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## Predictors of Smoking Cessation Success

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**Purpose.** To evaluate Smoking Cessation Clinic success rate and attitudes toward smoking among current and quitters enrolled at the clinic.

**Methods.** Telephone survey among a random sample of 61 subjects enrolled at the Smoking Cessation Clinic in the San Juan Veterans Affairs Hospital. The questionnaire was validated and standardized for Hispanic subjects.

**Results.** Twenty eight percent of the subjects interviewed referred they had quit smoking. Quitters used to smoke more cigarettes than current smokers do. Quitters perceived their general health to be worse than current smoker's perception. Even though Quitters were concerned about weight gain after quitting, it was not a

negative outcome for smoking cessation. No association was found between active smoking and use of ethanol, neither socializing with friends nor feeling anxious.

**Conclusion.** The Smoking Cessation Clinic at the San Juan Veterans Affairs Hospital has a success rate similar to other clinics reported in the literature. Poor health perception and consumption of more than one pack per day predicted smoking cessation. There was no single strong factor associated to smoking cessation. The idiosyncrasy of targeted population should be taken in account when designing smoking cessation program.

*Key words:* Smoking, Smoking cessation, Tobacco use disorder, Behavior, Behavior mechanisms

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Cigarette smoking is a leading cause of preventable morbidity and mortality (1). Twenty three percent of Americans smoke. It has been estimated that 400,000 annual deaths are associated with smoking (2). It is a major risk factor for coronary artery disease, chronic obstructive pulmonary disease and malignancy (1).

Several studies have indicated a low incidence of lung cancer among Hispanics (mostly Mexican); this has been attributed to the low smoking rates in Hispanics in the study samples (3-5). On the other hand, the Hispanic Health and Nutrition Survey conducted from 1982 to 1984 in three distinct Hispanic populations (Mexican, Cuban-American and Puerto Rican) showed different results. The Hispanic men in all three ethnic groups had significantly higher smoking rate than those non-Hispanic white men in the USA (6). Therefore, as the smoking rate among Hispanic is increasing the incidence of lung cancer, COPD and cardiovascular disease will also rise. The public health and medical communities as well as Hispanic organizations

need to recognize this danger and should design prevention and smoking cessation programs target to specific Hispanic-subpopulations.

The elements of public health strategy that have been used to promote nonsmoking include: policies regulating smoking, media campaigns against smoking, well-designed self-help cessation materials, advice from clinicians, and smoking cessation clinics (7). The reported smoking cessation success rate of behavioral therapy and pharmacotherapy, either alone or combined, does not exceed 25% (8-13).

In 1998, the San Juan Veterans Affairs Smoking Cessation Clinic (SJVASCC) was reorganized to include nicotine patches and bupropion as alternatives. Prior to that year the clinic consisted only of behavioral therapy. Now it consists of eight weekly sessions, which include behavioral therapy and pharmacotherapy. We sought to determine the success rate of SJVASCC and to document which factors promote smoking and quitting smoking. For those purposes, a telephone survey of the patients enrolled at the clinic was done.

### Methods

Participants were randomly chosen from an alphabetic list of clinic attendees from October to December

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1999, inclusive. The selected patients were interviewed by phone. The short version of the VA Addiction severity index (14) and a modified questionnaire of Perez–Stable’s Smoking Cessation for Latinos Program (7) were administered. The power analysis for the study determined that considering the total population of 463 patients enrolled at the clinic with a confidence level of 95% and tolerating an error of 10%, a sample size of 55 patients would be needed for the survey.

The Chi square testing was used to test baseline differences in demographics, cigarette consumption, and frequency of health problems. Analysis of variance was used to compare clinical adherence between smokers and quitters. Logistic regression was employed to assess 11 possible factors associated to smoking or quitting. The dependent variable was smoking status and independent variable was each possible factor. All statistical tests were two-sided and a *p* value equal or less than 0.05 suggested a statistical significance.

