Cor et Vasa

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/crvasa

Původní sdělení | Original research article

Impact of the radial versus femoral access for primary percutaneous intervention on smoking cessation rates: A paradoxus between the health related quality of life and smoking quitting?

Bulent Deveci[a], Ozcan Ozeke[b], Murat Gul[c], B. Acar[b], E. Hande Ozcan Cetin[b], Cengiz Burak[b], Serkan Cay[b], Serkan Topaloglu[b], Dursun Aras[b], Erdogan Ilkay[b]

[a] *Canakkale Onsekiz Mart University, Department of Cardiology, Canakkale, Turecko*
[b] *Health Sciences University, Turkiye Yuksek Ihtisas Training and Research Hospital, Department of Cardiology, Ankara, Turecko*
[c] *Aksaray University, Turkiye Yuksek Ihtisas Training and Research Hospital, Department of Cardiology, Aksaray, Turecko*

ARTICLE INFO

Article history:
Received: 14. 11. 2017
Received in revised form: 5. 3. 2018
Accepted: 7. 3. 2018
Available online: 3. 4. 2018

Klíčová slova:
Femorální přístup
Primární perkutánní koronární intervence
Radiální přístup
STEMI
Zanechání kouření

SOUHRN

Kontext: Zanechání kouření je potenciálně nejúčinnějším opatřením v rámci sekundární prevence a po akutním infarktu myokardu s elevacemi úseku ST (STEMI) sice zlepšuje prognózu, nicméně více než polovina pacientů po STEMI nadále kouří. Bylo prokázáno, že povědomí o závažnosti onemocnění a krátkodobý pobyt v nemocnici po zařazujícím STEMI jsou spojeny s kuřáctvím přetrvávajícím i po STEMI.
Cíl: Zhodnotit paradoxní vztah mezi procenty osob, které zanechaly kouření, a skóre kvality života v souvislosti se zdravím (health-related quality of life, QOL) u nemocného se STEMI, u něhož byla provedena primární perkutánní koronární intervence (pPCI) radiálním (radial access, RA) versus femorálním přístupem (femoral access, FA).
Metody: Do naší studie bylo zařazeno 138 pacientů se STEMI, u nichž byla provedena pPCI s použitím FA nebo RA. Byla stanovena procenta osob, které zanechaly kouření, a vypočítána skóre QOL.
Výsledky: Pacienti ve skupině s RA (46 osob, 57 ± 9 let, 87 % mužů) měli v prvním týdnu po pPCI vyšší skóre v dotazníku European Quality of Life-5 Dimensions (EQ-5D) oproti skupině FA (92 pacientů, 57 ± 8 let, 75 % mužů [FA: medián 0,81 (0,22) vs. RA: 1 (0,22); $p = 0,042$]), i když při vstupním vyšetření byly hodnoty podobné (FA: medián 1 [0] vs. RA: 1 [0]; $p = 0,992$). Celková délka pobytu v nemocnici (RA: medián 3 [1] dny vs. FA: 4 [1]; $p < 0,001$) byla ve skupině RA významně kratší. Zatímco procento osob, které do jednoho roku po propuštění z nemocnice zanechaly kouření, dosáhlo ve skupině RA hodnoty 41 %, ve skupině FA to bylo 67 % ($p = 0,003$). Nezávislými prediktory pokračování v kouření po STEMI byly ženské pohlaví, doba od nástupu bolesti do dveří, a použití RA během pPCI.
Závěr: Tato studie prokázala, že procento osob, které zanechaly kouření, je ve skupině RA ve srovnání se skupinou FA nižší. Vyšší míra pohodlí při léčbě STEMI s použitím RA může být spojena s menším povědomím o závažnosti onemocnění a nižší motivací k zanechání kouření. Proto je třeba se při každé návštěvě pacienta u lékaře pacienta dotazovat, zda kouří, zvláště u pacientů po prodělané pPCI s použitím radiálního přístupu.

ABSTRACT

Background: Smoking cessation is potentially the most effective secondary prevention measure and improves prognosis after acute ST-segment elevation myocardial infarction (STEMI), but more than half of the patients continue to smoke after STEMI. The *a*wareness of the disease's severity and the short hospital stay at the index STEMI have been found to be associated with persistent smoking after STEMI.

