

## RESEARCH ARTICLE

# Factors Affecting Mental Patients' Behaviors and Attitudes Regarding Smoking

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### Abstract

**Background:** Patients with mental health problems are in high risk to develop addiction, since smoking incidence is three times higher than that of the general population. The aim of the study was to investigate the factors affecting mental health patients' smoking habits. **Methods:** The sample of study were 356 patients out of 403 initially approached, with 142 hospitalized in hospital facilities and 214 in community settings. The «Smoking in psychiatric hospitals» and General Health Questionnaire (GHQ-28) questionnaires were used. A principal component analysis was performed using the correlation coefficients of the various variables and an orthogonal varimax rotation, in order to interpret the seven factors emerging. Among the variables the most important factors appeared to be the type of healthcare facility, legal status, depression and age. **Results:** The type of healthcare facility was correlated to demographic characteristics, clinical features, psychopathology and functionality, but also to the attitudes and behaviors related to smoking. More specifically, the in-hospital patients were heavier smokers, about 90% of the patients said they would consider quitting smoking. The various variables had only a small effect on the intention to quit smoking. The comparison of the coefficients of determination of each variable, showed that age had the strongest effect ( $R^2=0.152$ ), while the GHQ D subscale (severe depression) had the least significant effect ( $R^2=0.023$ ). From all (7) factors, it appears that hospitalization was positively correlated with factor 5 and negatively with the factors 2, 3 and 6, legal status (commitment order) negatively with factors 1 and 4, while depression (or consuming antidepressants) positively factor 4 and negatively to factors 1 and 3. Finally, age was the only variable that is associated with the agent 7. **Conclusions:** Patients are permissive to staff's smoking in the healthcare facility and may resist attempts to restrict it. It is important that these conclusions are taken into account in any systematic attempt to limit smoking within mental health settings.

**Keywords:** Factors- mental patients- smoking habits- smoking behavior

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### Introduction

For the most part of the 20<sup>th</sup> century smoking was considered a conscious behavior and healthcare professionals did not consider smoking to be addictive. At the same time, some others argued about the nature of tobacco. Unfortunately, it took a long time for the scientific community to realize that tobacco use was an addiction (Goodman, 2005; Kourakos et al., 2016).

Patients with mental health problems are in high risk to develop addiction, since smoking incidence is three times higher than that of the general population, ranging between 70 and 75%. Several researchers have demonstrated the increased awareness and concern regarding tobacco use among mental patients compared to general population. High smoking rates in mental or substance-abusing patients lead to high mortality and morbidity rates (over 42%), while they also affect the patients' social status and

way of living. In general, the more severe the psychiatric condition, (e.g., schizophrenia), the higher the smoking prevalence (Schroeder and Morris, 2010). It has been reported that biological, psychological and social factors affect mental health patients' smoking habits (Al-Bakri et al., 2015). High incidents of smoke users among this specific patient group could be due to neurobiological vulnerability, increased severity of withdrawal symptoms, inability to manage and use nicotine as a medication for attention-deficit problems, bad mood and anxiety (Ziedonis et al, 2003). Yet another reason for the high smoking rates among mentally ill is considered to be the advertising tactics of tobacco products manufacturers and the attractive way they use to present smoking.

Assessment of smoking behavior, as well as smoking cessation, in patients with mental disorders could be complicated due to alterations in smoking habits during hospitalization, which in turn could alter the

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pharmacological management of the disease (Olivier et al., 2007). Moreover, staff often use cigarettes as amplifiers of desired behaviours within the hospital, modifying the various social interactions associated with smoking (Olivier et al., 2007). Factors such as staff or other patients smoking, or the existence of smoke in the environment, can pose serious problems for those actually trying to quit smoking (Olivier et al., 2007; Kourakos et al., 2015). Another barrier in smoke prevention among mentally ill patients could be the hypothesis that smoking is a form of self-therapy, which holds back mental health professionals from supporting smoke cessation attempts (Ziedonis et al., 2008; Parakh et al., 2013). Indeed, for many years there was tolerance and in a way encouragement of smoking in the mental health and other facilities (Schroeder and Morris, 2010; Tiwari et al., 2013).

