Nicotine Dependency and Anxiety: A Gender- Based Study

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ABSTRACT

The present study assesses the relationship between nicotine dependence and anxiety in young adults. There has been an ever-rising increase in the use of cigarettes and other tobacco-related products. These products have been known to produce anxiety-related problems in users. However, anxiety can be a cause or an effect as people also start consuming cigarettes to get relief from the anxiety they are suffering from. This study examines the correlation between nicotine dependence and anxiety. The sample was taken from the age group of 18-25 years (young adults of Delhi/N.C.R.). Beck Anxiety Inventory and Fagerstrom's Test for Nicotine Dependence were used to assess the two parameters. The data was collected and analyzed by applying descriptive and inferential statistics.

Key Words: Nicotine Dependence, Anxiety and Smoking.

1. INTRODUCTION

The poisonous alkaloid nicotine is the chief active ingredient in tobacco; it is found in such items as cigarettes, chewing tobacco, and cigars, and it is even used as an insecticide. Nicotine, in small doses, stimulates the central nervous system; it can relieve stress and improve mood. But it can also cause high blood pressure and increase the risk of heart disease and cancer. High doses can blur your vision, cause confusion, lead to convulsions, and sometimes even cause death. Nicotine is inhaled into the lungs, where it enters the bloodstream. Only 7 to 19 seconds after a person inhales the smoke, the nicotine reaches the brain. Nicotine appears to stimulate specific nicotinic acetylcholine receptors in the midbrain reticular formation and the limbic system, the site of the brain's pleasure pathway (the dopamine system responsible for feelings of euphoria). Smokers dose themselves throughout the day to keep nicotine steady in the bloodstream.

The diagnostic criteria for nicotine withdrawal include (1) the daily use of nicotine for at least several weeks and (2) the following symptoms after nicotine ingestion is stopped or reduced: craving for nicotine; irritability, frustration, or anger; anxiety; difficulty concentrating; restlessness; decreased heart rate; and increased appetite or weight gain. Several other physical concomitants are associated with withdrawal from nicotine, including decreased metabolic rate, headaches, insomnia, tremors, increased coughing, and impaired performance on tasks requiring attention. These withdrawal symptoms usually continue for several days to several weeks, depending on the extent of the nicotine habit. Some individuals report a desire for nicotine for several months after quitting Smoking. In general, nicotine withdrawal symptoms operate like withdrawal from other addictions; they are time-limited and reduced over time as the drug intake stops.

Anxiety disorders include disorders that share features of excessive fear and anxiety and related behavioural disturbances. Fear is the emotional response to real or perceived imminent threats, whereas anxiety is an anticipation of future threats. Anxiety is often associated with muscle tension, vigilance in preparation for future danger, and cautious or avoidant behaviours. Anxiety disorders differ from one another in the types of objects or situations that induce fear, anxiety, or avoidance behaviour

and the associated cognitive ideation. Thus, while anxiety disorders tend to be highly comorbid with each other, they can be differentiated by close examination of the types of situations that are feared or avoided and the content of the associated thoughts or beliefs.

2. REVIEW OF LITERATURE

Johnson, Cohen, and Pine (2000) conducted a study on a sample of 688 youths to investigate the longitudinal Association between cigarette smoking and anxiety disorders among adolescents and young adults. It was found that heavy Smoking during adolescence was associated with a higher risk of generalized anxiety disorder, agoraphobia, and panic disorder during early adulthood.

Slomp FM, Bara TS, Picharski, and Cordeiro (2019) conducted to explore the potential link of cigarette smoking with depression, anxiety, suicidal ideation, and the influence of gender on these relationships in Brazilian adolescents. Suicidal ideation was common among smokers with depressive symptoms (54.2%). Smoking was associated with being held back three grades ($p < 0.001$). Female smokers were likelier to report suicidal ideation than male smokers ($p = 0.020$).

Audrain and Lerman(2007) look for potential mediators linking Smoking and anxiety. Potential mediators include self-medication variables (e.g., use of nicotine to manage stress) and cognitive variables (e.g., lower levels of self-efficacy). Regression analyses revealed that trait anxiety predicted nicotine dependence after controlling for depression, education, race, age, and marital status ($R2= .09$, $p = .0001$).

