

Effectiveness of Tobacco Cessation Program on Psychological Wellbeing of Tobacco users in a selected Deaddiction Centre in Mangaluru, Karnataka, India

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Nicotine dependence is characteristically a chronic and relapsing disease condition (Cosci, F., Pistelli, F., Lazzarini, N., & Carrozzi, L., 2011). Around 75%-85% tobacco users who are dependent on nicotine and one-third of them attempted to quit at a certain point of their life, but below 50% succeed in quitting tobacco before the age of 60 years. The individuals dependent on tobacco habit are prone to suffer from neurotic traits, such as depression, anxiety, and anger (Gilbert, D. G., & Gilbert, B. O., 1995). This study aimed to find the relationship between the level of nicotine dependence and the psychological wellbeing (i.e., depression, anxiety, and stress) of tobacco users, and to assess the effectiveness of tobacco cessation program as an intervention process for quitting of tobacco habits. Eighty subjects were selected by using purposive sampling technique, and their nicotine dependence level and psychological wellbeing were assessed by the Fagerstrom Test for Nicotine Dependence (FTND) and Depression Anxiety and Stress 21 Scale (DASS -21) respectively. The present study findings revealed that there was a significant relationship with the nicotine dependence level and psychological wellbeing (Depression, Anxiety, Stress). The tobacco cessation program was effective to reduce depression, anxiety, and stress level of the tobacco dependence. This result helps the mental health treatment strategists to implement a robust intervention for tobacco cessation..

Keywords: Tobacco Cessation, Nicotine dependence, Psychiatric Co-morbidity, Depression, Anxiety, Stress, DASS Scale-21, FTND

Tobacco dependence and the difficulty of quitting are assumed to be the result of addiction, genetic influences, and environmental factors (Gilbert, D. G., & Gilbert, B. O., 1995). The reviews have suggested that personal factors such as intelligence, socioeconomic status, and personality trait also have influenced nicotine habits among dependences. The lifetime prevalence of nicotine dependence was 20% (Breslau, N. 1995). Males and females with nicotine dependence had an increased chance of getting major depression, and anxiety disorders, compared with non-nicotine dependence (Andrews, J. A., Tildesley, E., Hops, H., & Li, F. 2002). Major depression and any anxiety disorder have a strong association with nicotine dependence (Lerman, C., Audrain, J., Orleans, C. T., Boyd, R., Gold, K., Main, D.,

& Caporaso, N. 1996). A study was conducted to examine the cognitive-behavioural linkages between depressed mood and level of nicotine dependence among smokers seeking smoking cessation treatment. The study subjects were examined for smoking status, depressive symptoms, and nicotine dependence level. The study findings indicated that there was a relation between nicotine dependence and depressive disorder. A cross-sectional study was conducted to analyze whether depression predicts the sustenance of smoking after three years. The subjects were diagnosed with DSM-IV diagnoses of depression and nicotine dependence by the Composite International Diagnostic Interview (CIDI). The study findings suggested that the risk of depression increases as the number of nicotine dependence symptoms increases (John,

U., Meyer, C., Rumpf, H. J., & Hapke, U. 2004) A cross-sectional study was conducted to find the psychological well-being of smokers. The study found that there was an association between smokers and psychiatric symptoms, i.e., somatization, anxiety, depression, paranoid symptoms, and hostility (Iniguez, S. D., Warren, B. L., Parise, E. M., Alcantara, L. F., Schuh, B., Maffeo, M. L., & Bolanos-Guzmán, C. A. 2009).

The smoking behaviour and nicotine dependence may increase the chances of developing anxiety disorders (Komiyama, M., Yamakage, H., Satoh-Asahara, N., Ozaki, Y., Morimoto, T., Shimatsu, A., & Hasegawa, K., 2018). The study conducted to explore the gender differences in nicotine dependency and the depressive tendency among smokers. The participants were evaluated for smoking cessation therapy and compared various parameters measured between gender during the consultation. Age, duration of smoking, and cigarette consumption per day were significantly higher in men during the first visit. Women had significantly higher self-rating depression scale scores and took more antidepressant drugs than men. The Self-Rating Depression Scale score significantly correlated with the Fagerstrom Test for Nicotine Dependence score in women, not in men. Smokers have reported that cigarettes help relieve feelings of stress very often. This study reported that the stress levels of adult smokers are slightly higher than of non-smokers (DiFranza, J. R., Savageau, J. A., Fletcher, K., Ockene, J. K., Rigotti, N. A., McNeill, A. D., & Wood, C. 2002).