## Materials and Methods

A cross-sectional study, with structured interview, took place, from July 2012 to January 2014, in a large Psychiatric Hospital in the capital of a southern European country aiming to investigate the factors affecting mental health patients' smoking habits. The sample of study were 356 patients out of 403 initially approached, with 142 hospitalized in hospital facilities and 214 in community settings (response rate=88%). In the study only adults, native citizens and patients with mental disorders according to the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) were included. As exclusion criteria were set the refusal to sign the informed consent, the denial to participate in the study and withdrawal during the interview, inability to communicate in the local language, mental retardation, autism, any other developmental or chronic mental disorder that affects cognitive ability and substance use.

Ethical approval was granted from the hospital's ethics committee as well as the university's attached to it. Particular caution was taken regarding patients' autonomy and mental and physical integrity. The questionnaires were administered anonymously and all appropriate steps to keep privacy and other patients' rights in accordance to the Declaration of Helsinki and its amendment in Tokyo in 2004 were taken. Prior to the completion of the questionnaire patients gave their written informed consent. The interview took place in the health facility's living room and lasted approximately 30-45 minutes.

### Research tools

The «Smoking in psychiatric hospitals» questionnaire (Dickens et al., 2005) was used, measuring attitudes and views of mental ill patients regarding smoking, along with the General Health Questionnaire (GHQ-28) in order for the patient to report any symptoms or attitudes present (Willmott et al., 2004). In addition, the Global Assessment Schedule (GAS) was used (Endicott et al., 1976) measuring the patients' functionality status.

### Statistical analysis

A principal component analysis was performed (PASW 18, SPSS Inc.), using the correlation coefficients of the

various variables and an orthogonal varimax rotation, in order to interpret the seven factors emerging (Table 1). According to this analysis, the patients' opinions could be grouped together in seven related, yet distinct categories:

1. The degree of power that the hospital environment (both animate and inanimate) had on patients' attempts to quit smoking. It could be named "Difficulties in quitting smoking within the hospital setting".

2. Hospital rules regarding smoking. In other words "Opinions regarding hospital smoking rules".

3. The degree of power that the staff's smoking habits had on the patients' attempts to quit smoking. In other words "Can the staff affect your attempts to quit smoking?"

4. The level of patients' realization on the fact that they should quit smoking due to health problems. In other words "Realizing that they should quit smoking due to health reasons".

5. The amount of difficulties patients' face on their attempt to quit smoking. In other words "Perceivable difficulties in smoking cessation".

6. The patients' views and attitudes regarding the smoking habits of their reference person or staff. In other words "Opinions on smoking habits of reference person".

7. The existing encouragement and motivation regarding smoking cessation. In other words "Motives for smoking cessation".

## Results

### Intention to quit smoking

About 90% of the patients said they would consider quitting smoking. The various variables had only a small effect on the intention to quit smoking. Females had a stronger intention ( $R^2=0.043$ ,  $p<0.05$ ), as well as patients of higher education ( $R^2=0.025$ ), in-patients ( $R^2=0.031$ ), patients with more severe symptoms (including physical symptoms and stress/insomnia) ( $R^2=0.038$  and  $0.039$ , respectively), and patients who scored high on the third factor (if the staff can affect their attempt to quit smoking) and believed that "The staff should encourage smokers to cut down on smoking or totally quit it" ( $R^2=0.035$ ). The comparison of the determination coefficients  $R^2$  of each variable showed that gender had the highest independent effect ( $R^2=0.043$ ), and education had the lowest ( $R^2=0.025$ ). The determination coefficient  $R^2$  showing the simultaneous effect of all variables was 0.162.

Also, females ( $R^2=0.082$ ), people of higher education level ( $R^2=0.143$ ), the occurrence of stress or insomnia ( $R^2=0.114$ ) and being convinced that the staff should encourage the patients to reduce or quit smoking, show a stronger intention to quit smoking ( $R^2=0.043$ ). The determination coefficient ( $R^2$ ) showing the simultaneous effect of all variables was 0.143.

