

## Prospective study of tobacco consumption and its impact on caloric balance and stress behavior among students from some Moroccan Universities

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### ABSTRACT

Many countries of the world are concerned about the short- and long-term consequences of the direct impact of cigarettes on consumer behavior. In this paper, we have studied, through a survey, the relationship between the quality of certain foods and the degree of cigarette smoking among university students in four cities in Morocco (Rabat, Marrakech, Tangier and Kenitra) for the period from February 28 to May 10, 2013. The questionnaire included 82 questions about student personal information and elements, smoking, coffee and tea and stress. The results show the use of tobacco in academic spaces is a major achievement for health and behavior. Coffee as a food product alone does not cause more problems of health relatively to other foods considered as harmful to people's health by encouraging the student to consume more.

**Key words:** Cigarette consumption, Food, University students, Morocco.

### INTRODUCTION

Student smoking can be understood as the installation of social reproduction of smoking or be due to promotional actions by the tobacco industry. Tobacco control measures have already been taken or will need to be intensified. But these general measures must be accompanied by measures of education and prevention among university students. At present, national and international authorities in all countries of the world are concerned about the short- and long-term consequences of the direct impact of cigarettes on consumer behavior [1-2].

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Eating behavior patterns or nutrient consumption patterns are promising strategies for studying the link between nutrition, cognitive functioning and tobacco use among students, as they allow for the complexity of food intake to be taken into account [3-4].

In the student populations across the globe, the answer is simple: there are good and bad habits of life but still need to know which ones. Often confronted with a change in lifestyle as soon as they enter university, students often take bad habits in their everyday lives, sometimes without realizing it. Many factors then come into play to understand the bad habits of students.

The work we have done will focus on tobacco consumption and its impact on caloric balance and stress. For this purpose, we will describe the energy balance and its association with tobacco consumption and its impact on the psychic side.

### MATERIAL AND METHODS

The survey was conducted among university students in four cities (Rabat, Marrakech, Tangier and Kenitra) during the period from 28 February to 10 May 2013.

The data were collected using a questionnaire completed by students leaving university campuses. The questionnaire included 82 questions on the student's personal information and elements, smoking, coffee and tea, and stress.

## RESULTS

### Socio-demographic characteristics:

The study focuses on students from four academic institutions in the cities of Rabat, Marrakech, Tangier and Kenitra. 55.40% of these students live with their families, 22.89% in the University City and 20.8% in a studio or flat. 39.1% of the respondents are scholarship holders and 38.24% believe they have financial difficulties. The sample consists of 55.13% female students and 44.87% male students, with more than half, or 57.06%, aged between 18 and 20 years.

Tobacco consumption was addressed through the following indicators: "Smoke or not" and "the average number of cigarettes smoked per day". The prevalence of student smokers is 46.6%, of which 20.7% consume between 1 to 5 cigarettes per day and 25.9% smoke more than 6 cigarettes per day. According to a study of French students aged 17 to 30, in 1999 by the CFES, 47.5% declare to smoke, even if only occasionally [5]. The share of students who have never smoked remains stable (73.8% in 2015, 73.2% in 2013), as are those of casual smokers and daily smokers. However, consumption patterns have evolved. Casual and daily smokers smoke more tobacco (37.8%) than in 2013 (29.8%). Excessive daily smokers (10 or more cigarettes) have a 50.9% share of tobacco.

### Distribution of students according to tobacco consumption and calorific balance II:

The table below summarizes the results of the distribution of the students surveyed according to their caloric balance and the state of consumption or not of tobacco. The results show that 22.22% of hypocaloric students are smokers of whom 18.52% consume between 1 to 5 cigarettes per day and 3.7% smoke more than 5 cigarettes per day. However, 75% of normal-calorie students reported that they "never used tobacco," compared to 25% of those who answered "consume between 5 cigarettes a day". Regarding hypercaloric, 82.61% of students are smokers, 60.87% of whom consume more than 5 cigarettes per day. According to this first reading, the number of the number of cigarettes daily has taken increases according to the caloric state. The hypercaloric category was the most incriminated, the chi-square test shows a strong link between the caloric state of the students and the consumption of tobacco (chi-square = 27.52, p <0.000).

On average, the weight of smokers is 3 to 5 kg lower than that of non-smokers. In smoking-related weight change, nicotine appears to be the first causative factor in various studies. Data on the effect of nicotine on smokers' food consumption are contradictory, but it appears that smokers have an increased caloric intake compared to non-smokers. On the other hand, smoking seems to increase metabolism and increase the energy expenditure associated with physical activity

It appears that tobacco tends to alter feeding behavior in general. The 1989 study cited above shows that smokers have a basic metabolism increased by 6% compared to normal. It is therefore possible that these students tend to cover their needs which are increased [5].

