of health emergency to protect health and prevent the spread of the pandemic[1].

Despite the wide-ranging impact of the COVID-19 pandemic on various aspects of people's lives, current understanding of how this pandemic affects addiction-related behaviors is relatively limited[2].

Furthermore, the experience of the COVID-19 pandemic could evoke negative emotions and increase stress, and social distancing measures could lead to boredom and depression[3-5].

A review of the literature on nicotine dependence and motivation to quit before and during confinement showed divergent results[6,7]. Thus, the overall impact of the coronavirus pandemic on tobacco dependence and motivation to abstain in the general population requires further investigation.

A survey conducted in Morocco by the High Commission for Planning[8] indicates economic, social and psychological repercussions. To our knowledge, the present study was

the first in Morocco to assess tobacco dependence and motivation to quit before and during confinement due to COVID-19.

It is essential to study the smoking habits of confined individuals, as these could undergo changes. We therefore put forward two hypotheses: 1) smokers would increase their consumption to combat boredom and stress, and 2) confinement measures and the respiratory complications of coronavirus infection would dissuade smokers from motivating themselves to stop smoking.

In this perspective, this study aims, on the one hand, to assess the degree of nicotine dependence and, on the other hand, to evaluate the motivation to stop smoking before and during confinement in Moroccan smokers.

METHODS

Study design

This was a cross-sectional, descriptive and analytical study. Cigarette smokers aged >18 years were included in the study. The sampling method was non-probability, convenience sampling.

Data were collected using an anonymous questionnaire developed by the authors. This tool consisted of 52 questions, most of which were closed-ended. It included: 1) sociodemographic and economic data on participants, 2) smoking profile, and 3) two psychometric tests, the Fagerström test for nicotine dependence (FTND)[9] and the Quit Motivation Questionnaire (Q-MAT)[10]. The items on these scales were completed by the participants during the confinement. For the period before the confinement, the measurement was retrospective.

The questionnaire also included an introductory section explaining the purpose of the current research, the rights of participants, anonymity, and voluntary informed consent. Validating the consent allowed participants to access the questionnaire.

The data collection tool was distributed via e-mail and social networks such as Facebook, WhatsApp and Messenger, during a containment period from 9 May to 11 June 2020. Before being distributed, the questionnaire was checked and validated by five resource persons from different fields. It was also pre-tested with 10 smokers excluded from the study.

Measurements

Nicotine dependence

The FTND is the most commonly used tool for assessing the degree of nicotine dependence in smokers. It consists of six questions about the individual's smoking habits. The score obtained from this test varies from 0 to 10. Different categories of dependence are assigned according to the scores obtained: 0–2 no dependence, 3–4 low dependence, 5–6 medium dependence, and 7–10 strong to very strong dependence. During confinement, this measurement scale is completed by the participant in a single operation for the two periods before and during confinement.

Motivation to stop smoking

The Quit Smoking Motivation Questionnaire (Q-MAT)[10] was used to assess the degree of motivation to quit smoking by means of four questions. The test score ranges 0 to 20. A score <6 indicates insufficient motivation, 7–12 average motivation, and >12 indicates high motivation. During confinement, this motivation scale is completed by the participant in one go for the two periods before and during confinement.

Statistical analysis

Data entry and management were conducted using the Jamovi software. The distribution of quantitative variables (dependence and motivation scores) was assessed using the Shapiro-Wilk test, in addition to graphical representation of values (Q-Q-Plot, Histogram). Non-normally distributed quantitative variables were described in terms of median and interquartile range, and then compared using the Wilcoxon test. However, qualitative variables (degree of dependence and degree of motivation) were described in terms of frequencies and percentages, and compared using the McNemar test.

RESULTS

Sociodemographic and economic characteristics of participants

This study involved 478 Moroccan smokers. The participants were predominantly male (95%) and more than half were married (54%) and aged 26–45 years (54%). The results also showed that 75% of those surveyed had a university education, 74% declared an income of over 2800 Moroccan Dirhams and 73% of participants had social security cover. Urban smokers accounted for 82% (Table 1).

Smoking profile of the participants

A study of the smoking profile (Table 2) revealed that 81% of the participants had attempted to quit, 77.5% of them without any help. In addition, alcohol (28%) and cannabis (20%) use were found among the study population. The first cigarette was smoked from the age of 10 years. Moreover, 72% of participants started smoking their first cigarette before the age of 20 years. Similarly, 80% of respondents indicated that they started smoking daily before reaching the age of 25 years. As regards spending on tobacco, 65% of participants said they spent more than 100 Dirhams a week. In addition, a fifth of participants spent more than 200 Dirhams a week on their tobacco consumption.

As for the state of knowledge of the population studied, 61.3% were aware of the negative effects of tobacco on health. On the other hand, 21.5% of participants felt that smoking is a risk factor for contracting COVID-19, while 50.4% had no knowledge of this. Furthermore, 47.5% of the population thought that smoking could aggravate the complications associated with COVID-19.

