ORIGINAL ARTICLE
SMOKING CESSATION AFTER COUNSELLING IN PATIENTS PRESENTING WITH ACUTE CORONARY SYNDROME

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Background: The long-term cardiovascular health risks associated with cigarette smoking are well established. It is a major risk factor for all manifestations of coronary artery disease, stroke, and peripheral vascular disease. Patients with acute coronary syndrome, who quit smoking, reduce their risk of cardiovascular events immediately and significantly when compared to those who continue smoking. The study was conducted to determine the frequency of smoking cessation after counselling in patients presenting with acute coronary syndrome (ACS). **Methods:** Patients of age 35–80 years of either gender presenting with Acute coronary syndrome presented in emergency within 12 hours of symptoms having history of smoking (>1pack year for >5 years) were included in the study. A total 225 patients were enrolled in the study from emergency of Punjab institute of cardiology, Lahore for the duration of six months. Informed consent was obtained from all patients. Their demographic information was also noted. Then patients under went counselling session with researcher himself in presence of psychiatrist from Department of Psychiatry, Services hospital, Lahore. After admitting patients in ward, patients received standard in-hospital treatment for smoking cessation which consisted of an assessment of their smoking behaviour and a personalized brief quit advice. Then patients were followed-up for 12 weeks. On weekly visit, patients were counselled for smoking cessation. After 12 weeks, patients were assessed for cessation of smoking. **Results:** Smoking cessation was seen in only 37 (16.4%) in ACS patients. Highest frequency of smoking cessation was seen in patients >65 years of age, i.e., 35.1%. Highest frequency for smoking cessation was seen in patients whose BMI was <30 (70.3%), patients with low socioeconomic status (45.9%) and patients with educational status as under matric (40.5%). None of these factors were significantly associated with smoking cessation in patients who presented with ACS**. Conclusion:** Results of this study demonstrate low frequency of smoking cessation among patients presenting with ACS. However, there is a strong need to identify those factors that were associated with failure to reduce smoking.
Keywords: Smoking cessation; Counselling; Acute coronary syndrome

INTRODUCTION

Cardiovascular disease is the leading cause of death and the second largest source of healthcare costs.[1] A third of cardiovascular disease mortality and hospital admissions are caused by coronary heart disease.[2] The pathologic process leading to coronary artery disease begins early in life, though the clinical consequences of atherosclerosis are apparent mainly in older adults. Smoking seems to be the most important risk factor for myocardial infarction events among young individuals. In fact, active and passive smokers are exposed to a wide range of substances with a potential impact on atherogenesis.[3]

Smoking cessation after a first coronary event such as a myocardial infarction significantly reduces the risk of mortality, hospitalization rates and reoccurrence. Smoking cessation is thus very relevant to patients with established coronary heart disease. Nevertheless, over half of those patients who were smokers prior to hospitalization for coronary heart disease continue smoking after hospital discharge.[4]

Cardiac patients who continue smoking after hospitalization are characterized as highly dependent smokers with no or low future intentions to quit.[5]

Earlier research showed that providing brief cessation support is not effective enough to help cardiac patients to quit smoking permanently. Hence, there is a need for more intensive smoking cessation interventions for this patient group. Interventions proven to increase smoking cessation rates in hospitalized smokers in general are promising.[1] Smoking relapse after acute coronary syndromes is associated with increased mortality, and counselling interventions should be integrated into the post-discharge support to reduce the negative effects of smoking resumption.[6]

One study conducted in Spain, has reported that the smoking cessation was observed in 61.9% cases.[7] Another study conducted in Czech, Central Europe showed that about 57.9% cases quit smoking after counselling.[8] A study conducted in Netherland, Europe, showed that about 30.8% cases quit smoking

after counselling.[9] Another study conducted in Boston, USA showed that about 28.9% cases quit smoking after counselling.[10] Chouinard et al also reported that about 24.5% cases quit smoking after counselling.[11]

However, one study conducted in USA, showed that only 10% cases quit smoking after counselling.[12] And one more study conducted in Newcastle, Australia also supported the evidence and reported that only 7.7% cases quit smoking after counselling.[13]

Rationale of this study is to determine the frequency of smoking cessation after counselling in patients presenting with acute coronary syndrome. The research work conducted in Western countries or say in developed countries showed that there are high chances of smoking cessation after counselling in cardiac patients. However, in some countries the smoking cessation after counselling was low. Moreover, the previously reported data has also controversy. Unluckily, there is no local evidence available in literature which showed that how much counselling is effective in a developing country like Pakistan. Through this study we want to get the local estimates, so that in future we may be able to implement the results of this study and implement the post-ACS counselling sessions during follow-up visits to prevent the patients from hazardous effects of smoking particularly after ACS. This will improve our practice as well as will also decrease the number of patients with repeat ACS.