Address: Ozcan Ozeke, MD, Türkiye Yüksek İhtisas Hastanesi, Kardiyoloji Klinigi, Ankara, 06100, Turecko, e-mail: ozcanozeke@gmail.com
DOI: 10.1016/j.crvasa.2018.03.006

Tento článek prosím citujte takto: B. Deveci, et al., Impact of the radial versus femoral access for primary percutaneous intervention on smoking cessation rates: A paradoxus between the health related quality of life and smoking quitting?, Cor et Vasa 60 (2018) e381–e386 as published in the online version of *Cor et Vasa* available at https://www.sciencedirect.com/science/article/pii/S0010865017301856

Objective: To assess whether the paradoxical relationship between smoking quitting rates and health-related quality of life (QOL) scores in STEMI patients undergoing primary percutaneous intervention (pPCI) by radial (RA) versus femoral approach (FA).
Methods: Our population is represented by 138 STEMI patients undergoing pPCI by FA or RA. The smoking cessation rates and QOL scores were evaluated.
Results: Patients at RA group (46 patients,57 ± 9 years, 87% male) had a higher European Quality of Life-5 Dimensions (EQ-5D) index score at post-PCI first week compared to FA group (92 patients, 57±8 years, 75% male) (FA: median 0.81 [0.22] vs. RA: 1 [0.22], $p = 0.042$), although it was similar at baseline (FA: median 1 [0] vs. RA: 1 [0], $p = 0.992$). Total hospital length of stay (RA: median 3 [1] day vs. FA: 4 [1], $p < 0.001$) was significantly reduced in the RA group. Whereas the smoking cessation rates at one-year post-discharge were 41% in RA group, it was 67% in FA group ($p = 0.003$). Female sex, pain-to-door time and RA during p-PCI were independent predictors of continued smoking after STEMI.
Conclusion: This study shows that the smoking cessation was lower in RA group compared to FA group. The more comfortable conditions of STEMI management related to RA may cause a lower awareness of the disease severity and lower motivation to quit smoking. Therefore, it is important to inquire about smoking status at each clinical encounter, particularly in patients undergoing pPCI by the radial approach.

Keywords:
Femoral approach
Primary percutaneous coronary intervention
Quitting
Radial approach
Smoking cessation
STEMI

Introduction

Transradial percutaneous coronary intervention (PCI) is a safe and effective method of coronary revascularization [1]. Although there has been also concern that technical difficulties by transradial approach (RA) can delay achievement of reperfusion during primary PCI (p-PCI) for acute ST-elevation myocardial infarction (STEMI); the RA has offered some advantages compared to transfemoral approach (FA) especially under conditions of aggressive anticoagulation and antiplatelet treatment [2].

Despite the established causal relationship between tobacco smoking and coronary artery disease [3], many patients continue to smoke after STEMI [4].This partly reflects ignorance of the beneficial effects of smoking cessation even after diagnosis. The other key drivers of smoking cessation are the awareness of the disease's severity [5]. Previous studies showed that a clinical event acts as an important motivator and may induce behavioral change, particularly if this event is perceived as life-threatening as is the case with patients' first STEMI [4] .Indeed, smokers are often strongly motivated to quit in that acute phase of the coronary event [6]; therefore, hospitalization for an acute cardiovascular event provides an important opportunity for smoking cessation. On the other side, the short hospital stay at the index STEMI has been found to be associated with persistent smoking after STEMI [7].The patient satisfaction with RA contributes to both physical and mental health-related quality of life (QOL) [8]; however, d*espite these apparent benefits* and encouraging global QOL findings in RA patients, these patients very often undervalue the disease's severity and usually have a misperception of the risk of STEMI. Therefore, we aimed to assess whether the paradoxical relationship between smoking quitting rates and QOL in STEMI patients undergoing primary PCI by RA versus FA.

Method

One hundred thirty-eight consecutive patients with STEMI undergoing p-PCI were included to study. Patients were divided into two groups as patients undergoing p-PCI transfemorally (FA group) and patients undergoing transradially (RA group) based on the operator's individual *preference*. All patients were active cigarette smokers at the time of admission. Never smokers, previous smokers and patients with crossover RA to FA were excluded. The professional inpatient or outpatient smoking cessation program has not received *any professional* patients in addition to usual *care* to *physician*-delivered *smoking cessation* advice and counseling.

The primary study endpoints were the periprocedural QOL measures and smoking cessation *rates at one year after discharge*. Extensive data, including self-reported smoking habits, were obtained at baseline and post-discharge one-year follow-up. Secondary endpoints included 1-year follow-up major adverse cardiac events.