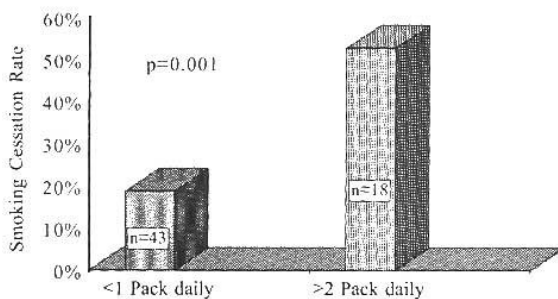
### Results

A total of 61 patients were interviewed: 44 smokers (42 male and 2 female) and 17 quitters (all male), all of them were willing to participate in the survey. The demographic characteristics of our population are shown in Table 1. The average age of patients was 60 year in smokers (range

**Table 1.** Population Demographic Characteristics. \* *p*=0.26. S.D.-standard deviation

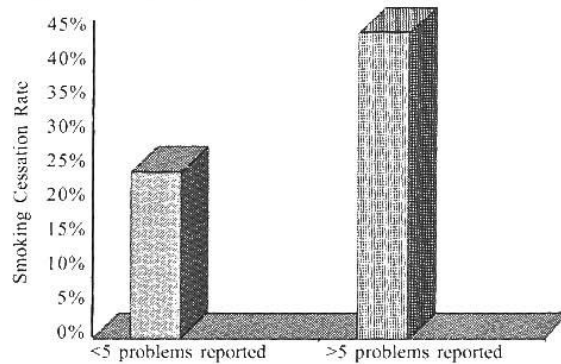
	Smokers (72%)	Quitters (28%)
Male	42	17
Female	2	0
Average Age,(range),yr	60(41-76)	58(38-77)
Average number clinic attended, ± S.D.	5.34±2.75	6.25±2.84*
Average time since first clinic attended, month	13.5	12.7

**Figure 1.** Cigarette consumption



41-76yrs) and 58 year in quitters (range 38-77yrs). Average clinic attendance was 5.34±2.75 S.D. visits in smokers and 6.26±2.84 S.D. visits in quitters. The average time since first clinic attended was 13.5 months in smokers and 12.7 months in quitters. Previous smokers had heavier tobacco consumption than current smokers (*p*=0.001), (Fig.1). Forty four percent of quitters reported more than five health problems, (Fig.2). The following factors were considered to promote smoking: watching TV, finishing lunch and dinner, drinking coffee, drinking alcoholic beverages and talking on the phone. Smoking while speaking on the phone was the only one statistically significant, (*p*=0.0123), (Fig.3). We evaluated the following factors as reasons to continue smoking: not to gain weight, to feel less nervous and to help in concentration. In our population, we found that only smoking to prevent weight gain was statistically significant, (*p*=0.0129), (Fig.5). In our population not a single factor was found to be statistically significant that would promote quitting (effect in others *p*=0.98, family health *p*=0.98, family pressure *p*=0.46), (Table 2 and Fig.4).

**Figure 2.** Frequency of health problems



**Figure 3.** Factors that promote smoking.

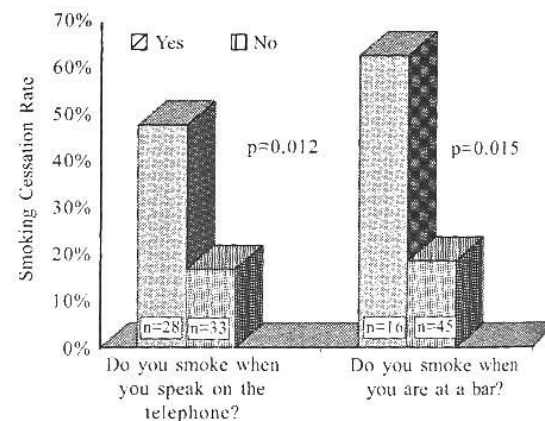


Figure 4. Factors that promote quitting.

