Original article

Demographic, psychological and smoking characteristics of users of an on-line smoking cessation programme in the Spanish language

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ABSTRACT

Objective: To determine the characteristics of users of a smoking cessation programme run by the Open University of Spain (*Universidad Nacional de Educación a Distancia* [UNED]).
Methods: We examined the demographic, psychological and smoking characteristics of 23,763 smokers who participated in the on-line smoking cessation program of the UNED. The programme was open to any smoker, free of charge, and was fully automated and with direct access.
Results: A total of 93.5% of the users were Spaniards, with an equal percentage of participation among men and women. The mean age was 39 years. Somewhat less than half were married and had a university education. The participants smoked a mean of 19.3 cigarettes per day, showing a mid-range level of nicotine dependence according to the Heaviness of Smoking Index. The results of the Anxiety and Depression subscales of the Symptom Checklist-90-Revised (SCL-90-R) and Perceived Stress Scale were not clinically significant. In a secondary analysis of the data, we found gender differences in all the variables measured.
Conclusions: The results of this study confirm the digital divide, with lower participation among people with a lower educational level. No association was observed between stress, anxiety or depression and cigarette consumption.

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Características demográficas, psicológicas y de consumo de tabaco de los usuarios de un programa *on-line* para dejar de fumar en idioma español

RESUMEN

Objetivo: Conocer las características de los participantes en el programa online para dejar de fumar de la Universidad Nacional de Educación a Distancia (UNED).
Método: Se analizaron las características demográficas, psicológicas y de consumo de tabaco de 23.763 fumadores, participantes en un programa *on-line* para dejar de fumar de la UNED. El programa de libre acceso estaba abierto a cualquier fumador, sin coste alguno y totalmente automatizado.
Resultados: El 93,5% de los usuarios eran españoles, con igual porcentaje de participación entre hombres y mujeres. La media de edad fue de 39 años, casados y con estudios universitarios. Fumaban una media de 19,3 cigarrillos al día, con un nivel de dependencia medio de acuerdo con el *Heaviness of Smoking Index*. Las puntuaciones en las subescalas de ansiedad y depresión del *Symptom Checklist-90-Revised* (SCL-90-R) y en la *Perceived Stress Scale* no tienen significado clínico. En un análisis secundario de los datos se encontraron diferencias entre hombres y mujeres en todas las variables medidas.
Conclusión: Se constata la denominada brecha digital, con un menor número de participantes con bajo nivel cultural. No se observa relación entre estrés, ansiedad o depresión con consumo de cigarrillos.

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Introduction

The World Health Organization (WHO)[1] informs that tobacco consumption causes 6.4 million deaths by lung cancer, cardiopathy, and other diseases. Europe and Americas have a similar number of deaths due to tobacco that rise up to 833,000 to 874,000 respectively.[1] According to the Environment, Public Health, and Food Safety Committee of the European Parliament,[2] in the European Union, 650,000 people die each year due to tobacco consumption. Not only are these institutions aware of the harmful effects of tobacco consumption, but also smokers. 70% of them would like to quit smoking; one half tries to quit each year, mostly without professional help.[3] Of them, between 3% and 4% successfully quit smoking.[4]

A problem of this magnitude requires both effective and accessible treatments, thereby preventing millions of deaths worldwide,[5]

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especially when treatments for tobacco dependence are available only for 14% of the world population. Many smokers do not want to or cannot receive conventional treatment.[6] Internet could be an effective, accessible, and efficient alternative in such cases.[7,8]

Most studies about Internet smoking cessation programs were performed with English-speaking population in developed countries. On-line smoking cessation programs attract people between 30 and 40 years old, more females than males, married, with higher education, employed, and with a daily consumption of 19.3 cigarettes.[9,10] However, with the exception of Barrera et al.,[9] there are no studies with Spanish-speaking population, while more than 333 million people worldwide speak Spanish as their first language, 88% of them living in Latin America.[11] According to the WHO,[1] tobacco consumption increases in poor or developing countries, where 80% of smokers are concentrated, whereas it decreases in rich countries. For example, in countries like Peru, the rate of male smokers is greater than 50%; in Chile, Cuba or El Salvador, over 40%; and in Bolivia, Honduras, Nicaragua or Uruguay, over 30%[12] versus 21.5% in the United States.[13]

There is a lack of research about the use of smoking cessation programs for Spanish language population due to the poor information about the characteristics of Spanish speaking participants in online programs for tobacco cessation. To overcome this needs, the present paper aims to describe the users' characteristics of an Internet smoking cessation program provided in Spanish language and the relations among demographic, psychological and smoking characteristics.

Methods

A descriptive non-experimental design was used to address the study aim. The program designed for the study is fully automated, free of charge, open, with direct access (as referral by a professional or health service was not required), and may be highly efficient in countries with few resources for smoking cessation. There were not economic incentives employed to participants and there was no direct contact with participants to confirm the data recorded.

