



ORIGINAL RESEARCH PAPER

Dental Science

CORRELATION OF PSYCHOLOGICAL VARIABLES WITH NICOTINE DEPENDENCE AMONG CURRENT CIGARETTE SMOKERS IN BANGALORE – AN OBSERVATIONAL STUDY

KEY WORDS: Nicotine Dependence, Smoking, Depression, Anxiety, Stress.

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ABSTRACT
Objectives- The study aimed to determine the magnitude of the influence of psychological variables of Depression, MAxiety, and Stress on Nicotine Dependence. **Materials and methods-** A cross-sectional study was conducted on smokers recruited from the O.P.D of KLE Society's Institute of Dental Sciences, Bangalore by convenience sampling. Depression, Anxiety, and Stress were evaluated in these subjects using the DASS-21 questionnaire scale. Nicotine Dependence was assessed using the Fagerstrom Test for Nicotine Dependence. Statistical analysis was performed on SPSS version 26 (p-value <0.05). **aterials and methods-** A cross-sectional study was conducted on smokers recruited from the O.P.D of KLE Society's Institute of Dental Sciences, Bangalore by convenience sampling. Depression, Anxiety, and Stress were evaluated in these subjects using the DASS-21 questionnaire scale. Nicotine Dependence was assessed using the Fagerstrom Test for Nicotine Dependence. Statistical analysis was performed on SPSS version 26 (p-value <0.05). **Results:** Pearson's Correlation test showed a positive correlation between nicotine dependence with anxiety and stress. **Conclusions** – Tobacco cessation programs should assess the mental health status of the Smoker prior to commencing cessation therapy as it dictates the level of nicotine dependence of the smoker.

INTRODUCTION
 Smoking is a public health issue that has gripped both the developing and developing countries of the world. It is associated with 22 % of cancer-related mortalities globally. Close to a million deaths were reported in India in the year 2018 alone from smoking. Current Smokers worldwide are expected to cross 1.6 billion by 2025.¹⁻³ Nicotine dependence from the Smoking habit makes habit cessation a herculean task.

Research spanning over decades has indicated a high co-occurrence between psychological morbidities and Smoking. Several Studies have found a bi-directional association between smoking and depression/ anxiety, with occasional smoking initially used to address symptoms, but deteriorating them over time.⁴ Stress is often attributed to smoking prevalence, with smokers reporting more cigarettes consumed at times of psychological stress.⁵ However, the exact magnitude of this association between smoking and these psychological variables remains unclear.

Hence, the current study was designed to determine the magnitude of the influence that these psychological variables of Depression, Anxiety, and Stress may exert on nicotine dependence.

MATERIALS AND METHODS
 Study Setting and population

The study design was cross-sectional wherein 240 participants were recruited from the OPD of KLE Society's Institute of Dental Sciences, Bangalore from February 1st, 2021 to May 31st, 2021 using the convenience sampling method.

Adult participants aged above 18 years, who were current Cigarette Smokers, currently residing in Bangalore city, and who gave written consent were included in the study. Participants who resided outside Bangalore city, undergoing any form of counseling or therapy for tobacco cessations, and were on psychiatric medications were excluded. Institutional ethical approval was obtained before commencing the study.

Data Collection
 A close-ended questionnaire was employed to collect the information concerning the socio-demographic variables.

Depression, Anxiety, and Stress were evaluated using the DASS-21 questionnaire scale that was administered to the subjects. This scale has excellent internal consistency and discriminative, concurrent, and convergent validities in assessing the aforementioned psychological variables.⁶

Nicotine dependence was assessed by administering the Fagerstrom test of Nicotine Dependence.⁷

Statistical analysis:
 The data so obtained were entered into Microsoft Excel and analyzed statistically using SPSS version 26 software. Pearson's Correlation test was used to assess the degree of correlation between psychological variables of Depression, Anxiety, and Stress with nicotine dependence. A p-value < 0.05 was considered to be statistically significant.

RESULTS
 Descriptive statistics:
 As evident from **Figure 1**, among the 240 study subjects, most of the smokers were in the 18-30 years and 31-40 years age

frame. Smoking was more prevalent among males, those who weren't married, and those who were employed.