The individual who is nicotine dependent need nicotine in order to feel normal (Wu, L. T., & Anthony, J. C., 1999). A cross-sectional study reported that the overall prevalence of smoking in the general population was 26%. Smokers have higher levels of perceived stress and less use of coping methods than quitters (Su, S., Miller, A. H., Snieder, H., Bremner, J. D., Ritchie, J., Maisano, C., & Vaccarino, V., 2009). Both quantitative and qualitative analyses indicated that regular smokers reported that smoking would alleviate emotional problems such as feelings of depression and anxiety, to stabilize mood, as well as relieving stress

(Clancy, Nicole, Nicholas Zwar, and Robyn Richmond. Depression, smoking, and smoking cessation, 2013). A qualitative study on tobacco users showed that it might be less likely for people to quit smoking if they believe their mental health will suffer (McNally, L., Oyefeso, A., Annan, J., Perryman, K., Bloor, R., Freeman, S. & Oyebode, D. 2006). As a result, the people who suffer from mental health disorders have a life expectancy eight years lesser than the general population, and this difference could be because of smoking (Ferguson, J., Bauld, L., Chesterman, J., & Judge, K., 2005). The research evidence on the relationship between tobacco dependence and mental health is not very clear. Beedi smoking and tobacco chewing are the most typical forms of tobacco users in India and strongly associated with oral cancer (Gilbert, D. G., & Gilbert, B. O., 1995). However, there is a lack of information on smokeless tobacco (ST) users, Beedi smokers, including multiple tobacco users and their psychological wellbeing. Hence, the present study aimed to find the relationship between nicotine dependence level and their psychological well being and the effect of the tobacco cessation programme (i.e. Health Education, (HE) Group therapy (GT) and Counselling on psychological wellbeing (i.e., depression, anxiety, and stress) among the individuals who had the habit of Beedi smoking, cigarette and ST users.

Method

The present study comprised of 80 tobacco users who were having the habit of smoking Beedi, Cigarette, and Smokeless Tobacco (ST) or dual users. The study setting was in a selected de-addiction centre of the hospital (KS Hegde Charitable Hospital of Nitte-Deemed University, Mangalore, Karnataka, India). Before commencing the ethical study, approval was obtained from the central ethical committee of Nitte University. The researchers have taken permission from the hospital authorities and informed consent from the study participants. The reliability of the tool was (i.e., FTND scoring and DASS-21 tool) tested among 25% of the study population. The total score of all the items was obtained and analyzed by using Cronbach's Alpha Reliability method of statistics.

The r-value of FTND tool was $r=0.798$, and DASS-21 was $r=0.827$ respectively. It indicates that both the tools were reliable to measure nicotine dependence and psychological wellbeing among tobacco users in the present study population. Tobacco cessation intervention (HE content) plan was validated by seven experts from the field of Psychiatry, Psychology, Psychiatric, and Community Health Nursing. There was 100% agreement in the intervention plan. The sample size was calculated based on the statistical method. The test result for sampling was $(r=0.306, n = (0.84+1.96)^2 / (0.306)^2 - 1 - (0.306)^2 = 73.93)$ for $N=80$. The subjects who are diagnosed to have any medical and psychiatric disorders, the habit of consuming alcohol and already admitted to the de-addiction centers were excluded from the study. Demographic proforma and FTND and DASS-21 tools were administered to the study participants on the 1st day of admission into the deaddiction ward. After that, the participants were made as a group comprised of three members and Health education was administered to the participants followed by the information booklet on the effect of tobacco use on health was given to the individual participants. The participants were instructed to read the information booklet for 15 minutes every day under the supervision for seven days. From 8th to 14th day, the participants (three in a group) could express their feelings, suggestions, and other emotions among the group members under the supervision of the researchers. It was continued for 30 minutes a day for a total of seven days. From 15th to 20th day individual counselling session was conducted for study participants covering various aspects of the ill effects of nicotine and influence on the mental health, the importance of mental hygiene and need-based issues. The post-test was administered (FTND tool, DASS-21 Scale) on the 21st day. The demographic characteristics of the subjects were analyzed by using descriptive statistics. The correlation between nicotine dependence (FTND score) and psychological wellbeing (DASS score) was analyzed by using the Karl Pearson correlation statistics method, and intervention effectiveness was assessed by Wilcoxon Signed Rank test.

Results

The description of the selected demographic characteristics was analysed based on frequency and percentage.

Table 1- Demographic characteristics among tobacco users.