MATERIAL AND METHODS

This Descriptive case series was conducted in Cardiology Ward, Punjab Institute of Cardiology, Lahore from 3rd August 2016 to 2nd Feb 2017. Sample size of 225 cases is calculated with 95% confidence level, 3.5% margin of error and taking expected percentage of smoking cessation, i.e., 7.7% in patients presenting with acute coronary syndrome. Non-Probability, Consecutive Sampling technique was employed.

Patients of age 35–80 years of either gender presenting with Acute coronary syndrome presented in emergency within 12 hours of symptoms having history of smoking (>1 pack year for >5 years) were included in the study. Patients who did not agree to take part in study or part of counselling sessions, Patients addict to alcohol or pan chewing or addicted to narcotics and Patients with diagnosis of psychological problem (on medical record and clinical evaluation) were excluded.

A total of 225 patients who fulfilled the selection criteria were enrolled in the study from emergency of PIC, Lahore. Informed consent was obtained from all patients. Their demographic information (name, age, gender, type of acute coronary syndrome, socioeconomic status, Education and contact number) was also noted. Then patients underwent counselling sessions with researcher himself in presence of psychiatrist from Department of Psychiatry, Services hospital, Lahore. After admitting patients in ward, patients received standard in-hospital treatment for smoking cessation which consisted of an assessment of their smoking behaviour and a personalized brief quit advice. Then patients were followed-up for 12 weeks. On weekly visit, patients were counselled for smoking cessation. After 12 weeks, patients were assessed for cessation of smoking. All this information was recorded on proforma. The collected data were analysed statistically by using SPSS version 21. Quantitative variables like age and BMI was calculated in form of mean±S.D. Qualitative variables like gender, type of ACS, SES, education and smoking cessation was calculated in form of frequency and percentage. Data were stratified for age, BMI, gender, SES, education and type of ACS. Post-stratification, chi-square test was applied to compare frequency of smoking cessation in stratified groups. p-value ≤0.05 was considered as significant.

RESULTS

Mean age of patients was 58.12±12.91 years. Minimum and max age of patients was 35 and 80 years respectively. There were 219 (97.3%) male and 6 (2.7%) female patients included in the study. Mean body mass index of patients was 27.09±4.29. Socioeconomic status of 78 (34.7%) patients was low, 65 (28.9%) patients socioeconomic status was middle and 82 (36.4%) patients belong to high socioeconomic status. As per education status of patients 69 (30.7%) were uneducated, 58 (25.8%) were under matric, 59 (26.2%) were graduate and 39 (17.3%) were post graduate. Unstable angina was seen in 65 (28.9%) patients, 78 (34.7%) patients presented with STEMI and 82(36.4%) patients presented with NSTEMI. Smoking cessation was seen in 37 (16.4%) patients. Smoking cessation and age of patients did not show statistically significant association with each other, i.e., p-value = 0.897 (Table-1). Smoking cessation was higher among female patients as compared to males and it was statistically significant, i.e., p-value = 0.001). Patients whose BMI was <30 among frequency of Smoking cessation was higher than that of patients with BMI ≥30. However, BMI of patients and Smoking cessation did not show any statistically significant association with each other, i.e., p-value =0.902 Socioeconomic status of patient and Smoking cessation did not show statistically significant association with each other, i.e., p-value = 0.252.

Highest frequency for Smoking cessation was seen in patients whose education status was under matric (40.5%) followed by patients who were uneducated (35.1%) and then graduates (13.5%) and the lowest frequency for Smoking cessation was see among patients who were post graduates. (10.8%). As per

this trend frequency for Smoking cessation was significantly higher among patients whose education status was lower, i.e., p-value =0.049. No statistically significant association was seen between ACS type and smoking cessation, i.e., p-value=0.846.