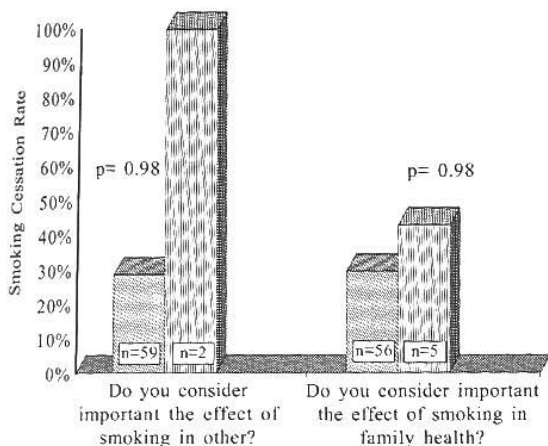
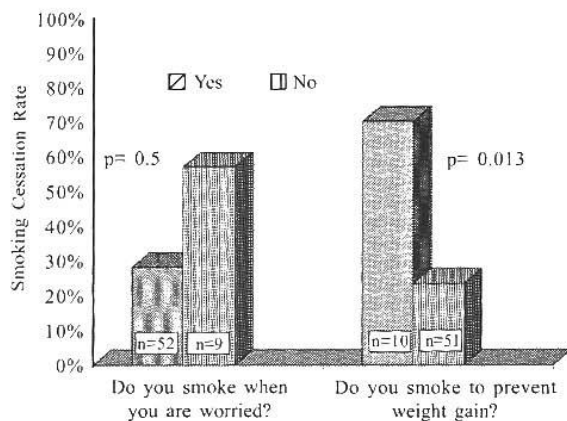


Table 2. Factors Associated with Smoking and Quitting. Logistic Regression Analysis.

Question	Coefficient	P value
Using the phone	2.2285	0.0123
At a bar	1.4115	0.1494
Effect on others	31.904	0.9809
Family health	-13.85	0.9848
Feeling worried	-0.768	0.495
Prevent weight gain	2.592	0.0129
Feeling tense	-1.19	0.2284
In parties	1.894	0.1034
Drinking alcohol	-0.2628	0.7253
Smoking with friends	15.29	0.9875
Family Pressure	0.8465	0.4613

Figure 5. Factors that promote smoking.



## Discussion

Twenty-eight percent of the patients enrolled in San Juan VA Smoking Cessation Clinic have quit smoking at the time of our interview. This success rate is similar to the one reported nationally (8-13).

Previous analyses on attitudes, beliefs and behavior about smoking and quitting in a sample of Latinos have showed that Latinos (Mexicans and Central Americans) did not associated smoking with habitual activities but instead with social and emotional factors (7). Latinos were less likely to smoke while talking on the phone, drinking alcoholic beverages, and watching TV, but were more likely to smoke at a party, when with other smokers and while nervous or tense. These observations were not found in our study. On other hand, we found that our population was more likely to smoke while talking on the phone.

Past studies found that Latinos smoke fewer cigarettes per day than whites and African Americans, but most of these studies have been conducted with Latinos of Mexican background. There is limited data available for Puerto Ricans that indicate that they smoke more cigarettes per day and that the proportion of heavy smokers are higher among them as well as in Cubans than in Latino groups of other national origin (6). In a recent study, Perez-Stable and colleagues compare smoking behavior among Latino men and women from different countries of origin and found that only one-quarter of Latino smokers reported smoking a pack or more cigarettes per day. However, they found that Cubans and Puerto Ricans smoked more cigarettes per day than Mexican and Central Americans (15).

Our study, where all subjects were of Puerto Rican origin, we found that those who quit smoke more cigarettes per day than those who continue smoking and reported more health problems than active smokers do. Although, we could hypothesize that the success of quitting could be related to health concerns as in Latinos in San Francisco, direct questioning did not support this assumption.

In the San Francisco study mentioned before, it was found that Latinos were more likely to quote reasons related to concerns about family and interpersonal relationships as the important motives to quit smoking (7). We thought that our population, as Latinos, would also have the same concerns, but the contrary was found. This concept is derived from the cultural dimension of Familism, which is a core value of Hispanic culture (7,16-17). Familism is usually described as a strong identification and attachment of individuals with their families and strong feelings of loyalty, reciprocity and solidarity among members of the same family (17). The Hispanic family has been described as an emotional support system in which each member