### Prior attempts to quit smoking

More than 60% of the patients reported prior attempts to quit smoking. The various variables seemed to barely have an effect on previous attempts to quit smoking. Patients with the following traits were more likely to had attempted to quit smoking on previous occasions: Patients

Table 1. Principal Component Analysis Patients' beliefs and Attitudes Regarding Smoking and Smoking Cessation

Question	1	2	3	4	5	6	7
Just watching other patients smoke. will make it hard for me to quit it	0.89	-0.10	0.09	-0.03	0.07	0.04	0.06
Environmental tobacco smoke will make it hard for me to quit smoking	0.87	-0.06	0.05	-0.03	0.06	-0.02	0.00
Watching the staff smoke. will make it difficult for me to quit it	0.83	-0.20	0.03	0.05	0.02	0.07	0.10
Staff should be allowed to smoke during working hours	-0.17	0.71	-0.22	0.06	0.15	-0.14	0.02
Rules about smoking are spot-on.	0.00	0.70	-0.05	-0.06	-0.23	0.28	-0.23
Visitors should be allowed to smoke with the patients	-0.31	0.65	-0.14	0.09	0.23	-0.06	0.14
I can cooperate better with a reference person who smokes rather than a non-smoker	0.17	0.09	-0.77	-0.02	-0.10	-0.05	-0.02
The staff should set an example for the patients and avoid smoking	0.29	-0.20	0.73	-0.11	-0.12	0.05	0.08
The staff should encourage patients who smoke. to reduce or totally quit it.	0.40	-0.09	0.63	-0.08	-0.19	0.24	-0.04
Do you suffer from any chronic disease/s?	-0.03	-0.02	0.01	0.85	-0.06	-0.01	-0.07
Have you been instructed by a doctor to quit smoking?	0.01	0.07	-0.11	0.82	-0.11	0.07	0.00
How many cigarettes do you smoke daily?	0.00	0.09	-0.02	-0.06	0.74	-0.01	0.05
Is it too hard to quit smoking?	0.13	0.01	-0.05	-0.12	0.69	0.19	-0.04
Would I trust more a reference person who doesn't smoke than a smoker?	0.13	-0.36	-0.24	-0.05	-0.20	0.63	0.10
Does your reference person smoke?	0.09	0.07	0.23	0.00	0.07	0.59	0.01
Do you see staff smoking during working hours?	-0.07	0.06	0.09	0.08	0.19	0.57	0.03
There is not enough encouragement from the staff for me to quit smoking	0.05	-0.25	-0.02	0.03	0.21	-0.01	0.75
There is not enough information for me to quit smoking	0.11	0.25	0.10	-0.14	-0.24	0.13	0.75

who had scored low on the GHQ depression subscale ( $R^2=0.023$ ), those who were not under civil commitment order ( $R^2=0.071$ ), who attended an outpatient setting ( $R^2=0.054$ ), those of older age ( $R^2=0.152$ ), who had been smoking for many years ( $R^2=0.112$ ), and scored high on the factors 1, 3, 4 and 6 of the questionnaire (respectively  $R^2=0.032$ ,  $R^2=0.086$ ,  $R^2=0.040$ ,  $R^2=0.033$ ). The comparison of the coefficients of determination of each variable, showed that age had the strongest effect ( $R^2=0.152$ ), while the GHQ D subscale (severe depression) had the least significant effect ( $R^2=0.023$ ). The determination coefficient ( $R^2$ ) showing the simultaneous effect of all variables was 0.188. Non-existence of civil commitment ( $R^2=0.240$ ), older age ( $R^2=0.217$ ) and the patients' belief that "the staff should make an example by avoiding smoking" and that "the staff should encourage patients quit smoking" ( $R^2=0.152$ ), are the best indicators of prior smoking cessation attempts. The determination coefficient ( $R^2$ ) showing the simultaneous effect of all variables was 0.240 (Table 2).

Factors affecting the patients' views regarding the difficulties perceived while trying to stop smoking in hospital are described below:

*Factor 1: Difficulties while trying to quit smoking in hospital*

High scores on this factor is shown by patients who stated the following: "Seeing other patients to smoke would make difficult to quit," "The atmosphere with smoke would make it difficult for me to quit" and "Seeing the staff smoking would make it difficult for me to quit".