Pedersen and Von Soest(2009) conducted a longitudinal study to investigate the associations between daily Smoking and nicotine dependence and anxiety, depression, and suicide attempts in young Norwegians prospectively. The findings showed that young adults who were nicotine-dependent had clearly elevated rates of anxiety and depression.

Risdiana and Rustyawati(1979) conducted research to identify if there is a correlation between nicotine dependence levels and anxiety levels in Indonesian adolescents. A sample of 44 people was undertaken; Fagerstrom Test for Nicotine Dependence was used to measure the nicotine dependence level, while the instrument for anxiety level was carried out using the Taylor Manifest Anxiety Scale. The correlation analysis between the level of nicotine dependence and anxiety conducted using Spearman rho non-parametric correlation analysis obtained a significant value of 0.0001 ($p > 0.05$). The $r = 0.979$ showed a positive and robust correlation between nicotine dependence and anxiety level.

3. RATIONALE

Nicotine addiction is a severe public health issue because it leads to continued tobacco use, one of the leading preventable causes of death worldwide, killing over 8 million people annually. Six per cent of smokers who want to quit each year successfully left. Nicotine withdrawal is the main factor hindering smoking cessation. A 2010 World Health Organization report states, "Greater nicotine dependence is associated with lower motivation to quit, difficulty in trying to quit, and failure to quit, as well as with smoking the first cigarette earlier in the day and smoking more per day." E-cigarettes may result in starting nicotine dependence again. The study aims to find out the gender differences of young adults for nicotine dependence and anxiety. This study also examines the relationship between nicotine dependence and anxiety and creates awareness among people about the ill effects of the use of cigarettes.

4. OBJECTIVE OF THE STUDY

I. To study the gender differences in nicotine dependence among young adults.

II. To examine anxiety in male and female participants.

III. To find the relationship between nicotine dependence and anxiety of male and female participants.

5. HYPOTHESES OF THE STUDY

I. There is no significant difference between male and female participants with anxiety

II. There is no significant difference between male and female participants concerning nicotine dependence

III. There is no significant correlation between anxiety and nicotine addiction in males and females participants

6. METHOD

Design

The present study is descriptive and cross-sectional research. Descriptive research aims to accurately and systematically describe a population, situation, or phenomenon. It can answer what, where, when, and how questions, but not why questions and a cross-sectional study is a type of research design that simultaneously collects data from many individuals at a single point.

Participants

Young adults (63 male and 63 female) 126 in the age group of 18-25 who smoke cigarettes were part of the present study. Convenience sampling techniques will be used to draw samples for the analysis.

Tools used

Fagerström Test of nicotine dependence (F.T.N.D.): Self-administered questionnaire which contains six items. The Beck Anxiety Inventory was utilized to measure the level of anxiety, and to measure the degree of nicotine dependence, the Fagerstrom Test for Nicotine Dependence was selected. F.T.N.D. was of good construct validity, as demonstrated by a good value of 0.699. Cronbach's alpha coefficient ranged from 0.45 to 0.83, indicating that the F.T.N.D. has low to moderate internal consistency.

Beck Anxiety Inventory (BAI): A scale that was developed to measure anxiety both in psychiatric patients and in the general population and consisted of a list with 21 common symptoms of anxiety, where the patient indicates how he had been feeling in the previous week, up to the current day. For this study, the results were classified as minimal/mild and moderate/severe. Internal consistency for the BAI = (Cronbach's α=0.92) Test-retest reliability (1 week) for the BAI = 0.75 (Beck, Epstein, Brown, & Steer, 1988). The BAI also demonstrates good concurrent validity, with correlations between 0.78 and 0.81 with the SCL-90 Anxiety Subscale, the Hamilton Anxiety Scale, and Spielberger's S.T.A.I.