The data analyzed in the study were obtained from the smoking cessation program website of the UNED (http://www.apsiol. uned.es/dejardefumar), from October 2009 until May 2010. In such a period of time, 23,763 users registered on the program, but only 23,213 people were considered in the final analysis because of the criteria established for the selection of the sample. To check if the participants meet the requirements, they underwent a 61-item survey about demographic, psychological and smoking variables, reporting information such as their age, gender, nationality, marital status, education and employment status. The entire process of data collecting and criteria is specified in the Figure 1.

Psychological measurement instruments previously used online[14,15] were selected to avoid uncontrolled effects due to their use via Internet.[16] Psychological variables were assessed by the following questionnaires: Symptom Checklist-90-Revised (SCL 90-R),[17] Anxiety (AN) and Depression (DEP) subscales, and the Perceived Stress Scale of 4 items (PSS-4).[18] The SCL 90-R is an adequate questionnaire to evaluate psychopathology in substance use disorders[19] (Bergly, Nordfjærn and Hagen, 2014). The Spanish adaptation of SCL 90-R denotes high reliability with Cronbach's alpha coefficients fluctuating between 0.81 and 0.90.[20] The PSS-4 is a reduced version of the 14-item Perceived Stress Scale. It measures the degree to which the respondent has perceived stressful situations during the past month. Higher scores are correlated to more stress. Although the four item PSS (PSS-4) has a moderate loss in internal reliability compared to the 14-item scale ($r = 0.60$ vs $r = 0.85$),[21] the brevity of this instrument lends itself well to settings in which assessment time is limited.
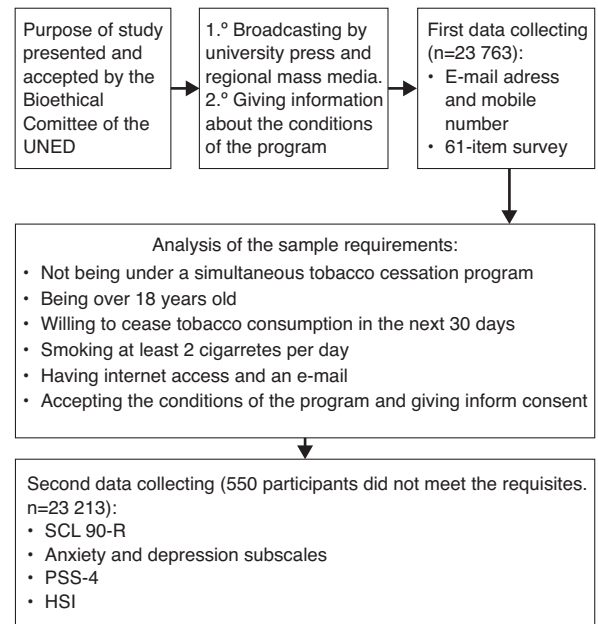
Figure 1. Process followed in the study.

Smoking variables were assessed by the Heaviness of Smoking Index (HIS),[22,23] onset of smoking, physician's advice on smoking cessation, motivation to quit smoking, living with smokers and expectations of treatment success.

The HSI is a reduced 2-item version of the Fagerstrom Tolerance Questionnaire (FTQ).[24] Nicotine dependence is categorized into a three-category variable: low (0–1), medium (2–4) and high (5–6). The HSI is used when time and resources are scarce.[25]

An alpha level of 0.05 was used for the statistical tests. Pearson correlation coefficient was used to relate the quantitative variables, and chi square for the categorical variables. The relation between categorical and quantitative variables was calculated with Student's t-test. Given the large sample size, some irrelevant differences may be statistically significant, and therefore we calculated the strength of the association through Cohen's d index for t-test and Cramer's V for χ^2, according to Cohen's criteria.[26] For Cohen's d, the small, medium, and large effect sizes are respectively 0.20, 0.50, and 0.80. For Cramer's V the small, medium, and large effect sizes are calculated from w index.[27] For Pearson correlation coefficient, small, medium, and large effect sizes are respectively 0.10, 0.30, and 0.50.

Results

Demographic variables showed that more women registered for the treatment than men, 11,620 (50.1%) and 11,593 (49.9%) respectively, but this difference is not statistical significant, with a mean age of 39.5 years, most of them of medium economic level (64.6%), Spanish nationality (93.6%), married (46.1%), with university education (46%), and employed (78.7%). The percentage of non-European male participants was 1.7 times that of females, 6.2% and 3.7%, respectively (Table 1).

In a secondary analysis of the demographic data we found sex differences: the females were younger, mean age 38.5 years versus 40.5 years in males, $t(22,961) = 14.37$, p <0.001, Cohen's $d = 0.19$. In the categorical variables, the greatest sex difference was observed in marital status, $\chi^2(4, N = 23,213) = 454.35$, p <0.001, Cramer's $V = 0.140$, p <0.001. There were more married men (52.3%) than women (39.9%) and fewer separated men (6.7%) than women (11.4%). There were more women (49.2%) with university