Table-1: Smoking cessation in relation to age, gender, BMI, socioeconomic status, education status of patients and ACS type

Smoking cessation in relation to age of patients			Chi-Square Test= 0.595	
Age	**Smoking Cessation**		**Total**	**_p_-value**
	Yes	**No**		
35–45	9 (24.3%)	39 (20.7%)	**48**	
46–55	7 (18.9%)	41 (21.8%)	**48**	
56–65	8 (21.6%)	48 (25.5%)	**56**	0.897
>65	13 (35.1%)	60 (31.9%)	**73**	
Total	**37**	**188**	**225**	
Smoking Cessation in relation to gender of patients			Chi-Square Test= 11.316	
Gender	**Smoking Cessation**		**Total**	
	Yes	**No**		
Male	33 (15.1%)	186 (84.9%)	**37**	
Female	4 (66.7%)	2 (33.3%)	**188**	0.001
Total	**219**	**6**	**225**	
Smoking Cessation in relation to BMI of patients			Chi-Square Test= 0.015	
BMI	**Smoking Cessation**		**Total**	
	Yes	**No**		
≥30	11 (29.7%)	54 (28.7%)	**65**	
<30	26 (70.3%)	134 (71.3%)	**160**	0.902
Total	**37**	**188**	**225**	
Smoking Cessation in relation to socioeconomic status of patients			Chi-Square Test= 2.756	
SES	**Smoking Cessation**		**Total**	
	Yes	**No**		
Low	17 (45.9%)	61 (32.4%)	**78**	
Middle	10 (27%)	55 (29.3%)	**65**	0.252
High	10 (27%)	72 (38.3%)	**82**	
Total	**37**	**188**	**225**	
Smoking Cessation in relation to educational status of patients			Chi-Square Test= 7.846	
Education	**Smoking Cessation**		**Total**	
	Yes	**No**		
Uneducated	13 (35.1%)	56 (29.8%)	**69**	
Under Matric	15 (40.5%)	43 (22.9%)	**58**	
Graduate	5 (13.5%)	54 (28.7%)	**59**	0.049
Post Graduate	4 (10.8%)	35 (18.6%)	**39**	
Total	**37**	**188**	**225**	
Smoking Cessation in relation to ACS type			Chi-Square Test= 0.335	
ACS Type	**Smoking Cessation**		**Total**	
	Yes	**No**		
UA	11 (29.7%)	54 (28.7%)	**65**	
STEMI	14 (37.8%)	64 (34%)	**78**	0.846
NSTEMI	12 (32.4%)	70 (37.2%)	**82**	
Total	**37**	**188**	**225**	

DISCUSSION

Not only in primary, but also in secondary prevention smoking cessation is highly relevant. Patients with ACS who quit smoking, reduce their risk of cardiovascular events immediately and significantly when compared to those who continue smoking.[14,15]

Complete cessation of active tobacco smoking is associated with a significant 30–40% reduction in the relative risk of death after ACS.[16] In light of these major benefits, active in-hospital and post-discharge interventions are currently recommended to assist smokers in quitting after ACS.[17] However, smoking cessation interventions appear to be largely underutilized in cardiovascular institutions providing

acute care to ACS patients.[18] As a consequence, smoking relapse rates among smokers who have become abstinent during an admission for ACS may exceed 60% at 12 months from discharge.[6]

Furio Colivicchi from Italy in his study reported that that most of cardiology units fail to provide recommended smoking care interventions to ACS patients. In particular, brief smoking cessation advice before discharge represents the only systematically implemented approach in clinical practice (22 units; 100%).[19]

In this study smoking cessation was seen in only 37 (16.4%) patients who presented with ACS. Highest frequency of smoking cessation was seen in patients who were >65 years of age, i.e., 35.1%.

In this study, we also found 6 smoker females and among them 4 females out of 6 (66.7%) had smoking cessation which was significantly higher than males. Patients whose BMI was <30 (70.3%), patients with low socioeconomic status (45.9%) and patients with educational status as under matric (40.5%). None of these factors were significantly associated with smoking cessation in patients who presented with ACS.

Bolamn et al[20] and Hajek et al[21] who assessed the effect of a minimal smoking cessation intervention on patients with cardiovascular disease during their hospitalization period; these authors reported that the intervention had been unable to maintain abstinence from smoking at 12 months after discharge from hospital.

A Cochrane review concludes that patients admitted for cardiovascular disease are more receptive to smoking cessation interventions, probably due to their perception of the seriousness of their condition.[22]

One study conducted in Spain, has reported that the smoking cessation was observed in 61.9% cases.[7] Another study conducted in Czech, Central Europe showed that about 57.9% cases quit smoking after counselling.[8] Frequency of smoking cessation in this study was quite lower as that of mentioned in the above studies. This difference can be explained on the basis of the interventional programs used for counselling of the patients for smoking cessation.

Increased quitting rates are perhaps to be found in studies where more attention is given to enhance the patient's readiness to quit smoking. Furthermore, it was believed that studies that offer a combination of smoking cessation interventions to cardiovascular patients may be more successful.

