Smoking Rates after Cessation of Alcohol and/or Cocaine A Pilot Study

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Abstract

Objective: *To assess the change in smoking rates in alcohol and/or cocaine dependent patients after the cessation of the primary drug of use.*

Design: *A self-report questionnaire was administered upon admission to a Residential Treatment Facility, in the fourth week, and in the final (sixth) week of the program. The control group was administered a self-report questionnaire at the time of intake as controls and again four and six weeks later.*

Setting: *Residential Treatment Facility (RTF), a 30 bed inpatient alcohol and drug treatment unit, at Eisenhower Army Medical Center, Fort Gordon, Georgia.*

Patients: *A total of 42 patients; 37 male, 5 female; Controls were 40 non-patient smokers; 30 male, 10 female.*

Main Outcome Measure: *The change in number of cigarettes smoked per day.*

Results: *A repeated measures analysis of variance revealed that smoking changed over time,* $F(2,68) = 24.63$, $p < .001$.

Conclusions: *There was a 37% decrease in smoking rates after the cessation of alcohol and/or cocaine use. This meaningful and statistically significant* ($p < .001$) *reduction was not observed in the control group* ($p > .05$), *and was seen regardless of sex, race, or whether the primary substance was alcohol and/or cocaine.*

INTRODUCTION

Smoking, alcohol use, and illicit drug use are long-standing problems with significant social and medical complications and costs. A review of the literature reveals a positive correlation between smoking and alcohol use, and users of illicit drugs are more likely to be smokers than non-users (1,2). Experimental studies (3), reveal that rats increase their alcohol consumption when given nicotine. In addition, an idiographic study (4), reveals that cigarette smoking increases with alcohol consumption, and drinking and smoking also have a highly similar relapse curve (5). Much time and money is spent annually in the treatment of alcohol and drug-related illnesses and, despite the high correlation documented between these behaviors and smoking, there is no research on dual treatment of alcohol or drug dependence and smoking (6). In fact, overt resistance to dual treatment of alcohol or drug dependence with nicotine dependence is commonly found among staff treating such

patients (7). A further review of the literature fails to reveal any studies which document smoking rates after the cessation of the primary drug of dependence.

Additional literature review reveals support for the role of psychological conflict in driving addictive behavior. The use of addictive substances, to allow toleration of otherwise intolerable affective states, is commonly espoused (8,9), in addition to a drive to ward off a sense of helplessness (10). This makes it difficult to predict how smoking rates would respond after the cessation of the primary substance of dependence. Would smoking increase in an effort to offset the loss of the primary drug, as one might anticipate if the drive to addiction was primarily psychological, or would smoking rates decrease as the potential synergistic effect of the primary drug is lost?

METHODS

A total of 42 patients admitted to Dwight David Eisenhower Army Medical Center for participation in the Residential Treatment Facility (RTF) for treatment of either alcohol and/or cocaine dependence were administered a self-report questionnaire at week one, week four, and week six of the program (Appendix). Any patient who was actively trying to stop smoking was excluded from the study. Four patients were dually diagnosed with both alcohol and cocaine dependence. This was not a large enough group to evaluate separately, therefore they were included in both the alcohol and cocaine populations. Fourteen of the patients failed to complete the questionnaire during the fourth week and the data from this week was not included in the analysis. However, all patients completed the questionnaire at week one and week six. Therefore, the study compares self-reported smoking rates while using alcohol and/or cocaine with the first and sixth week of RTF treatment. The control group was composed of 40 active duty smokers selected from one company stationed at Fort Gordon, Georgia. Anyone with a substance abuse/dependence history or attempting to stop smoking was excluded from the control group.

RESULTS

Analyses were first directed toward establishing changes in smoking over time in the study population. Patients undergoing addiction treatment were asked to report the average number of cigarettes smoked daily over the course of a six week period: before treatment and during the first, fourth, and sixth weeks of treatment. Because 14 subjects were missing data at week four, this time period was dropped from the remainder of the analyses. A repeated measures analysis of variance revealed that smoking changed over time, $F(2, 68) = 24.63$, $p < .001$. Planned comparisons revealed that the patients smoked significantly less after one week of treatment (16.9/day) than before the initiation of treatment (26.7/day), and they also smoked less at week six (14.9/day) than at week one ($p < .05$) (figure 1).

