DOI: 10.53555/ks.v12i3.2989

# The Impact of Counseling on Smoking Cessation in Cardiovascular Disease Patients

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#### Abstract

Smoking continues to be the primary preventable cause of morbidity and mortality in cardiovascular disease patients. Smoking is well established risk factor for coronary heart disease. Cessation of smoking decreases the incidence of cardiovascular disease as well as mortality and additional cardiac events. The present study aimed to examine the impact of counseling on smoking reduction or cessation in cardiovascular disease patients (CVD). We examined the effect of psychosocial intervention, including counseling, telephone assistance, and self-help materials, on male smokers with cardiovascular disease (CVD). Participants of the study were randomly selected 60 male smokers CVD patients from OPD of two cardiology hospitals and we used a pretest posttest design by randomly allocating the participants to the control and intervention groups. We used the cigarette dependence scale (CDS-12) which is a reliable and valid measure of nicotine dependence and measures the progress of the cessation intervention. The main study outcome was the reduction scores o on the questionnaire or cessation of smoking at follow ups. The results of the study reported that psychological intervention of counseling was effective in reducing smoking scores and cessation in CVD management program can help reduce morbidity and control of this preventable risk factor. Due to the substantial consequences related to smoking, psychological intervention of counseling may assist CVD patients to stop smoking, especially those with a higher degree of nicotine dependence and those with difficulty in quitting smoking.

Keywords: Smoking cessation, Cardiovascular disease, Counseling

#### Introduction

Smoking is a significant risk factor in the development of coronary heart disease. The risk of mortality from CVD is increased by smoking. Both active smoking and secondhand smoke exposure contribute to almost one third of the mortality caused by coronary heart disease.

Numerous studies have been carried out regarding the effects of stopping smoking.

Smoking triggers oxidative processes, hampers platelet function, causes inflammation, and increases the 10-year risk of fatal events in smokers by double compared to nonsmokers. There was 90% reduction in mortality risk if the cessation was done at the age of 40 years (Gallucci et al., 2020). Cardiovascular disease is the major cause of mortality and health problem globally. The main risk factors for CVD, which contribute to a significant number of deaths worldwide, include hypertension, cigarette smoking, diabetes mellitus or high blood sugar levels, raised cholesterol levels, and obesity or being overweight ( Amini et al., 2021). According to Kondo et al. (2011), an evident increase in the incidence of CVD was noted in young and middle-aged persons who smoked 11 to 20 cigarettes daily. Stopping smoking led to a decrease in the number of incidences of CVD. The study found that quitting smoking for a minimum of 4 years had a statistically significant impact on reducing CVD. According to another study, coronary heart disease (CHD) prevention involves the identification and management of individual and community level risk factors (Wong, 2014). Cessation of smoking is the most economically efficient approach to preventing cardiovascular disease (CVD). Strategies to encourage it involve providing concise guidance, psychotherapy and behavioral interventions, as well as using medication-based treatments. Patients should also refrain from exposure to secondhand smoke. Compared to receiving no therapy, providing brief guidance doubles the likelihood of successfully stopping smoking in short term. However, more thorough advice and support, such as behavioral treatments, telephone support, or self-help measures, are even more beneficial. Goettler et al., (2020) reported that interventions based on evidence that aid in smoking cessation, including comprehensive counseling were lacking in use. A strong link was observed between being referred to a cardiac rehabilitation program and

successfully quitting smoking. General practitioners and cardiologists may improve non-pharmacological management of risk factors, with a special emphasis on providing counselling.