Nicotine dependence

The results showed a significant variation ($p<0.001$)

Table 1. Characteristics of smoker participants, Morocco, 2020 (N=478)

Characteristics	n (%)
Gender	
Male	456 (95)
Female	22 (5)
Age (years)	
18–25	100 (21)
26–45	257 (54)
46–65	115 (24)
>65	6 (1)
Marital status	
Single	205 (43)
Married	258 (54)
Divorced	11 (2)
Residence	
Urban	394 (82)
Suburban	46 (10)
Rural	38 (8)
Education level	
Primary	11 (2)
Middle School	28 (6)
High School	75 (16)
University	358 (75)
Monthly income (Dirhams)*	
<1500	58 (12)
1500–2800	63 (13)
2800–6763	160 (33)
>6763	197 (41)

*1000 Moroccan Dirhams about US$99.

Table 2. Smoking status characteristics of participants, Morocco, 2020 (N=478)

Characteristics	n (%)
Age of first cigarette (years)	
10–15	82 (17.2)
16–20	261 (54.6)
21–25	111 (23.2)
>25	24 (5.0)
Age of daily smoking initiation (years)	
15–20	165 (34.5)
21–25	220 (46.0)
26–30	71 (15.0)
>30	22 (4.6)
Attempted cessation	
Yes	387 (81.0)
No	91 (19.0)
Unassisted	300 (77.5)
Alcohol	
Yes	133 (27.8)
No	345 (72.2)
Cannabis	
Yes	95 (20.0)
No	383 (80.0)
Spending per week (Dirhams)*	
<100	166 (34.7)
100–150	134 (28.0)
150–200	86 (18.0)
>200	92 (19.2)
Smoking is a risk factor for COVID-19	
Yes	106 (21.5)
Don't know	241 (50.4)
No	131 (27.4)
Smoking increases complications of COVID-19	
Yes	227 (47.5)
Don't know	195 (40.8)
No	52 (10.9)
Effect of smoking on health	
Positive	56 (11.7)
No effect	106 (22.2)
Negative	293 (61.3)

*1000 Moroccan Dirhams about US$99.

in dependence scores before and during confinement, with a mean decreasing from 3.82 to 2.95. The median also decreased from 4.00 to 2.00. However, the standard deviation remained unchanged at 2.29, indicating stability in the dispersion of scores. In terms of percentiles, the 25th percentile decreased from 2.00 to 1.00, and the 75th percentile from 6.00 to 4.00, reinforcing the idea of a reduction in dependence (Table 3).

During confinement, there was a significant increase in the percentage of people with no dependence on tobacco (50.6% compared with 32.2% before confinement) (Table 4).

These results highlight a downward trend in all levels of tobacco dependence during confinement. The percentages of low, medium and high dependence all decreased.

Motivation to quit smoking

Table 5 presents the results for the motivation score, comparing the results before and during confinement. The main descriptive

Table 3. Smoking dependence score before and during confinement, Morocco, 2020 (N=478)

Measure	Dependence score		
	Before confinement	During confinement	p
Mean	3.82	2.95	<0.001
Median	4.00	2.00	
Standard deviation	2.29	2.29	
25th percentile	2.00	1.00	
75th percentile	6.00	4.00	

Table 4. Degree of tobacco dependence before and during confinement, Morocco, 2020 (N=478)

Degree of tobacco dependence	Before confinement n (%)	During confinement n (%)	p
No	154 (32.2)	242 (50.6)	<0.001
Low	141 (29.5)	118 (24.7)	
Moderate	122 (25.5)	73 (15.3)	
High or very high	61 (12.8)	45 (9.4)	

Table 5. Degree of motivation to quit smoking before and during confinement, Morocco, 2020 (N=478)

Measure	Before confinement	During confinement	p
Motivation score			<0.001
Mean	11.8	12.7	
Median	12.0	13.0	
Standard deviation	5.1	4.7	
25th percentile	8.3	10.0	
75th percentile	15.0	17.0	
Degree of motivation, n (%)			<0.001
Insufficient	67 (14.0)	53 (11.0)	
Moderate	246 (51.5)	191 (40.0)	
Strong	165 (34.5)	234 (49.0)	

statistics are provided for these two periods, as well as a p-value to assess the significance of the difference between the two periods. Motivation increased during confinement, with higher median, lower quartile and upper quartile values. This increase was statistically significant (p<0.001).

In addition, Table 5 presents the results concerning the participants' degree of motivation to stop smoking before and during the confinement period. The data were divided into three levels of motivation, and a p-value was provided to assess the significance of differences between the two periods.

This table shows that during the confinement period, there were significant changes in people's motivation to stop smoking. The 'good motivation' category increased, while the 'insufficient motivation' and 'average motivation' categories decreased.

DISCUSSION

The present study assessed nicotine dependence and motivation to stop smoking before and during the period of confinement. The results highlight a significant decrease in the dependence score (p<0.001) in terms of nicotine dependence before and during COVID-19 confinement. In addition, the assessment of motivation to stop smoking increased during confinement, with higher median, lower quartile and upper quartile values. This increase was statistically significant (p<0.001).