Analyses of the control group were first directed toward establishing changes in smoking over time. Controls were given questionnaires at intake, four weeks later,

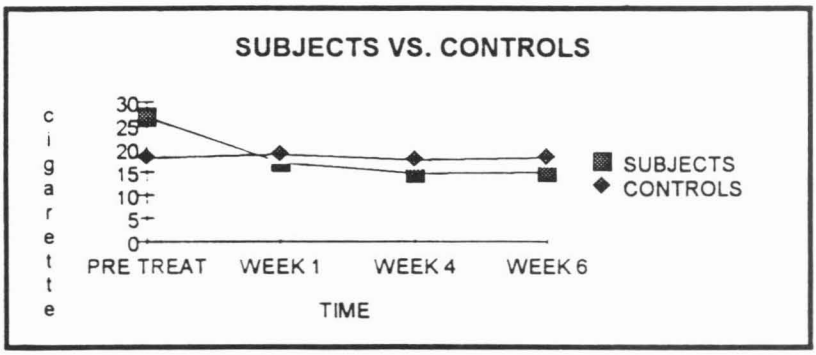

FIGURE 1

and six weeks later. There was no significant difference in smoking when comparing week six and week one by repeated measure analysis of variance or paired T-test ($p > .05$).

Additionally, a repeated measures analysis of variance was used to compare smoking rates over time between patients being treated for alcohol addiction and patients being treated for cocaine addiction (figure 2). The analysis revealed a significant group effect. Subjects being treated for alcohol addictions smoked more than patients addicted to cocaine $F(1.30) = 4.83$, $p < .04$. Also, there was a significant time effect, $F(2, 60) = 14.08, p < .001$. All patients smoked less over time. A similar analysis was also done to compare smoking over time between males and females (figure 3) and between white and black patients (figure 4). There were no differences in smoking between males and females. However, the analysis comparing whites to blacks revealed a significant main effect for race, $F(1, 32) = 14.13, p < .001$. White patients smoked significantly more than black patients. Both groups smoked less after the cessation of the primary drug of use, $F(2, 64) = 33.5, p < .001$.

Finally, analyses were directed toward a direct comparison of self-reported

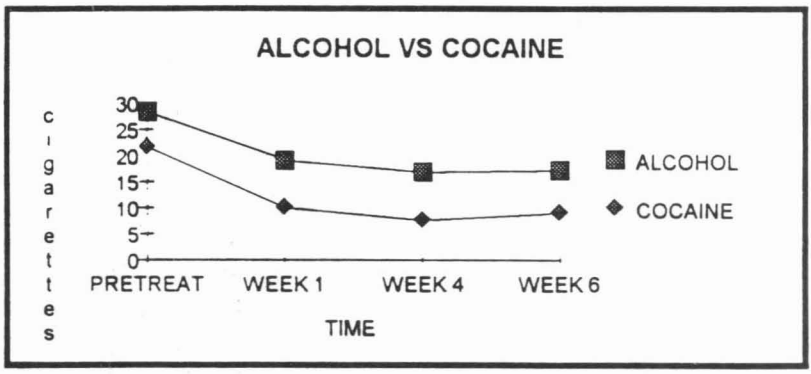

FIGURE 2

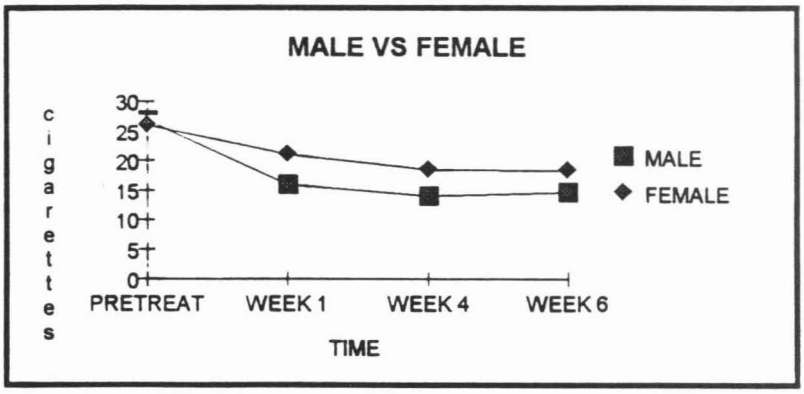

FIGURE 3

changes in smoking between the experimental group and the control group. A design flaw was detected in that controls were not asked to report on smoking rates during the two weeks prior to intake as controls; therefore, direct comparison could only be studied from weeks one through six, which was the period after the experimental group had already discontinued use of their primary substance. A smoking change score was computed for each subject. For both the control subjects and the experimental subjects the average number of cigarettes smoked daily at six weeks was subtracted from the number smoked daily at intake.