We examined patient health status including QOL, symptoms, and functional capacity, at the baseline (prior to p-PCI) and post-PCI first week. Health status was assessed directly from patients using the European Quality of Life-5 Dimensions (EQ-5D) instrument, which includes five domains (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) using a 3-point scale (1 = no problems, 2 = moderate problems, 3 = extreme problems) [9]. From the health-state profile obtained, a scoring algorithm was used to calculate a total utility score (EQ-5D index score) between 0 (represents death) and 1.0 (represents perfect health).

Statistical analyses were performed using Statistical Package for Social Sciences (SPSS) for Windows 20 (IBM SPSS Inc., Chicago, IL). Assuming a ratio of 2 : 1 for FA to control RA subjects, a total sample size of 138 was calculated to achieve the desired power of 0.90 with an alpha value of 0.05. Normal distributions of variables were evaluated with Kolmogorov–Smirnov test. Numerical variables with a normal distribution were presented as the mean ± standard deviation and numerical variables with a skewed distribution were presented as the median (interquartile range) and categorical variables were presented as percentages (%). Two group comparisons of normally distributed variables were tested by unpaired t test. The nonparametric Mann–Whitney U-test was used for comparisons of non-normally distributed variables. Pre-

dictors of smoking cessation were determined by logistic regression analysis. For all tests, a two-tailed p-value less than 0.05 was defined statistically significant.

Results

There were 92 patients in FA group and 46 patients in RA group. Basal demographics and comorbidities were similar between groups (Table 1).

Patients at RA group had a higher EQ-5D index score at post-PCI first week compared to FA group (FA: median 0.81 [0.22] vs. RA: 1 [0.22], $p = 0.042$), although it was similar at baseline (FA: median 1 [0] vs. RA: 1 [0], $p = 0.992$). Patients in the RA group reported fewer problems with mobility (RA: 100% vs. FA: 91%, $p = 0.039$) and anxiety and/or depression (RA: 59% vs FA: 91%, $p < 0.001$), but higher problems with access site pain (RA: 22 % vs. FA: 8 %, $p < 0.026$). Total hospital length of stay was significantly shorter in the RA group (RA: median 3 [1] day vs. FA: 4 [1] day, $p < 0.001$) (Table 2). Whereas the smoking cessation rate at post-discharge one-year was 41 % in RA group, it was 67 % in FA group ($p = 0.003$). Female sex, pain-to-door time and RA during p-PCI were independent predictors of continued smoking after p-PCI in STEMI patients (Table 3). Since only two femoral arteriovenous fistulae and one mortality were detected in FA group at one-year follow-up, it was underpowered to compare clinical mortality and complications outcomes analyzed.

Discussion

We found that smoking cessation rate was statistically lower in RA group compared to FA group in STEMI patients undergoing p-PCI, and that RA approach was an independent predictor of continued smoking after p-PCI in STEMI patients despite higher QOL scores in RA group. These data underscore the importance of the need to emphasize cessation in those all STEMI patients but particularly those undergoing p-PCI by RA.

Smoking cessation is potentially the most effective secondary prevention measure and improves prognosis after STEMI, but more than half of the patients continue to smoke [10]. Moreover, two-thirds of patients return to smoking by 12 months after STEMI [11]. The Multiple Risk Factor Intervention Trial revealed that smoking cessation is the strongest predictor of lower rates of coronary artery disease as compared with other changes in risk factors, such as cholesterol and blood pressure lowering interventions in high-risk men [12]. However, smoking cessation is a difficult process which is influenced by many factors such as educational level, personality, psychosocial circumstances, work satisfaction, poor family income and the presence of a partner [13–15]. The long duration and high intensity of pre-STEMI smoking are also associated with smoking cessation rates in STEMI patients [7,16]. The immediate cessation after hospitalization for STEMI has been found to be an important predictor of successful quitters. However, the short hospital stay at the index STEMI has been found to be associated with persistent smoking after STEMI [7] probably since there was a gap between calculated and perceived cardiovascular risk [17]. Although the p*atient preference* and satisfaction are clearly in favor of *RA [18]* due to the better physical and mental health-related QOL [8], early ambulation with self-care and the associated reductions in bleeding/vascular complications and back pain [2,18], these patients may be un*aware* about his/her actual risk and *underestimate its* severity due to a short hospital stay [19] and

Table 1 – Basal demographic, clinical and angiographic features in STEMI patients undergoing p-PCI by transfemorally versus transradially.