Dependence

A study of the smoking profile before and during confinement revealed a reduction in consumption. This finding is consistent with the results of several studies. The study carried out in Spain by Rebollar Álvarez et al.[11] confirmed the reduction in tobacco consumption. Another recent study supported this result[12].This reduction in tobacco consumption was linked, on the one hand, to restrictions on movement and financial constraints[13,14]. On the other hand, researchers have correlated this reduction with smokers' fear of contracting a serious form of COVID-19[15].

These results can be interpreted in different ways. It is possible that some people took advantage of the confinement to reduce their smoking, perhaps because of limited opportunities to smoke or increased health awareness during the pandemic. However, it is important to note that other factors may also have contributed to these changes, and further studies may be needed to fully understand the motivations and implications of these variations.

However, some studies have contradicted these results. According to Yan et al.[3] and Sidor and Rzymski[16], more than 45% and 74.1% of smokers, respectively, saw their frequency of consumption increase during confinement. Similarly, Klemperer et al.[17] and Chagué et al.[18] reported that 30% of respondents increased their consumption. The study carried out by the French public health authorities[19] on smoking behavior and trends, found that around 25% of smokers said they had increased their tobacco consumption; the same figure was reported by Cransac-Miet et al.[20].

In addition, the Chinese survey by Sun et al.[21] showed that 20% of regular smokers had increased their cigarette consumption and 25.3% of ex-smokers had relapsed. Several studies have supported this increase in consumption[22-32]. Numerous studies have linked this increase in consumption to various factors, including stress, anxiety, boredom,

working at home, lack of social contact, and negative feelings engendered by confinement[25,29,33-35].

As for inferential analysis, our result relating to dependence was statistically significant (p<0.001). In the same sense, and according to Dogas et al.[36], participants reported smoking a significantly higher number of cigarettes (from 11.8 ± 7.4 cigarettes/day before confinement to 13.9 ± 9.8 cigarettes/day during confinement, p<0.001). In addition, Hanafi et al.[37] recorded a significant increase in cigarette consumption. The significance was also confirmed by the work of Souza et al.[31]. However, according to Cicero et al.[28] and Abouzid et al.[38] confinement did not significantly modify smoking habits.

Motivation to quit smoking

The participants' assessment of their motivation to stop smoking increased during confinement, with higher median, lower quartile and upper quartile values. This increase in motivation was statistically significant (p<0.001).

The work of Klemperer et al.[17] specified that motivation to stop was increased in 35.6% of cigarette smokers. Moreover, according to Shimpo et al.[39], 6.4% stopped smoking during confinement (p<0.001). Similarly, COVID-19 was significantly associated with an increase in quit attempts, successful cessation among smokers[15]. In addition, a study[40] comparing smoking cessation success before and after the pandemic, found a 31.1% cessation rate during the pandemic with a statistically significant difference (p<0.001). Moreover, intentions to quit smoking increased from 26% to 40% according to the results of Zubović et al.[24]. Furthermore, several studies have supported these results in relation to the increase in motivation to quit smoking during confinement[13,34,41-44]. However, according to Freire et al.[22] most smokers did not report any change in their motivation to stop smoking. Another study found that participants were not more motivated to quit smoking during the COVID-19 pandemic[45]. Overall, these studies show that the period of confinement due to COVID-19 led to a significant increase in motivation to stop smoking. The results suggested that the exceptional circumstances associated with the pandemic had a positive impact on smokers' motivation to quit.

Strengths and limitations

To our knowledge, this study was the first in Morocco to assess tobacco dependence and motivation to quit before and during the confinement imposed by COVID-19. In addition, the 478 participants represented 12 regions of Morocco. The present work has, however, some limitations. First, the cross-sectional study does not allow for temporal evaluation. Second, the sampling technique does not allow for generalization of the results. Third, the participants' responses could be subjective, despite the use of validated psychometric scales.

CONCLUSIONS

Smoking dependence and motivation to stop are two essential elements in the abstinence process. The results showed a change in smoking habits during the pandemic. The evaluation of dependence and tobacco consumption showed a reduction. This finding was statistically significant. Similarly, the evaluation of participants' motivation to stop smoking evoked a desire to abstain. This reduction in smoking and the increase in motivation during the pandemic should be an opportunity for healthcare professionals to promote smoking cessation and encourage healthier behavior during periods of crisis. The occurrence of major events such as the COVID-19 pandemic could have a positive impact on motivation to quit, depending on the underlying factors involved.

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CONFILCTS OF INTEREST
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ETHICAL APPROVAL AND INFORMED CONSENT
Ethical approval was validated (Date: April 2020) by the research monitoring committee at the AGADIR Higher Institute of Nursing Professions and Health Techniques, Tiznit Annex. This research was conducted in accordance with the Declaration of Helsinki and with strict respect for confidentiality. Participants provided informed consent.

DATA AVAILABILITY
The data supporting this research are available from the authors on reasonable request.

PROVENANCE AND PEER REVIEW
Not commissioned; externally peer reviewed.