However, in our country there is no proper set up for counselling services as well as different interventions in cardiology units of hospitals. It's a common practice of doctors to verbally advice the patients for smoking cessation without any proper follow up by the patients.

However there are certain studies from developed countries who reported lower frequency for smoking cessation in cardiac patients.[11]

However, one study conducted in USA, showed that only 10% cases quit smoking after counselling.[12] And one more study conducted in Newcastle, Australia also supported the evidence and reported that only 7.7% cases quit smoking after counselling.[13]

As indicated by the earlier studies in general populations of smokers, low SES groups profited most from high intensity face-to-face interventions.[23] Studies have shown that individuals with a lower SES have a less favourable profile towards smoking than high SES patients due to a lower self-efficacy towards non-smoking, a less favourable social environment, less social support, and more stress and negative affect leading to fewer successful quit attempts.[24] Moreover, smokers with a low SES have been found to profit least from cessation methods due to, among other reasons, a lack of motivation to quit.[25,26] Studies therefore suggest the need for relatively intensive interventions for these groups.[23] In contrast, smokers with a high SES are recognized as more successful in quitting due to a higher intention to quit and may therefore profit sufficiently from somewhat less intensive interventions.

In this study, highest frequency of smoking cessation was found in patients with low socioeconomic status. This finding is quite interesting and contradicts the above-mentioned findings from different studies.

The absence of clearly effective smoking cessation treatments during hospitalization has led to research being promoted in this area, and a number of articles have now been published on the impact of different interventions and the factors that predict continued abstinence from smoking. Efforts to encourage and support smokers to quit are critical to prevent premature smoking-associated morbidity and mortality. Hospital settings are seldom equipped to help patients to quit smoking thus missing out a valuable opportunity to support patients at risk of smoking complications. Despite the availability of such interventions, smoking cessation remains a significant challenge to many individuals at risk. Previous studies have shown a significant impact of inpatient smoking cessation programs on patients with ACS. Smoking cessation (self-reported) was achieved in 46% of patients at 6 months after myocardial infarction (MI), with greater odds of cessation for those offered inpatient smoking cessation services.[18]

Limitation of our study was that patients who resume smoking after initial quilting after 12 weeks couldn't be accounted for

CONCLUSION

We observed low frequency of smoking cessation in patients with acute coronary syndrome There is a strong need to identify those factors that were associated with failure to reduce smoking. Services leading to smoking cessation interventions are helpful and urgently needed as a secondary prevention for cardiovascular disease.

AUTHORS' CONTRIBUTION

MAA: Main paper writing and data collection. SM: Paper writing, discussion. KA: Statistical analysis.

REFERENCES

1. Berndt N, Bolman C, Lechner L, Mudde A, Verheugt FW, de Vries H. Effectiveness of two intensive treatment methods for smoking cessation and relapse prevention in patients with coronary heart disease: study protocol and baseline description. BMC Cardiovasc Disord 2012;12:33.