STEMI patients treated by p-PCI	FA group (n = 92)	RA group (n = 46)	*p*-value
Age at diagnosis (year, mean ± SD)	57.29 ± 8.41	57.35 ± 9.32	0.878
Gender (male, %)	75%	87%	0.104
Hypertension (%)	46%	52 %	0.470
Diabetes mellitus (%)	33%	39%	0.448
Dyslipidemia (%)	25 %	30%	0.497
Premature family history for CAD (%)	32 %	28%	0.695
Body mass index (mean ± SD)	27.73± 4.55	27.21 ± 4.07	0.514
Smoked cigarettes/day at hospitalization (mean ± SD)	25.71 ± 7.69	25.11 ± 7.49	0.665
Smoking duration (year, mean ± SD)	29.96 ± 7.04	30.02 ± 6.95	0.959
Onset of pain to ED (hour; mean ± SD)	4.86 ± 1.98	4.37 ± 1.70	0.155
STEMI type (anterior, %)	60%	74%	0.102
Fluoroscopic time (minutes, median [IQR])	8 (2)	8 (2)	0.951
Door-to-balloon time (minutes, median [IQR])	45 (5)	45(5)	0.245
EQ-5D Index score, baseline (median [IQR])	1.00 (0)	1.00 (0)	0.992
EQ-5D Mobility at baseline (1 = no problems, %)	100%	100%	1
EQ-5D Self-care at baseline (1 = no problems, %)	99%	100%	0.478
EQ-5D Usual activities at baseline (1 = no problems, %)	98%	98%	1
EQ-5D Pain/discomfort at baseline (1 = no problems, %)	59%	92%	1
EQ-5DAnxiety/depression at baseline (1 = no problems, %)	97%	96%	0.747

CAD – coronary artery disease; ED – emergency department; E Q-5D – European Quality of Life-5 Dimensions; FA – transfemoral approach; IQR – interquantile range; PCI – primary percutaneous coronary intervention; RA – transradial approach; STEMI – ST elevation myocardial infarction; SD – standard deviation;

Table 2 – Comparison of quality of life indices and smoking quitting rates in STEMI patients undergoing p-PCI by transfemorally versus transradially.

STEMI patients treated by p-PCI	FA group (n = 92)	RA group (n = 46)	*p*-value
Hospital stay (day, median [IQR])	4 (1)	3 (1)	< 0,001
EQ-5D Index score post-PCI at 1st week (median [IQR])	0.81 (0.22)	1.00 (0.22)	0.042
EQ-5D Mobility at first week (1 = no problems, %)	91%	100%	0.039
EQ-5D Self-care at first week (1 = no problems, %)	99%	100%	0.478
EQ-5D Usual activities at first week (1 = no problems, %)	96%	98%	0.519
EQ-5D Pain/discomfort at first week (1 = no problems, %)	92%	78%	0.026
EQ-5D Anxiety/depression at first week (1 = no problems, %)	59%	91%	< 0.001
Smoking quitting rate at post-discharge one year (%)	67%	41%	0.003

EQ-5D – European Quality of Life-5 Dimensions; FA – transfemoral approach; IQR – interquantile range; p-PCI – primary percutaneous coronary intervention; RA – transradial approach; STEMI – ST elevation myocardial infarction.

Table 3 – Univariate and multivariate predictors of quitting smoking after STEMI.

	Univariate			Multivariate		
Variables	***p***	**OR**	**95% CI**	***p***	**OR**	**95% CI**
Age at diagnosis	0.635			–		
Female sex	0.014	3.37	1.27–8.93	0.033	2.99	1.10–8.17
Hypertension	0.344			–		
Diabetes mellitus	0.431			–		
Dyslipidemia	0.149			–		
Premature family history for CAD	0.806			–		
Body mass index	0.562			–		
Smoked cigarettes/day at the hospitalization	0.440			–		
Smoking duration	0.308			–		
Pain-to-door time	0.021	1.25	1.03–1.50	0.046	1.22	1.00–1.49
STEMI type (anterior)	0.525			–		
Door-to-baloon time	0.940			–		
Transradial access	0.004	2.94	1.41-6.10	0.011	1.34	1.07–1.69

CAD – coronary artery disease; STEMI – ST elevation myocardial infarction.