Since a multivariate analysis of variance revealed that there were demographic differences between the addiction group and the control group, a multiple regression analysis was performed. In this manner, differences in smoking change scores between the two groups could be separated from the variance accounted for by the original demographic differences between the two groups. Four background variables (age, sex, education, and race) were simultaneously used as predictor variables for smoking change scores. Then, a one-way analysis of variance was performed on the

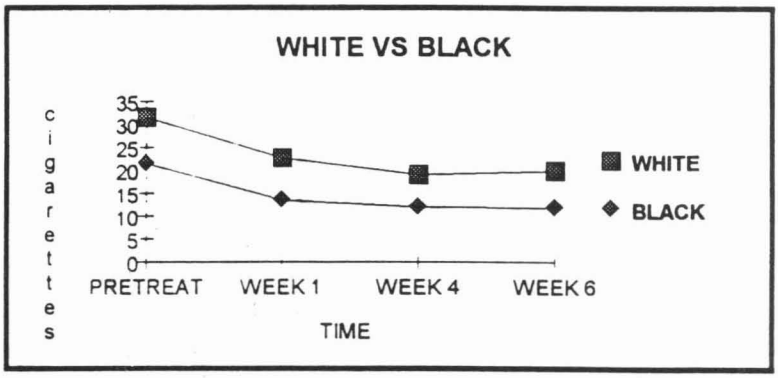

FIGURE 4

residual values generated by the regression equation. This analysis was done to examine possible differences in smoking change scores between the experimental and control groups that were irrespective of original demographic differences. A one-way analysis of variance revealed no diffferences between the addiction group, from weeks one through six, and the control group when smoking change score residuals were used as the dependent variable. Therefore, the change observed in the study population from weeks one through six was not significantly different from the control group. However, the change seen in the study group from pre-treatment to week one is significant when compared with the control group if one assumes the control group maintained consistent smoking rates the two weeks prior to becoming controls.

DISCUSSION

This study provides additional evidence of the inter-relatedness and synergy of addictions. In this study, all experimental groups experienced a drop in the number of cigarettes smoked when the primary drug of dependence was discontinued. As noted in the introduction, very little research has been done on the simultaneous treatment of substance dependence and nicotine dependence. In fact, resistance to doing such dual treatment has been reported. This research suggests that this may be the ideal time to treat both addictions, as there is already an observed decrease in smoking when alcohol and/or cocaine is discontinued.

The control group showed no change in smoking over time which therefore reduces the possibility that the change seen in the study population was a contaminant produced by the questionnaire itself. However, when the study population was compared from weeks one through six with the control group, no significant difference was found between the two groups. This indicates that the decrease seen after the cessation of the primary drug of dependence reaches a plateau and no further decline continues with time. A design flaw was noted in that the control group was not asked to report how much they were smoking in the two weeks prior to intake into the study. Therefore, a direct comparison between the control group and the study population's pre-treatment and post-treatments rates could not be done. However, if one assumes that the control group maintained constant smoking rates prior to intake, statistical significance between the two groups is found.

The RTF is a nonsmoking facility, however the decrease seen in the study population from pre-treatment to week one cannot be accounted for by admission to this facility. This is because week one scores report the amount smoked at the time of admission to the treatment facility, and no further decrease is seen after admission. Additionally, hospital policy allows RTF patients the freedom to go to smoking areas during breaks and after duty hours. This would be similar to their normal daily work environment as all military facilities are smoke-free. Therefore, hospitalization itself seems to have little impact on smoking rates, but rather smoking rates were effected by the cessation of the primary drug of abuse.

In the future, studies which include larger sample sizes and treatment for

nicotine dependence may provide interesting information in further exploring the relationship between tobacco and other addictive substances. One could also envision a study in which relapse rates of smokers with alcohol or drug dependence diagnosis, who undergo simultaneous nicotine dependence treatment, are compared with other patients with substance dependence diagnosis who do not receive smoking cessation treatment.

CONCLUSION

Patients with alcohol and/or cocaine dependence smoke significantly more than controls when using their primary drug, and smoking rates return to average levels when the primary drug is discontinued.

APPENDIX

Self-Report Questionnaire
Date _____

*NUMBER OF WEEKS IN HOSPITAL _____

1. Last four of your Social Security number _____.

2. Age _____.

3. Sex M or F.

4. Military Status (active duty, dependent, and branch) _____.

5. Race _____.

6. Level of formal education _____.

*7. Primary drug of abuse a. Alcohol b. Cocaine c. other _____.

8. Do you smoke cigarettes? Yes or No

9. How many cigarettes are you currently smoking daily (please be as specific as possible) _____.

*10. How many cigarettes did you smoke daily when you were still using your primary drug of abuse? (please be as specific as possible) _____.

*Designates questions not used on control group questionnaire.

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