Demographic characteristics	N (%)
Age	
21-30 years	19 (24)
31-40 years	37 (46)
41-50 years	14 (17)
>50 years	10 (13)
Gender	
Male	76 (95)
Female	4 (5)
Religion	
Hindu	65 (81)
Christian	6 (8)
Muslim	9 (11)
Marital status	
Married	58 (73)
Unmarried	22 (27)
Literacy status	
Illiterate	9 (11)
Primary	15 (19)
High school	34 (42)
Higher Secondary	10 (13)
University or higher	12 (15)
Occupation	
Physical workers	59 (74)
Business	4 (5)
Employers	13 (16)
No job	4 (5)
Individual income per month	
Up to 5000	18 (23)
5001-10000	32 (40)
>10000	30 (37)
Type of addiction	
Beedi /cigarette/ ST	10 (12)
Beedi	8 (10)
Beedi / ST users	3 (4)
	59 (74)

Table 1: shows that 37 (46%) participants were 31-40 years of age, 19 (24%) were between the age group of 21 and 30 years, 14 (17%) were in the 41-50 year age group, and ten subjects (13%) were aged 50 and above. Most participants (95%) were males; the remaining

(5%) of them were females. Fifty-eight (73%) of the participants were married, and 22 (27%) were unmarried. Out of 80 subjects, 34 (42%) had completed high school, and 10 (13%) had completed higher secondary education, and 12 (15%) of them completed full university education. Nine subjects (11%) were illiterate. Occupation-wise, out of 80 subjects, 59 (74%) were manual workers, and 13 (16%) were office goers, 4 (5%) were businessmen, and 4 (5%) of the participants were unemployed. About monthly incomes, 32 (40%) participants earned between Rs. 5,001-10,000 (average Rs. 7500), and the income of 30 subjects (37%) was Rs. 10,000. Eighteen subjects (23%) had an income below Rs. 5,000. Out of 80 participants, 59 (74%) were smokers who also had the habit of ST chewing. Ten participants (12%) were Beedi smokers, of which 8 (10%) had the habit of smoking cigarettes and ST chewing.

Table 2: Perceptions and practice on tobacco habits among tobacco users

Questions and answers	N (%)
Q. When do you think tobacco habits help you most?	
Answers	
When too much stressful	42(52)
My sleep problem	20(25)
Others (such as tired, bored, low confident)	18(23)
Q. Reason for not stopping tobacco habits	
Answers	
I had less willpower and worried about my weight gain	14(18)
I shall be suffering from a more stressful condition	16(20)
I cannot enjoy my leisure	34(42)
I am really addicted	16(20)
Q. Have you tried to stop tobacco habits in the past?	
Answers	
Yes	60(75)
No	20(25)
Q. How confident you are to stop tobacco use?	
Answers	
Very confident	48(60)
Fairly confident	30(38)
No confident	2(2)

Q. Are you ready to stop tobacco habit today?	
Answer	
Yes	47(59)
No	33(41)
If no, Why?	
Answer	
I do not bother the bad effect of tobacco	33
I do not know	19(58)
	14(42)

Table 2: demonstrates that 42 (52%) subjects expressed that they were relieved from stress while using tobacco, 20 (25%) of them explained that sleep disturbance is less intensive if they consumed tobacco, and 18 (23%) expressed that other problems such as tiredness, boredom, and low confidence level were relieved while consuming tobacco. Out of 80 participants, 14 (17%) had explained that they have less willpower and weak determination to quit tobacco. Sixteen participants (20%) explained that only stressful conditions render it difficult to cease tobacco smoking, but 34 (43%) enjoyed tobacco socially. However, 16 subjects (20%) expressed that they were more addicted to tobacco. Indeed, 60 (75%) did not try to cease tobacco smoking; on the contrary, 20 (25%) tried to cease but failed to do so. However, 40 participants (50%) expressed the opinion that they were very confident regarding ceasing tobacco smoking, 30 (38%) were fairly confident, and 2 (12%) subjects are not at all confident about quitting their tobacco smoking habits. 47 (59%) participants responded that they would cease tobacco smoking immediately, although 33 (41%) did not want to do so. Out of 80 subjects, 47 (59%) subjects were on a moderate level of nicotine dependence, and 33 (41%) were on a high-level nicotine dependence category respectively (FTND score). However, no subjects were in the category of the low level of nicotine dependence as per the FTND score.

Table 3 reveals that there was a highly significant relationship with nicotine dependence level and psychological well-being (Depression, Anxiety, and Stress) among tobacco users. The calculated P-value for Depression ($r=0.360$, $p=0.001$), Anxiety, ($r=0.313$, $p=0.000$) and Stress ($r=0.302$, $p=0.000$) was less than $P<0.005$.

Table 3 - Correlation between the status of psychological wellbeing (DASS-21) and the severity level of nicotine dependence (FTND score)

Psychological wellbeing (DASS-21)	Nicotine dependence level (FTND)	
	r value	P value
Depression	0.360	0.001*
Anxiety	0.313	0.006*
Stress	0.302	0.007*

Table 4-Assess the effectiveness of Tobacco cessation program on psychological wellbeing (Depression, Anxiety, Stress level) by using the Wilcoxon signed rank test on the level of depression among tobacco users

Psychological wellbeing	Mean %		Z	P
	Pre – test	Post – test		
Depression	27.8	18.5	6.383	0.000
Anxiety	36.2	30	3.538	0.000
Stress	18.3	10.2	5.502	0.000

The table 4 showed that there was change in the mean % of depression (27.8-18.5) anxiety (36.2-30) and stress (18.3-10.2) among tobacco users before and after the intervention. A nonparametric test of Wilcoxon signed rank test was used to assess the effectiveness of tobacco cessation program among tobacco users. The calculated P-value for depression (Z=6.383, P=0.000), Anxiety (Z = 3.538, P=0.000) and Stress (Z = 5.502, P=0.000). Hence calculated p-value was less than 0.005 (P<0.005), the intervention (HE, GT, and counselling) was effective on psychological wellbeing (Depression, Anxiety, and Stress) among tobacco users.