Patients who were not under legal commitment ( $F = 10.54$ ), not under antidepressants ( $F = 4.05$ ) and in mental health community facilities ( $F = 8.78$ ), had a higher score on Factor 1. General speaking they faced greater difficulties from hospitalized patients in their attempt to quit smoking (Table 3). Increased hospitalizations ( $r = -0.134$ ,  $p = 0.016$ ) and the depression subscale ( $r = -0.143$ ,  $p = 0.010$ ) in the General Health Questionnaire (GHQ) were negatively correlated with Factor 1, while

Table 2. Intention to Quit Smoking (Simple Logistic Regression)

Independent variable	R	R <sup>2</sup>	B <sup>1</sup>	SE	e <sup>B<sup>2</sup></sup>	Wald T	P
Factor 1	0.179	0.032	-0.329	.0122	0.720	7.280	0.007
Factor 3	0.293	0.086	-0.762	0.177	0.467	18.616	0.001
Factor 4	0.200	0.040	0.926	0.309	2.524	8.954	0.003
Factor 6	0.182	0.033	-0.677	0.248	0.508	7.477	0.006
Age	0.390	0.152	-0.064	0.011	0.938	31.692	0.001
Years of smoking	0.335	0.112	-0.051	0.010	0.950	24.189	0.001
GHQ_D (depression)	0.152	0.023	0.057	0.024	1.058	5.500	0.019
Commitment order	0.266	0.071	-1.006	0.247	0.366	16.589	0.001
Treatment setting	0.232	0.054	-0.864	0.243	0.422	12.622	0.001

$R^2=0.188$ ;  $p<0.05$ ; 1 Regression coefficient; 2 Odds ratio

Table 3. One-Way Analysis of Variance (ANOVA) of The Basic Independent Variables for Factor 1

Independent variable	x <sup>2</sup> sum	B.E.	x <sup>2</sup> mean	F	P
Commitment order	10.279*	1	10.279	10.54	0.001
	313.053**	321	0.975		
	323.332	322			
Treatment with antidepressants	4.027*	1	4.027	4.05	0,045
	319.305**	321	0.995		
	323.332	322			
Treatment setting	8.607*	1	8.607	8.78	0,003
	314.725**	321	0.98		
	323.332	322			

\*, Between the groups; \*\*, Within the groups p<0.05

Table 4. Pearson's r between Basic Independent Variables and Factor 4

Independent variable	r	P	N
Age	-0.435	0.001	355
Education	0.129	0.015	355
Income	-0.177	0.001	355
Number of hospitalisations	-0.188	0.026	355
Duration of smoking in years	-0.389	0.001	355

p<0.05

older age (r = 0.110, p = 0.049) and high compliance (r = 0.130, p = 0.019) to medication were positively correlated.

Concomitant and overall effect of various independent variables on Factor 1, revealed that the absence of antidepressant therapy (R<sup>2</sup> = 0.047) as well as the absence of legal commitment orders (R<sup>2</sup> = 0.029, p = 0,001) were statistically significant variables contributing to the model. All of them predict better the score on Factor 1. Patients smoking, staff smoking and smoky atmosphere, would make it difficult for smokers to quit. The adjusted coefficient R<sup>2</sup> is 0.047 (p = 0.007) for all the above variables.

*Factor 2: Views on smoking policy in hospital*

High scores on this factor have patients who agreed to the following statements: "Staff should be allowed to

Table 5. Pearson's R Between Basic Independent Variables And Factor 5

Independent variable	r	P	N
Age	0.109	0.040	355
Number of hospitalisations	0.127	0.016	355
Smoking frequency	0.161	0.002	355
Smoking duration in years	0.222	0.001	355
Smoking Age of onset	-0.175	0.001	355
GHQ_A (physical symptoms)	0.160	0.003	355
GHQ_B (anxiety and insomnia)	0.199	0.001	355
GHQ_C (social malfunctioning)	0.174	0.001	355
GHQ_D (severe depression)	0.167	0.002	355
GHQ Total	0.207	0.001	355

p<0.05

Table 6. One-Way Analysis of Variance (ANOVA) of The Basic Independent Variables for Factor 6