### Literature Review

Smoking is the primary risk factor responsible for the disease burden all over the world (Stanaway et al., 2018). There is compelling data indicating that providing smokers with one-on-one counseling for smoking cessation can effectively help them quit. There is evidence of moderate quality supporting both the idea that more intensive counseling is beneficial than brief counseling interventions and that the relative benefit of using counseling in addition to medication is smaller (Lancaster & Stead, 2017). Gilgien-Dénéréaz et al., (2022) reported that the implementation smoking cessation counseling systematically in hospitalized smokers with acute coronary syndrome was not helpful after 5 years, nor did it lead to a decrease in the recurrence of cardiovascular events, when compared to the use of opportunistic smoking cessation counseling during hospitalization. There is a need for studies that have sufficient power to assess long-term smoking abstinence. Evidence supports the notion that proactive telephone counseling aids smokers who seek assistance from quitlines. Additionally, it was noted that smoking cessation rates were higher in proactive telephone counseling as compared to quit rates (Matkin et al., 2019). The method of delivering smoking cessation counseling does not seem to have a significant impact on the long-term success of quitting smoking. This discovery is especially significant for individuals who cannot participate in face-to-face cessation counseling because of factors such as limited availability or physical limitations. Additionally, the research findings indicated that participants who were younger and had lesser levels of education exhibited a higher propensity to discontinue their smoking cessation endeavors or to abandon their program altogether. This suggests that there are still differences in smoking cessation rates when standardized counselling is given, indicating that specific counselling may be required for particular populations (Poole et al., 2023). A metaanalysis showed that both individual and telephone counselling are effective in helping people with CVD in smoking cessation (Suissa et al., 2017). Although there is a substantial body of research on smoking cessation, only a limited number of studies have specifically targeted individuals with cardiovascular conditions. The efficacy of group or individual cessation programs in cardiovascular patient populations is inconclusive. Additional investigation is required to discover efficacious quitting treatments for persons suffering from cardiovascular disorders. However, systematic review determined that providing a combination of smoking cessation therapies to people with cardiovascular conditions may yield higher rates of success (Wiggers et al., 2003). Smoking is contributing factor to coronary heart disease, and ceasing this habit diminishes the associated risk. Behavioral therapy, self-help materials and telephone support helped individuals with coronary heart disease to quit smoking when administered for a duration of more than one month. Evidence showed that after six months, psychosocial therapies improved cessation rates. As a result of the combination of intervention measures utilized in the majority of trials, no singular strategy proved to be more effective than others (Barth et al., 2008). In order to establish a sustainable cessation program, it is necessary to consistently advocate for the tobacco cessation needs of physicians. As individuals become more receptive to the guidance provided by healthcare experts, implementing a structured cessation intervention could enhance patients' determination to quit using tobacco (Jubayer et al., 2021). The primary cause of mortality in Pakistan is CVD, presenting a significant public health concern. It affects approximately 17.5% of the populace, of which 18.3% of women and 16.6% of males are affected. Smoking is mainly recognized as a significant contributor to cardiovascular risk (Zubair et al., 2018). When compared to normal treatment, post-discharge telephone and in-person counseling interventions enhanced the rates of smoking abstinence among cardiac patients (Berndt et al., 2017). CVD patients hospitalized should be involved in smoking cessation interventions, including counselling and medication and integrated into post-discharge support. This recommendation is based on the substantial impact that quitting smoking has on subsequent cardiovascular morbidity and mortality (Reid et al., 2018).

### Methodology

The effect of counseling on smoking reduction or cessation was studied during the year 2023 by recruiting 60 male smoker CVD participants from the outpatient departments (OPDs) of two cardiology hospitals ( one government and one private) hospitals of Rawalpindi, Pakistan. The inclusion criteria was male smoker CVD patients aged 40 to 65 years. The exclusion criteria for the study was the smokers already using pharmacotherapy or counseling, cognitive issues or lung disease. The random sampling technique was used for the present study. Out of 60 participants (N = 30), half of participants were randomly allocated to the intervention and half to the control group (n = 30). The size of sample was estimated with the software G\*Power version 3.1.9.7, at a significance level of 5% and a power of 80% (Faul et al., 2009; Kang, 2021). We used a pretest-posttest design to study the effect of intervention of counseling for cessation or reduction of smoking.

For the collection of data on smoking scores, the cigarette dependence scale with 12 items (CDS-12), with a good test-retest reliability ( $r \ge 0.83$ ) and high internal consistency (Cronbach's alpha  $\ge 0.90$ ) was administered to the

participants of the intervention group. It is a valid measure of compulsions, withdrawal symptoms, and dependence on cigarette smoking. This is a useful instrument for researchers and clinicians (Etter et al., 2003). No intervention was administered to the control group except standard care. The baseline data was recorded before the psychological intervention of counseling was administered to the intervention group. The intervention group was given with a free 60-minute group therapy session, self-help material, and 15-minute telephone follow-ups at weeks 1, 2, 3, 4, 6, and 8, as well as at 3, 4, and 5 months (Chen et al., 2014). The session focused on counseling regarding the detrimental consequences of smoking, the benefits of stopping, techniques for managing withdrawal symptoms, and tactics for preventing relapses. The self-help resources comprised a smoking cessation leaflet containing details regarding the detrimental consequences of smoking, advantages of quitting, and instructions for quitting smoking. Post-intervention data was recorded after one and a half months and three months after the intervention.

Table 1 Demonstration of the second states of the second state and

able 1. Demograp	nic characteristics of the p	pariicipanis	
Characteristics	п	%	
Gender			
Male	60	100	
Female	0	0	
Age			
Middle age (40 –50 years)	27	45	
Old age (51–65 years)	33	55	
Education			
Matric	15	25	
Graduate	25	41.7	
Postgraduate	20	33.3	
Socioeconomic Status			
Low socioeconomic status	26	43.3	
Medium socioeconomic status	19	31.7	
High socioeconomic status	15	25	

#### **Results and Discussion**

Table 1 displays the sociodemographic information of the study participants. The smoking cessation interventional study comprised CVD patients who were smoking. Of the 60 participants, all (100%) were male CVD patients who were smoking. Regarding the age of the participants, 27 (45%) and 33 (55%) were between the ages of 40 – 50 years and 51 –65 years, respectively. The study participants provided information about their educational backgrounds. Out of 60, 15 (25%) were matric, 25 (41.7%) were graduates, and 20 (33.3%) were postgraduates. In terms of socioeconomic status (SES), 26 (43.3%) reported low SES, 19 (31.7%) reported medium SES and 15 ( 25%) had high SES.