**Table-1. Distribution of students surveyed by caloric balance and tobacco consumption.**

Caloric balance	Tobacco use			Total	Khi-square	P value
	No smoking	1 to 5 cigarettes a day	More than 5 cigarettes/day			
Hypocalorique	210	50	10	270	27,52	0,000*
Normocalorique	60	20	0	80		
Hypercalorique	40	50	140	230		
<b>TOTAL</b>	<b>310</b>	<b>120</b>	<b>150</b>	<b>580</b>		

\*: Very highly significant difference

**Table-2. Répartition des étudiants enquêtés en fonction de la consommation du café et de la consommation du tabac.**

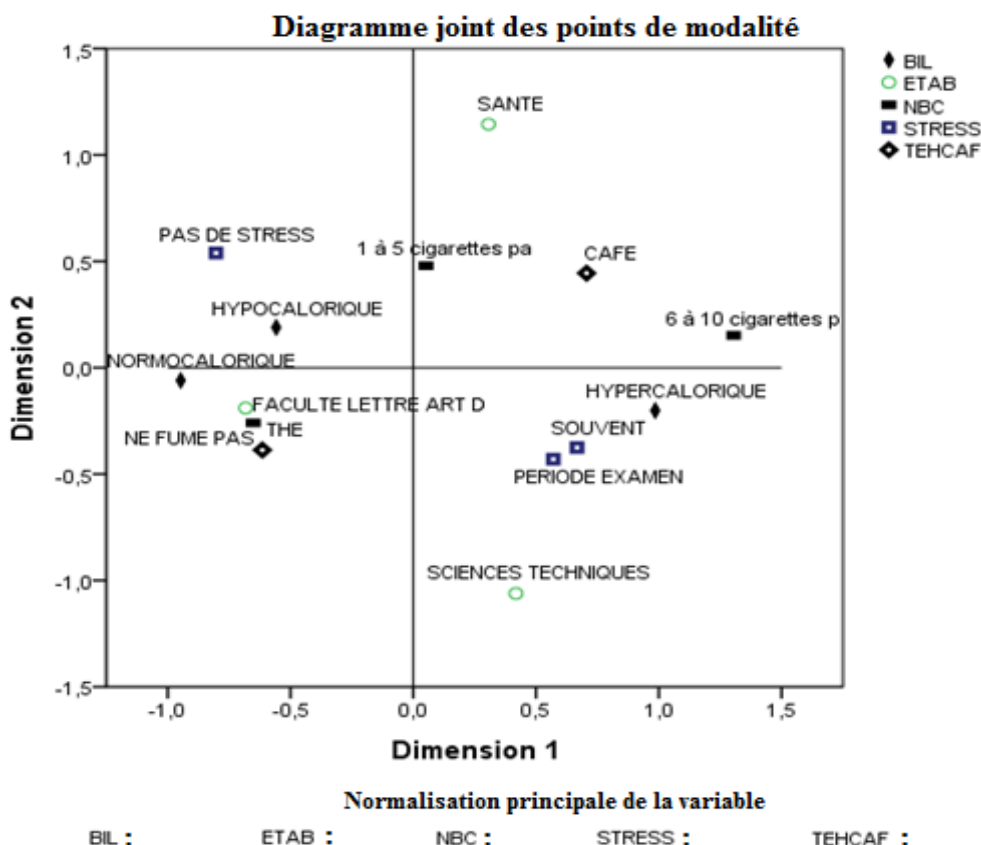
Consumption Tea + coffee	Tobacco use			Total	Khi-square	P value
	No smoking	1 to 5 cigarettes a day	More than 5 cigarettes/day			
Tea	220	60	30	310	10.63	0.005*
Coffee	90	60	120	270		
<b>TOTAL</b>	<b>310</b>	<b>120</b>	<b>150</b>	<b>580</b>		

**Table-3. Distribution of surveyed students according to tobacco consumption and state of stress.**

STRESS	Tobacco use			Total	Khi-square	P value
	No smoking	1 to 5 cigarettes a day	More than 5 cigarettes/day			
No Stress	170	60	20	250		
Examination Period	90	20	90	200	9,72	0,045*
Often	50	40	40	130		
Total	310	120	150	580		

\*: Very highly significant difference

**Figure-1. Presentation in ACM of the modalities of the set of variables studied.**



The distribution of tobacco-consuming students according to the institution of origin shows a difference in the representativeness, 25% are smokers from Letter of Law faculties, 50% come from faculties of technological sciences and 65% from Health institutions.