Procedure

Data was collected by sharing a Google form. The socio-demographic details were collected after taking the informed consent of the participants. Purposive sampling was used as young adults 18-25 years of frequent smokers were of prime interest. To measure the anxiety level, Beck Anxiety Inventory was selected, and to measure the degree of nicotine dependence, Fagerstrom Test for Nicotine Dependence was selected. Before administering these two tests, rapport was formed with the participants.

Scoring and Data analysis

Scoring was done according to the instructions given in the manual. For the analysis, the researcher used descriptive analysis followed by inferential statistics. Descriptive statistics were used to analyze the mean, S.D.S.D. of the independent variable. T-test was done to study the significance of the two groups based on gender. A correlation was applied to determine the relationship between nicotine dependency and anxiety.

7. RESULTS

Table 1

Descriptive statistics related to various levels of anxiety among male and female participants

	Male		Female	
Variables	Mean	SD	Mean	SD
Low anxiety	10.28	6.021	10.53	5.34
Moderate anxiety	29.08	4.73	28	4.038
High Anxiety	45.83	11.05	38.67	2.58

Table 2

Showing Mean, SD and t -value for anxiety of male and female participants

	Gender	N	Mean	S.D.S.D.	df	T	P
Anxiety	Male	63	17.25	13.45	124	-1.56	0.11
	Female	63	20.17	11.21			

*Level of significance is at .05

Table 3

Descriptive statistics related to various levels of nicotine dependence among male and female participants

Nicotine dependence	Male		Female	
Variables	Mean	SD	Mean	SD
Low	1.48	0.51	1.44	0.50
Low to moderate	3.42	0.51	3.06	1.25
Moderate	5.83	0.92	6.83	3.60
High	9.43	1.72	10	2.83

Table 4

Depicting Mean, SD and t- value for nicotine dependence of male and female participant

	Gender	N	Mean	S.DS.D.	df	t-value	p-value
Nicotine dependence	Male	63	4.06	2.66	124	2.02	0.046*
	Female	63	3.18	2.26			

*Level of significance is at .05

Table 5

Correlation of nicotine dependence and Anxiety

		Nicotine dependence	Anxiety
Nicotine dependence	Pearson's r	1.00	-
	p-value	--	-
	N	-	-
Anxiety	Pearson's r	0.12*	1.00
	p-value	0.61	--
	N	126	-

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

INTERPRETATION

The first objective was to study the gender difference in nicotine dependence. Considering the purpose, the null hypothesis was formulated, which states no significant difference exists in male and female nicotine dependence. To prove the hypothesis, an independent sample t-test was utilized. The null hypothesis (Ho) stated no significant difference between nicotine dependence and anxiety.

Table 1 depicts the descriptive scores of anxiety. The first domain in Table 1, which indicates low pressure - showed mean values of 10.29 for males and 10.53 for females, followed by Standard deviation values of 5.35 for females and 6.02 for males, respectively. In this, we can see a slight difference in the mean values of males and females. The second domain in Table 1, associated with moderate anxiety—showed mean values of 28 for females and 29.08 for males, followed by Sd values of 4.04 for females and 4.74 for males, respectively. The third domain, associated with severe anxiety—showed mean values of 38.67 for females and 48.33 for males, followed by Sd values of 2.58 for females and 11.05 for males, respectively.

Table 2 depicts the t statistics of anxiety of males and females. The calculated t-value is -1.57, and the p-value is 0.12. The t critical value for df 124 at 0.05 level of significance is 1.98. Therefore there is no significant difference between the values obtained. Therefore, our null hypothesis is retained: there is no significant difference between male and female participants on anxiety. The results do not align with previous studies on gender differences in anxiety. It contradicts the results we got from the Beck anxiety inventory. The studies that have been done previously on anxiety are as follows.

A Study was done by P M Lewinsohn et al. (1998) on Gender differences in anxiety disorders and anxiety symptoms in adolescents. Participants were examined on a wide array of psychosocial

measures. There was a preponderance of females among current and recovered anxiety disorder cases but not among those who had never experienced an anxiety disorder. The female majority emerges early in life, and retrospective data indicate that at age 6, females are already twice as likely to have experienced an anxiety disorder than males.