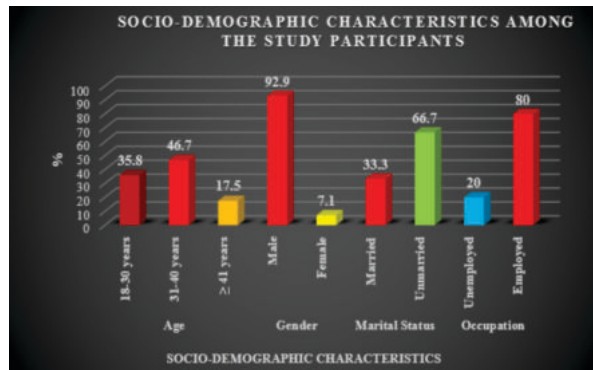


Figure 1: Socio-demographic details of the study participants

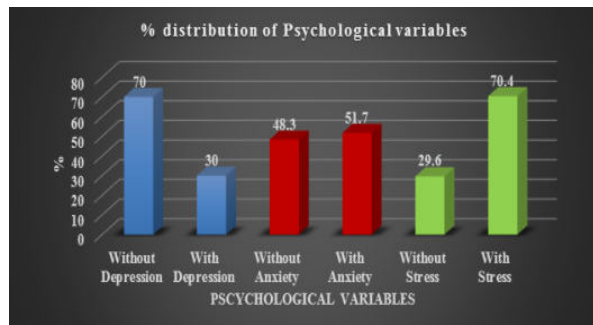


Figure 2: Distribution Of Psychological Variables Among The Study Participants

Figure 2 shows a high prevalence of psychological morbidities of anxiety and stress among the 240 subjects. More than half the subjects suffered from anxiety and stress. Depression was less prevalent among the subjects

Inferential Statistics:

Shapiro Wilk test revealed that the data were normally distributed. The Pearson's Correlation test revealed a statistically significant positive association between Anxiety and Nicotine dependence, $r(238) = 0.53, p = 0.00$. There was also a statistically positive significant association between Stress and Nicotine dependence among the subjects, $r(238) = 0.64, p = 0.00$ (Table 1)

Table 1: Pearson's test of correlation to assess the correlation between Depression, Anxiety, and Stress with levels of nicotine dependence among current smokers

Nicotine Dependence	Depression	Anxiety	Stress
Correlation coefficient (r)	.12	.53**	.64**
p-value	.05	.00	.00

** Correlation is significant at the 0.01 level (2-tailed).

DISCUSSIONS:

The study was conducted to determine the magnitude of the influence of depression, anxiety, and stress on nicotine dependence.

Most of the smokers were males and unmarried which was in line with results obtained from other studies.⁸⁻⁹ Through our study we found that there was a high prevalence of psychological morbidities of stress and anxiety among smokers. The correlation test revealed a positive association between nicotine dependence with anxiety and stress. However, no such association was seen between depression and nicotine dependence. Stress is one of the most cited reasons for engaging in the habit of smoking (Dinicola et al., 2013).¹⁰ Experiencing copious levels of stress can aggravate the problem of eliminating smoking behavior as stress reduction is attributed as one of the main reasons for

engaging in smoking behavior. Chronic Nicotine exposure can alter the acute stress response and dampen the adaptive response to chronic stress increasing cigarette-seeking behavior. This alteration of the physiological and behavioral responses to nicotine further exaggerates nicotine's addictive liability.⁵ Mykletun A et al., 2008 also found anxiety to be more exceedingly associated with smoking than depression.¹¹ The anxiolytic properties of nicotine may be the cause of the positive correlation between Nicotine Dependence and anxiety levels that leads to cigarette-seeking behavior.^{5,12}

The study had certain limitations. The cross-sectional design delimits the determination of causality.

CONCLUSIONS:

This study gives us the magnitude of the association between anxiety and stress levels with nicotine dependence. The higher levels of anxiety and stress, the higher will be the nicotine dependence among current smokers. Hence, tobacco cessation interventions should aim to determine and alleviate the levels of these psychological variables in smokers before commencing the cessation process to ensure lesser withdrawal symptoms attributed to nicotine dependence

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Conflict of Interest - Nil

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