2. Shah AM, Pfeffer MA, Hartley LH, Moyé LA, Gersh BJ, Rutherford JD, *et al*. Risk of all-cause mortality, recurrent myocardial infarction, and heart failure hospitalization associated with smoking status following myocardial infarction with left ventricular dysfunction. Am J Cardiol 2010;106(7):911–6.
3. Hbejan K. Smoking Effect on Ischemic Heart Disease in Young Patients. Heart Views 2011;12(1):1–6.
4. Berndt N, Bolman C, Mudde A, Verheugt F, de Vries H, Lechner L. Risk groups and predictors of short-term abstinence from smoking in patients with coronary heart disease. Heart Lung J Acute Crit Care 2012;41(4):332–43.
5. Costa ML, Cohen JE, Chaiton MO, Ip D, McDonald P, Ferrence R. "Hardcore" definitions and their application to a population-based sample of smokers. Nicotine Tob Res 2010;12(8):860–4.
6. Colivicchi F, Mocini D, Tubaro M, Aiello A, Clavario P, Santini M. Effect of smoking relapse on outcome after acute coronary syndromes. Am J Cardiol 2011;108(6):804–8.
7. Moreno Ortigosa A, Ochoa Gómez FJ, Ramalle-Gomara E, Saralegui Reta I, Fernandez Esteban MV, Quintana Díaz M. Efficacy of an intervention in smoking cessation in patients with myocardial infarction. Med Clín (Barc) 2000;114(6):209–10.
8. Croghan G, Croghan I, Frost M, Sloan J, Novotny P, Nelson M, *et al*. Smoking cessation interventions and post-operative outcomes in esophageal and lung cancer patients. Society for Research on Nicotine and Tobacco 11th Annual Meeting; 2005.
9. Bolman C, de VH, van Breukelen G. Evaluation of a nurse-managed minimal-contact smoking cessation intervention for cardiac inpatients. Health Edu Res 2002;17(1):99–116.
10. Rigotti NA, Arnsten JH, McKool KM, Wood-Reid KM, Pasternak RC, Singer DE. Efficacy of a smoking cessation program for hospital patients. Arch Inter Med 1997;157(22):2653–60.
11. Chouinard MC, Robichaud-Ekstrand S. The effectiveness of a nursing inpatient smoking cessation program in individuals with cardiovascular disease. Nurs Res 2005;54(4):243–54.
12. Hennrikus DJ, Lando HA, McCarty MC, Klevan D, Holtan N, Huebsch JA, *et al*. The TEAM project: the effectiveness of smoking cessation intervention with hospital patients. Prev Med 2005;40(3):249–58.
13. Nagle AL, Hensley MJ, Schofield MJ, Koschel AJ. A randomised controlled trial to evaluate the efficacy of a nurse-provided intervention for hospitalised smokers. Aust N Z J Public Health 2005;29(3):285–91.
14. Jonas MA, Oates JA, Ockene JK, Hennekens CH. Statement on smoking and cardiovascular disease for health care professionals. American Heart Association. Circulation 1992;86(5):1664–9.
15. Wiggers LC, Smets EM, de Haes JC, Peters RJ, Legemate DA. Smoking cessation interventions in cardiovascular patients. Eur J Vasc Endovasc Surg 2003;26(5):467–75.
16. Critchley JA, Capewell S. Mortality risk reduction associated with smoking cessation in patients with coronary heart disease: a systematic review. JAMA 2003;290(1):86–97.
17. Krumholz HM, Anderson JL, Bachelder BL, Fesmire FM, Fihn SD, Foody JM, *et al*. ACC/AHA 2008 Performance Measures for Adults With ST-Elevation and Non–ST-Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Performance Measures (Writing Committee to Develop Performance Measures for ST-Elevation and Non–ST-Elevation Myocardial Infarction) Developed in Collaboration With the American Academy of Family Physicians and American College of Emergency Physicians Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, Society for Cardiovascular Angiography and Interventions, and Society of Hospital Medicine. J Am Coll Cardiol 2008;52(24):2046–99.
18. Dawood N, Vaccarino V, Reid KJ, Spertus JA, Hamid N, Parashar S. Predictors of smoking cessation after a myocardial infarction: the role of institutional smoking cessation programs in improving success. Arch Intern Med 2008;168(18):1961–7.
19. Colivicchi F, Mocini D, Uguccioni M, Strano S, Imperoli G, Santini M. Smoking cessation interventions after Acute Coronary Syndromes. Results of a cross-sectional survey in the Lazio Region of Italy. Monaldi Arch Chest Dis 2015;78(2):85–8.
20. Bolman C, De Vries H, van Breukelen G. A minimal-contact intervention for cardiac inpatients: long-term effects on smoking cessation. Prev Med 2002;35(2):181–92.
21. Hajek P, Taylor TZ, Mills P. Brief intervention during hospital admission to help patients to give up smoking after myocardial infarction and bypass surgery: randomised controlled trial. BMJ 2002;324(7329):87–9.
22. Rigotti N, Munafo MR, Stead LF. Interventions for smoking cessation in hospitalised patients. Cochrane Databese Syst Rev 2007;(3):CD001837.
23. Siahpush M, McNeill A, Borland R, Fong G. Socioeconomic variations in nicotine dependence, self-efficacy, and intention to quit across four countries: findings from the International Tobacco Control (ITC) Four Country Survey. Tob Control 2006;15(Suppl 3):iii71–5.
24. Businelle MS, Kendzor DE, Reitzel LR, Costello TJ, Cofta-Woerpel L, Li Y, *et al*. Mechanisms linking socioeconomic status to smoking cessation: a structural equation modeling approach. Health Psychol 2010;29(3):262–73.
25. Reid JL, Hammond D, Boudreau C, Fong GT, Siahpush M. Socioeconomic disparities in quit intentions, quit attempts, and smoking abstinence among smokers in four western countries: findings from the International Tobacco Control Four Country Survey. Nicotine Tob Res 2010;12(Suppl 1):S20–33.
26. Hiscock R, Judge K, Bauld L. Social inequalities in quitting smoking: what factors mediate the relationship between socioeconomic position and smoking cessation? J Public Health (Oxf) 2010;33(1):39–47.

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