The study's second objective was to study the gender difference in various domains of nicotine dependence. Considering the objective, the null hypothesis was formulated, which states a significant difference in males and females on nicotine dependence in each of the four domains. To prove the hypothesis, a dependent sample t-test was utilized. Table 3 depicts the descriptive scores of males and females with nicotine dependence.

The first domain in Table 3 indicates low dependence-showed mean values of 1.48 for males and 1.44 for females, followed by S.D.S.D. values of 0.51 and 0.50 for males and females, respectively. The second domain in Table 3—indicative of low to moderate dependence—showed mean values of 3.42 for males and 3.06 for females, followed by S.D.S.D. values of 0.51 and 1.25 for males and females, respectively. The third domain, indicative of moderate dependence—showed mean values of 5.83 for males and 6.83 for females, followed by S.D.S.D. values of 0.92 and 3.60 for males and females, respectively. The fourth domain, indicative of severe dependence—showed mean values of 9.43 for males and 10.00 for females, followed by S.D.S.D. values of 1.72 and 2.83 for males and females, respectively.

Table 4 depicts the t statistics of nicotine in males and females. The calculated t-value is found to be 2.02. The p-value was 0.046, which is lower than 0.05(the level of significance). The t critical value for the degree of freedom 124 at 0.05 level of significance is 1.98. So there is a significant difference in the obtained values. Therefore, This leads to rejecting the null hypothesis and retaining the alternative hypothesis that there is a substantial difference between males and females in nicotine dependence. Compared with males, females smoked fewer cigarettes daily, were less likely to smoke when ill in bed, and were less likely to smoke frequently in the morning. This is in line with the previous research done by Motohiro Nakajima and Mustafa al'Absi(2012), who explored gender differences in response to F.T.N.D. items. They found male smokers reported more significant symptoms of nicotine dependence than female smokers.

Table 5 indicates the correlational value of anxiety and nicotine dependence which is 0.12, which is mildly positive. Which means the relationship between two variables is in the same direction. When nicotine dependence increases, then anxiety increases and vice versa. It is consistent with the epidemiological studies by Steven Moylan (2012). They identified evidence that consistently supports cigarette smoking and nicotine dependence as a risk factor for developing some anxiety disorders (for example, panic disorder and generalized anxiety disorder). The results of the present study are also supported by the survey which assesses smoking and nicotine dependence with depression, anxiety, and stress in Egyptian adults, which found a statistically significant association between psychometric disorders, on the one hand, and both smoking motivation and nicotine dependence, on the other ($P < 0.001$).

CONCLUSION

It can be concluded that the results stated that males showed more significant anxiety levels than females when meaning and standard deviation were calculated on severe levels. However, not much difference in anxiety was found at the other low and moderate anxiety levels. Talking in terms of overall anxiety, negligible differences were found between males and females. Moving on to the nicotine dependence parameter, it found that males were more dependent than females at moderate and high levels of nicotine dependence and in terms of overall addiction, significant differences were found between males and females. Moreover, a positive correlation of 0.12 was found between anxiety and nicotine dependence.

LIMITATIONS OF THE STUDY

There were a few limitations of the study. The respondents might have opted for the socially desirable responses as they knew that they were being observed. So they might have opted for the options that were more acceptable in society and not the ones that were inappropriate according to society which lead to insignificant results. Another limitation was the limited number of participants. We could have researched more participants to observe the effect of nicotine dependence and anxiety. The present study did not evaluate the mechanisms and reasons linking anxiety and nicotine dependence. Because the research was conducted through a questionnaire, we cannot fully understand the reasoning behind what could have been possible with a more qualitative research method like F.G.D., Interview, etc.

SUGGESTIONS FOR FURTHER STUDIES

Future studies can be carried out keeping in mind the following suggestions. Using a larger sample size is suggested, ensuring it is representative of the population. People belonging to different age groups and socioeconomic statuses should be included. The study can be done using both qualitative and quantitative research designs. The effects of other commonly abused substances, such as alcohol, can be studied with many different variables, such as depression and well-being.

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