Independent variable	x <sup>2</sup> sum	B.E.	x <sup>2</sup> mean	F	P
Diagnostic category	3.008*	2	1.504	6.02	0.003
	88.200**	353	0.250		
	91.207	355			
Treatment with antiepileptics	1.182*	1	1.182	4.65	0.032
	90.026**	354	0.254		
	91.207	355			
Treatment setting	1.658*	1	1.658	6.56	0.011
	89.549**	354	0.253		
	91.207	355			

\*, Between the groups; \*\*, Within the groups p<0,05

smoke at work", "The rules for the smoking in hospital are correct" and "Guests should be allowed to smoke with the patients". The effects of various qualitative (categorical) independent variables (with two or more categories) on the dependent variable, Factor 2 (Views on smoking policy in hospital) showed that patients accommodated in outpatient community structure (F = 3.92, p = 0.048) had a higher score on Factor 2. Patients agreed to permit staff and visitors to smoke in all mental health facilities. The high incidence of smoking was positively correlated with Factor 2 (r=0.124; p = 0.020; N = 356). The type of mental health facility was the variable that best predicted the score on Factor 2 (p = 0.003). Hospitalized patients disagreed more strongly with the permissiveness of smoking for staff and visitors compared to patients hosted in community mental health settings. The adjusted coefficient R<sup>2</sup> was 0.024 (p=0.003) for this model.

*Factor 3: Views on patient-staff relationship regarding smoking cessation*

High scores on this factor had been found from patients who agreed to the statements: "It is important for staff to set a good example for patients avoiding smoking", "Staff should encourage people who smoke to quit or reduce smoking" and disagreed with the statement "I better cooperate with a reference person who smokes rather than someone who does not smoke". In other words, patients preferred non-smoking staff. Patients with no mood disorders diagnosed (F = 3.09, P = 0.047) and patients hosted in outpatients facilities (F = 8.96, P = 0,003) had a higher scores on Factor 3. In other words they believed staff should encourage patients to reduce or stop smoking by setting the example themselves. Frequent hospitalizations (r = -0,115, p = 0.029) and social dysfunction (r = -0.104, p = 0.049), as calculated in the General Health Questionnaire (GHQ) subscale, were negatively correlated with Factor 3, while the perception that smoking was extremely harmful was positively correlated. Furthermore, patients with no mood disturbance diagnosis (R<sup>2</sup> = 0.033, p = 0.043) and patients in outpatient community facilities (R<sup>2</sup> = 0.024, p = 0.004) predicted better the score in Factor 3. These patients reported that staff should encourage patients to reduce or stop smoking by setting the example themselves. The

adjusted coefficient  $R^2$  was 0.033 for this model.

#### *Factor 4: Views on smoke cessation due to health reasons*

As factors affecting the patients' view regarding the importance or urgency to stop smoking due to health problems, could be considered the existence of children ( $F = 13.92$ ,  $p = 0.001$ ), antidepressant therapy ( $F = 6.01$ ,  $p = 0.015$ ), other than psychotic disorders diagnosis ( $F = 5.12$ ,  $p = 0.006$ ), not under legal surveillance ( $F = 7.59$ ) and smoking filtered cigarettes (not twisted) ( $F = 3.18$ ,  $p = 0.043$ ). All these categories had higher scores on Factor 4, they believed that it is important for their health to stop smoking. As shown in Table 4 education level was positively correlated with Factor 4, while age, income, number of hospitalizations and duration of smoking years were negatively correlated. The absence of legal commitment order ( $R^2 = 0.029$ ) and receiving antidepressants ( $R^2 = 0.047$ ) better predicted the score on Factor 4. In conclusion, patients with chronic illnesses agree to the idea to quit smoking due to medical reasons. The adjusted coefficient  $R^2$  was 0.047 for this model.

#### *Factor 5: Perceived difficulty for smoke cessation*

The single categorical variable that influenced patients' responses in Factor 5 was the type/place of the mental health facility. In particular, patients who were hospitalized ( $F = 6.56$ ,  $p = 0.011$ ) had higher scores; they reported that they experienced more difficulty in trying to quit smoking, and a large number of cigarettes smoked per day. Older age, high frequency and duration of smoking, younger age of smoking onset, presence of increased psychopathology as recorded on all subscales of the General Health Questionnaire (GHQ) and increased number of hospitalizations correlated positively with the number of cigarettes and the perceived difficulty of quitting smoking (Table 5). The type of mental health facility was the variable that best predicted the scores in Factor 5, compared to patients hosted in community facilities, those hospitalized reported more difficulty in trying to quit smoking and a greater number of cigarettes smoked per day. The adjusted coefficient  $R^2$  was 0.024 ( $p = 0.003$ ) for this model.