**Distribution of students according to tobacco consumption and consumption of coffee and tea:**

According to the work of Friedman et al. Quoted by Istvan and Matarazzo (1984) [6] on the role of tobacco and coffee in the genesis of stomach ulcer, found innocent coffee, but found that 38% of smokers of both sexes were heavy users of coffee, By sex, 12% and 16% among non-smokers. The Framingham epidemiological

study found an extremely strong correlation ( $r = 0.99$ ) between the number of cigarettes and the number of cups of coffee consumed. This correlation is not found with tea.

The table below shows the results of the tobacco-coffee-tea association. In addition, the ratio between the student who consumes tea and the student who consumes coffee is 1.15 (the ratio is balanced  $p > 0.05$ ). Moreover, among supposed students of real smokers (more than 5 cigarettes per day), 80% of them consume coffee and 20% consume tea. In non- smokers, 70.97% consume only tea. The chi-square test of independence shows a strong connection between the coffee-tobacco-tea sign.

According to the work of Caillabet-Le Guillou (1991) [7], at the Max Fourestier Hospital in Nanterre, of the 165

hospitalized, 58% drank coffee, 75% smoked. 83% of coffee drinkers smoked, while only 65% of smokers were drinking coffee. The heterogeneity of this distribution is significant. Blood thiocyanate levels (140  $\mu\text{mol/l}$ ) than in two cups (89  $\mu\text{mol/l}$ ).

Coffee does not seem to pose any real public health problems. Suspicion of coffee-related illness has not been confirmed [8]. However, given the frequency of its association with tobacco, it is theoretically possible to fear certain interactions.

In his research report, Marshall WR, (1980) [9], confirmed that coffee drinkers smoke more than smokers do not drink coffee. So, subjects spontaneously smoked all the more cigarettes because they were made to drink more coffee.

It should therefore be concluded that there are factors in coffee that stimulate smoking, and that it is not caffeine, which tends to be the limit [10-12].

It is accepted that tobacco and coffee are used for their psychoactive effects. There is a certain paradox to see spontaneously associated these two psychostimulants, and the consumption of one reinforce that of the other (Jarvis MJ., 1993) [13].

Smokers who had quit smoking were less depressed, less anxious and more optimistic than those who had taken up smoking again [14,15]. Daily, family or professional events are more generating negative stress and smoking: domestic worries, health concerns, overcrowded hours, loneliness, insecurity, debts, professional conflicts, lack of job security. They are most often found as amplifiers of cigarette smoking and as a barrier to smoking cessation [16,12,18].

In our research, we tried to look for a possible link between tobacco consumption and stress. The results are shown in the table 3. On the other hand, the chi-square test of independence shows a strong link between tobacco consumption and stress (chi-square = 9.72,  $p < 0.045$ ). However, 43% of students responded "are not stressed", 8% smoke more than 5 cigarettes per day. Then out of 34.48% of students reporting having stress especially during the exam period, 45% consume more than 5 cigarettes per day and ending on the whole student having shown the stress behavior for often, 30.77% Smoke plus 5 cigarettes per day.

The results are almost in complete agreement with a positive trend, more stress more cigarettes consumed.

According to the study conducted by Madeleine Estry-Behar and her team entitled "Survey of Health Care Experience and Behavior of Nursing Students" in 2011, 40.8% of students report feeling stressed often or all the time, While only 34.5% of students in all disciplines report stress, 45.1% of women and 23.3% of men.

### Global analysis:

In this section, we used a multiple correspondence analysis that regroups all the modalities of the variables chosen for the study. The results of this analysis are presented in the space delineated by axes 1 and 2. Indeed, two major groups are thus reformulated:

- The first group is composed of students from health institutions and faculties of science and technology, who have often shown themselves or undergoing a stressful examination with a high caloric profile. They usually smoke large amounts of cigarettes with excessive coffee consumption

- The second group is composed of students from other institutions who have either a low-calorie or normal calorie profile, are not stressed, and often consume tea. This category generally includes non-smokers.

## CONCLUSION

The results show the use of tobacco in academic spaces is a major achievement for health and behavior. Coffee as a food product alone does not cause more problems of health relatively to other foods considered as harmful to people's health by encouraging the student to consume more.

In the face of this situation, which affects families in the first place and the bodies directly or indirectly connected, it is necessary to multiply the spots and the awareness programs of the student population on the dangers of cigarettes.

## Conflict of Interests

Authors declare that there is no conflict of interests regarding the publication of this paper.

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