Discussion

The study conducted by Anthony et al. (1999) reported that late childhood and early adolescence tobacco smoking leads to a later subsequent onset for depressed mood (Ussher, M., West, R., McEwen, A., Taylor, A., & Steptoe, A., 2003). The present study findings revealed that out of 80 subjects, 14 (17%) of them had explained that they have less willpower and weak determination to quit tobacco (Table-2).

These findings were supported by the study conducted by Naomi Breslau et al. (1998), who reported that major depression plays a role in smoking and increases the risk of smoking initiation. The present study found that there was a significant relationship between nicotine dependence level and psychological wellbeing (Depression, Anxiety, Stress) (Table-3). These findings were supported by the study conducted by Merikangasph et al. (2001), which reported that individual and multiple psychiatric diagnoses were strongly associated with nicotine dependence.

The presence of an affective disorder and drug dependence generally increased the risk for co-occurring nicotine dependence (Gupta, S., Sarpal, S. S., Kumar, D., Kaur, T., & Arora, S., 2013). Another study conducted by Morissette et al. (2007) reported that tobacco use increases the risk for later development of anxiety disorders and smokers with anxiety disorders have more severe withdrawal symptoms during smoking cessation than smokers without anxiety disorders (Morissette, S. B., Tull, M. T., Gulliver, S. B., Kamholz, B. W., & Zimering, R. T.2007). A study conducted by Louisa et al. reported that there was an association with the use of tobacco and cannabis with increased rates of all mental health problems among the general population (Degenhardt, L., Hall, W., & Lynskey, M.2001). Another study conducted by Douglas et al. (2004) shows that tobacco use can reduce or ameliorate psychiatric symptoms, over-reliance on the self-medication hypothesis to explain the high rates of tobacco use in psychiatric populations which may result in inadequate attention to other potential explanations for this addictive behaviour among those with mental disorders (Ziedonis, D., Hitsman, B., Beckham, J. C., Zvolensky, M., Adler, L. E., Audrain-McGovern, J., & Calhoun, P. S., 2008). A study was conducted by Bridget et al. (2004) which revealed that there was a positive and significant relationship suggesting evidence that comorbid mood or anxiety disorders were related to substance use disorder and tobacco dependence also.(Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton, W., & Kaplan, K. (2004). Another study conducted by

Matthew et al. (2016) indicated that individuals with a lower level of nicotine dependence had increased cortisol responses to the stressor; it means there was a relationship with nicotine dependence level with stress level in tobacco dependence (T. Morris, M. C., Mielock, A. S., & Rao, U., 2016). The study findings (Table-4) indicated that multimode intervention comprised of Health education on the effect of nicotine in health, Group therapy and counselling for 21 days under the supervision of the researchers were found to be effective to overcome the tobacco consuming behaviour and enhance their psychological wellbeing. The study finding was supported by a study conducted by Michael et al. (2003), which reported that only counselling was not a useful tool to increase smoking abstinence and reduce tobacco withdrawal symptoms (Degenhardt, L., Hall, W., & Lynskey, M., 2001). Another cross-sectional community-based study conducted by Gupta et al. (2013) reported that multimode interventions regarding health education /counselling should be adopted as a part of smoking and tobacco cessation program (Gupta, S., Sarpal, S. S., Kumar, D., Kaur, T., & Arora, S., 2013).

Conclusion

Nicotine dependence is a major health issue, and it can be preventable. Beedi and ST users are high in India in comparison to Cigarette smokers. Quitting a nicotine dependence product is a major life stressor, and it results in disturbances in mood, anxiety, sleep disturbances, and cognitive and psychomotor deficits. Our results also found that there was a significant relationship between psychological well-being (Depression, Anxiety, and Stress) and nicotine dependence level. There is a lack of existing evidence-based interventions that have a beneficial effect on smoking and dual tobacco users. The present study findings could help mental health professionals, tobacco researchers into the development of new interventions and consider innovative harm reduction strategies. Hence there is a need for greater collaboration between mental health researchers and nicotine and tobacco researchers who need better understanding and develop new treatment strategies for co-

occurring nicotine dependence and mental illness in the general population.

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