#### *Factor 6: Views regarding the referral persons' smoking habits*

Patients stating that they trusted more a reference person who did not smoke and gave negative answers to questions like "Does your reference person smoke?" and "Do you see staff smoking at work?" scored higher in factor 6. Therefore, high scores were found in patients who were accustomed to a non-smoker reference person. Table 6 presents the categorical variables that influenced patients' responses to Factor 6. In particular, patients with mental conditions other than psychosis or mood disorder ( $F = 6.02$ ), patients not on anti-epileptics ( $F = 4.65$ ) and hosted in outpatient facilities ( $F = 6.56$ ) had a higher score on Factor 6, in other words they were used to being with non-smokers, both staff and reference person, and those were who they trusted more. The high number of hospitalizations ( $r = -0.110$ ) was negatively correlated with

Factor 6 ( $p=0.039$ ). Patients in outpatients settings had higher scores in Factor 6 compared to hospitalized ones, in other words they were used to being with non-smokers, both staff and reference person, and those are who they trust more. The adjusted coefficient  $R^2$  was 0.024 ( $p = 0.003$ ) for this model.

#### *Factor 7: Motives to stop smoking*

Factors affecting the patients' views regarding lack of motivation for smoke cessation showed that patients who agreed with the statement "There is not enough encouragement from the staff to stop smoking" and "Not enough information to stop smoking" scored higher on this factor. From all categorical variables examined, none affected the patients' responses to this factor. Age ( $r = 0.189$ ,  $p = 0.001$ ) and duration of smoking in years ( $r = 0.140$ ,  $p = 0.012$ ) were positively associated with Factor 7. Age was the variable that best predicted the score on Factor 7, meaning that older patients believe that there were not enough information and encouragement to stop smoking. The adjusted coefficient  $R^2$  was 0.009 ( $p = 0.049$ ) for all these variables.

In summary, it appears that hospitalization was positively correlated with factor 5 and negatively with the factors 2, 3 and 6, legal status (commitment order) negatively with factors 1 and 4, while depression (or consuming antidepressants) positively factor 4 and negatively to factors 1 and 3. Finally, age was the only variable that is associated with the age 7.

## **Discussion**

This research, though focused on people with mental illnesses, reflected the general attitude of the inhabitants of the country towards smoking. In summary, it appears that participants were less keen on stopping compared to their counterparts abroad and had a more permissive attitude towards staff's smoking in the hospital. This attitude towards smoking and its prohibition in public places is probably a fact since the particular country is the one with most smokers on European level (and in other countries) and with more than 40% prevalence of smoking (TNS Opinion and Social, 2010; World Health Organization, 2014; Binnal et al., 2013).

In the present study the patients' responses on staff smoking was relatively consistent. More specifically, in the statement "Seeing the staff to smoke would make difficult for me to quit" our sample disagreed at 52.7% and 52.3%, respectively, agreed with another statement such as "We need to allow the staff to smoke at work", while in other research (Dickens et al., 2005) the results were contradictory. On the other hand, most responds were less polarized, that is they were more neutral.

The different responses of the study were grouped by Principal Component Factor Analysis in conceptually homogeneous categories. Interestingly, patients stand mentally their view of the hospital rules from their view of what can be difficult for them and what helps in the effort to stop smoking. It also seems that stopping smoking for health reasons is treated as a total different issue, as well as the fact that the reference person could be smoking.

A variety of factors affected not only the attitudes towards smoking cessation and smoking in hospital premises and the prospect of quitting. Socio-demographic factors (gender, children, education and income) and clinical factors, such as number of previous hospitalizations, compliance with medication, diagnostic category, the different aspects of psychopathology and smoking habits, such as the duration of smoking in years, the kind of cigarettes, the smoking frequency, age of onset correlated in univariate analyses to one or more of the factors resulting from the Principal Component Analysis.