can find help and protection against external physical and emotional stressors (16-18). A previous study evaluated the effects of acculturation (in this case, assimilation of the American culture) on attitudinal familism in 452 Hispanics compared to 227 white non Hispanic subjects (19). Their range of age was 30 to 40 yrs (mean age Mexican 30.8, Cubans 40.8, Central Americans 30.2). Although the sample analyzed was strongly acculturated, they were of different national origin (Mexican, Central and Cuban-Americans). Nonetheless, they reported similar attitudes toward Family (familial obligations, perceived support from the family, etc.). When these groups were compared to white nonHispanics, they found statistically difference in how they perceive support from the family, family behavior and attitudes. In other words, even though acculturation has taken place, Hispanic families did not resemble white nonHispanic families. Our sample of Puerto Ricans, despite being older (quitters mean age was 58 yr., smokers mean age 60 yr.) was similar in this aspect to white nonHispanics. Which are the variables prompting these findings could be reason for another study.

Many studies have shown that quitting is associated with weight gain and that many smokers continue with the habit in order to prevent this from happening. In their 10 yr. Prospective study, Williamson and colleagues found that the men weight gain after cessation of smoking was 6.6 lbs (2.8 kg) in men and 8.36 lbs (3.8 kg) in women (20). These findings were higher than the ones reported in the Surgeon General's report (1990) (21). This weight gain may potentially discourage the patient from quitting. Therefore, the patient's weight gain concern after quitting is commonly quoted as an important reason for continued smoking.

Contradictory findings have been demonstrated in the relation between weight gain concerns and smoking cessation. For instance, French and colleagues found that weight concerned female workers were similarly successful in smoking cessation as women who do not show weight concern (22). On the other hand, Klesges et al found that both female and male smoker who anticipated post-cessation weight gain were more likely to relapse (23). In a recent study of 580 volunteers who participated in smoking cessation intervention, Meyers et al found that the prevalence of weight concern was not as high as expected. The vast majority of male and female participants indicated that they would not resume smoking even with weight gain of 20 lbs. Finally, those individuals who reported weight concern were significantly less likely to stop smoking (24). In our study, weight gain concern was not an issue against smoking cessation. The majority of smokers did not associate their smoking habit with weight gain prevention. On the other hand, 70% of quitters

referred that the use to smoke to prevent weight gain. In conclusion weight gain was not negative outcome for smoking cessation.

Our study has many limitations. First, the smoking status was self-reported which may have overestimated the smoking cessation rate. Second, we had a small amount of females. Previous studies have shown that weight concerned smokers tend to be female gender (24-25). The small amount of females may have been one of the reasons why weight gain concern was not associated with smoking status. Third, we were unable to document weight gain in our quitters. It was based on self-report.

In the data obtained, there was no single strong factor associated with smoking cessation, for which variables should be evaluated to assess this important issue. The morbidity and mortality associated with smoking deserves that interventions aimed toward smoking cessation be tailored according to the individual's ethnical origin.

## Resumen

*Propósito.* Evaluar la efectividad de la Clínica para dejar de fumar y las aptitudes hacia el fumar de pacientes actuales y los que han dejado de fumar en la clínica.

*Métodos.* Se realizó una encuesta telefónica al azar en una muestra de 61 sujetos activos en la clínica para dejar de fumar en el Hospital de Veteranos de San Juan. El cuestionario que se administró estaba validado y estandarizado para sujetos de habla hispana.

*Resultados.* Veintiocho por ciento de los sujetos entrevistados dijeron que habían dejado de fumar. Los que dejaron de fumar fumaban más que los que actualmente estaban fumando. Los que dejaron de fumar percibían que su salud general era peor que los que actualmente estaban fumando. A pesar de que los que habían dejado de fumar estaban preocupados por el ganar peso después de fumar, esto no ocurrió después de haber dejado de fumar. No se encontró una asociación entre el fumar activamente y el uso de alcohol, el socializar con amigos o sentirse ansioso(a).

*Conclusión.* La clínica para el dejar de fumar en el Hospital de Veteranos de San Juan tiene una tasa de efectividad similar a la de otras clínicas reportadas en la literatura. La pobre percepción de la salud y el consumo de más de un paquete de cigarrillos por día son factores predictores de dejar de fumar. Las idiosincrasias de la población a tratarse se deben de tomar en cuenta cuando se diseña un programa para dejar de fumar.

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