	Statistics			df		Sig	
Pretest	0.99			60		0.72	
Posttest1	0.98			60		0.47	
Posttest2	0.96			60		0.06	
Table 3. Be	ox's Test of Eq	uality of Covar	iance M	[atrices f	or Counseling Smo	king Cessation in C	VD Patients
	Box's M				11.33		
	F				1.78		
	df1		6				
<i>df2</i> Significance				24373.13			
				0.10			
	Significance				0.10		
Ta	able 4. Mauch	ly's Test of Spl	<i>hericity</i>	for coun.	seling smoking cessa	ation in CVD paties	nts
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Ta in Subject Effect rette Smoking es Table 5.	able 4. Mauch Macuchly's 0.96	hy's Test of Sph Approx. Chi-Square 0.24 ention of Coum	df 2 seling fo	for coun. Sig. 0.30 r Smoki	0.10 seling smoking cesse Greenhouse Geisser 0.96 ing Cessation in M Postte	ation in CVD patien Epsilon Huynh-Feldt 1.00 Tale CVD Smokers Pest 2.	nts Lower- boun 0 .50 (N = 60)

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Intervention	29.50	2.91	18.07	3.16	14.40	2.61	30	
Control	26.20	2.94	23.67	4.15	25.17	2.83	30	

Table 5 indicates the means, standard deviation of pretest, postest1 and posttest 2 the intervention and control group.

**Table 6.** Repeated Measures ANOVA Within Subject Results of Intervention of Counseling for Smoking Cessation in Male

 CVD Smokers

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Variable	Test	F	Þ	Partial <sub>7</sub> 2
Cigarette	Sphericity Assumed	145.93	0.00	0.72
Smoking	Greenhouse-Geisser effects	145.93	0.00	0.72
Scores	Hyphen-Feldt	145.93	0.00	0.72
	Low-bound	145.93	0.00	0.72

The influence of counseling for smoking cessation in male smoker CVD patients was examined. It was hypothesized that CVD patients given intervention of counseling for smoking cessation would report low posttest scores on smoking cessation questionnaires. A repeated measure ANOVA within the subjects was conducted to compare the smoking scores at three points in time (pretest, posttest1and Posttest 2).

The results in Table 6 revealed that the smoking scores of CVD patients significantly differed between the pretest (M = 29.50 SD = 2.91), posttest-1 (M = 18.07 SD = 3.16), and posttest 2 (M = 14.40 SD = 2.61), F (2, 58) = 185.59, p < 0.01. The effect size of  $\eta 2 = 0.77$  was noted, which was a large effect size.

Dependent Variable	(I) Factor 1	(J)Factor 1	Mean Difference (I-J)	Standard Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Cigarette Smoking Scores	Pretest	Posttest 1	-6.98*	0.55	.000	5.62	8.35
		Posttest 2	-8.07*	0.46	.000	6.93	9.21
	Posttest 1	Posttest 2	-1.08	0.52	.121	2.36	0.19

To see the differences between pretest, posttest 1 and posttests 2 scores, post hoc analysis was conducted (Table 7), which reported significant differences among pretest, posttest 1 and posttest 2. Whereas we found no significant differences between posttest 1 and posttest 2.

### Discussion

The current study assessed the efficacy of counseling as a psychological intervention for the purpose of reducing or quitting smoking. Male CVD smokers exhibited a substantial reduction in mean scores subsequent to receiving counseling sessions at 1.5 and 3 months. At 3 months( last follow up 9 participants (30%) from the intervention group reported complete cessation of smoking. Further studies with longer follow up and other therapies like behavioral therapy can give better results. Comparable results were reported by Suissa et al., (2017) regarding the efficacy of individual and telephone counseling as smoking cessation strategies for CVD patients. Kim et al., 2013 suggested that in order to achieve a more substantial reduction in smoking prevalence among patients diagnosed with cardiovascular disease (CVD), it is imperative to implement continuous and more intensive smoking cessation initiatives that consider the distinct socioeconomic, behavioral, and clinical characteristics of each individual. In the future, it would be advantageous to identify these individuals not solely in clinical settings, but also in the broader community, and devise optimal counseling strategies to mitigate their risk.

## Conclusion

The present study demonstrated that male patients with CVD who smoke are more likely to quit smoking with counseling, telephone support and self-help material. Future studies should, however, aim to recruit a large representative sample of individuals from various geographic areas. By studying the effects of various psychological therapies on smoking cessation in patients with CVD, future research can build on the findings of this study. Counseling as a psychological intervention can be beneficial for cardiovascular disease (CVD) patients who are highly dependent on nicotine and struggle to quit smoking. This is particularly essential because continued smoking has significant implications for the patient's health and increases the risk of CVD.

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