Among the variables the most important factors appeared to be the type of healthcare facility (inpatient vs. outpatient), legal status, depression and age. In brief, hospitalization was positively correlated to factor 5 and negatively to factors 2, 3 and 6; commitment orders were negatively correlated to factors 1 and 4, while depression (or treatment with antidepressants) was positively correlated to factor 4 and negatively to factors 1 and 3. Finally, age was the only variable correlated to factor 7. Especially gender correlations were investigated and the type of the facility with the different research questions. Gender was associated with demographic (marital status, occupation, income, children) and clinical characteristics (diagnosis, taking neuroleptics, antidepressants) (Johnson et al., 2010), which showed different profiles of tobacco use between the genders. In particular, men seemed to be heavier smokers than women and had less intention to quit smoking. But there were no statistically significant differences with respect to their attitudes and opinions about smoking cessation and smoking on hospital premises. These findings are similar to the findings of Langenecker et al., (2009) who found that men were heavier smokers, with more cigarettes smoked per day and a younger age of onset. However, in our sample men had lower intention to stop smoking, while Langenecker et al., (2009) found no statistically significant difference.

The type of healthcare facility was correlated to demographic characteristics (marital status, educational level, occupation, income, age, family members live together), clinical features (legal commitment order, taking anticonvulsants, compliance with medication, years of hospitalization), psychopathology and functionality, but also to the attitudes and behaviors related to smoking. More specifically, the in-hospital patients were heavier smokers, had less effort but more intent to quitting smoking and perceived it as less harmful compared to outpatients. In general, outpatients compared to hospitalized ones, perceived greater difficulties in the effort to stop smoking, they believed that staff should encourage their patients to reduce or quit smoking but also agreed with the smoking rules.

Overall, to our knowledge, the present study is the first that has systematically studied the attitudes of mental patients on smoking and smoking policies in hospital spaces (intra- or outpatient) in the particular country.

#### *Study limitations*

The sample consisted of patients of a large mental health hospital in the capital of the country, under treatment for many years suffering from psychotic

disorders (schizophrenia, schizo-emotional disorder e.t.c.) or emotional disorders (mainly bipolar disorder). Also the literature on this topic was limited and this was a limitation for our study too.

The research tools themselves could be considered to have some limitations. The General Health Questionnaire (GHQ), while a valid and reliable instrument, is designed to measure psychopathology in primary healthcare settings as a screening test. On the other hand the Global Assessment Scale (GAS), a common way to evaluate the functioning of similar patients, is a scale where the clinicians rate subjectively the patients. The evaluation of smoking habits was based on the patients' responses. The positive side was that their smoking habits could be directly evaluated without the subjective judgment of the researchers. The negative side was that those self-evaluations could be influenced by the patients' judgment, their memory and possible motives to disclose or conceal the truth. On the other hand, the questionnaire by Dickens et al., (2005) is not a psychometrically tested and standardized instrument, but a rather loosely structured group of questions. This fact, on its own, poses restrictions on the validity and reliability of the measurements.

Although the treatment setting (hospital or outpatient), the existence of commitment orders and some other characteristics appear to influence the patients' attitudes regarding smoking, it would be risky to assign causal relationships to them. For instance, there are important differences between the patients under treatment in those settings (e.g. age, education level, diagnosis, treatment, functioning etc) and within the environment of those settings too. Although the legal framework is clear, it remains unclear if all the patients understood and interpreted the questions in the same way, since each setting implements its own 'rules'.

Finally, the most powerful, and also the biggest limitation, of the study, similarly to the one by Dickens et al., (2005), was its explorative nature. The participation of as many patients as possible can lead to representative conclusions very much like epidemiological surveys. On the other hand, this type of studies does not allow answers to specific questions, e.g. "does the diagnosis or sex affect opinions regarding smoking?". This kind of questions can be answered via a different research design, e.g. creating two groups of patients with different diagnoses or gender and similar all the other characteristics.

In conclusions, for some patients, the rules applicable to the healthcare facility, the staff's smoking behavior, the type of the facility (hospital or community setting) and information and motivation can influence their decision to quit smoking. In general, however, patients are permissive to staff's smoking in the healthcare facility and may resist attempts to restrict it. It is important that these conclusions are taken into account in any systematic attempt to limit smoking within mental health settings.

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