early ambulation compared to FA patients. In the RIVAL trial, 90% of patients randomized to undergo the RA reported a preference for the same approach if a repeat procedure was needed, as opposed to 49% in the FA arm [18]. Unfortunately, patients very often undervalue the disease's severity and usually have a misperception of risk, with an optimistic bias about their risk, therefore, post-MI hospitalization is a window of opportunity for smoking cessation interventions [7]. On the other side, although smoking cessation is probably the most important thing a smoker with STEMI can do to improve future health, many hospitals do not consistently offer tobacco use interventions to their patients. Indeed, the recent findings gave insight into the ways that doctors should offer smoking cessation support to patients with established cardiovascular disease, particularly after a period of hospitalization when the majority are highly motivated to stop smoking [20,21]. No safe level of smoking exists for cardiovascular disease [22,23]. Post-cessation body mass index change did not significantly modify the protective association of smoking cessation with STEMI [24]. Only complete cessation is protective and should be emphasized by all prevention measures and policies [22]. If a patient understands that a STEMI is potentially lethal, the fear of having a STEMI could act as an incentive for adopting a healthy lifestyle and smoking quitting. This seems a new smoker's paradox with regard to QOL and quitting rates [25].

There are some limitations of the study. In addition to small sample size, a degree of operator bias cannot be excluded in our study since the groups were not randomized. It was also underpowered to compare clinical outcomes analyzed. Moreover, determinants of smoking cessation after STEMI are multifactorial and we could not have been considered these determinants in detail. Smoking status was assessed by asking patients about their smoking behavior and, we were not able to confirm by biochemical validation. However, self-reports of smoking in observational studies in an adult population such as this have a high sensitivity and specificity [26].

In conclusion, current study suggested that more comfortable conditions of STEMI management related to RA may cause a lower awareness of the disease severity and lower motivation to quit smoking. Physicians should con-

sider the accuracy of the patients' perception of own risk and in the case of underestimation, work on calibrating this perception. It is important to request smoking status at each clinical encounter, and appropriate advice should be offered to help patients to stop cigarette smoking [27], particularly in patients undergoing procedures by the radial approach.

Conflict of interest
None declared.

Ethical statement
Authors state that the research was conducted according to ethical standards.

Informed consent
Informed consent was not necessary as it was anonymous registry and Ethics Committees were only informed about this study.

Acknowledgements
The abstract section of the current study was presented at the 14th International Update in Cardiology and Cardiovascular Surgery (UCCVS) Congress (April 5–8, 2018. Antalya, Turkey; OP-455]

References

[1] N. Cox, F.S. Resnic, J.J. Popma, et al., Comparison of the risk of vascular complications associated with femoral and radial access coronary catheterization procedures in obese versus nonobese patients, American Journal of Cardiology 94 (2004) 1174–1177.
[2] I. Bernat, D. Horak, J. Stasek, et al., ST-segment elevation myocardial infarction treated by radial or femoral approach in a multicenter randomized clinical trial: the STEMI-RADIAL trial, Journal of the American College of Cardiology 63 (2014) 964–972.
[3] O. Ozeke, M. Gungor, S. Topaloglu, et al., Chronic total artery occlusions in noninfarct-related coronary arteries, International Journal of Angiology 23 (2014) 17–22.
[4] W. Scholte op Reimer, E. de Swart, D. De Bacquer, et al., Smoking behaviour in European patients with established coronary heart disease, European Heart Journal 27 (2006) 35–41.
[5] J.E. Arnetz, U. Winblad, A.T. Hoglund, et al., Is patient involvement during hospitalization for acute myocardial infarction associated with post-discharge treatment outcome? An exploratory study, Health Expectations 13 (2010) 298–311.
[6] N.L. Benowitz, J.J. Prochaska, Smoking cessation after acute myocardial infarction, Journal of the American College of Cardiology 61 (2013) 533–535.
[7] Y. Gerber, N. Koren-Morag, V. Myers, et al., Long-term predictors of smoking cessation in a cohort of myocardial infarction survivors: a longitudinal study, European Journal of Cardiovascular Prevention and Rehabilitation 18 (2011) 533–541.
[8] B. Guldvog, Can patient satisfaction improve health among patients with angina pectoris? International Journal for Quality in Health Care 11 (1999) 233–240.
[9] G. EuroQol, EuroQol – a new facility for the measurement of health-related quality of life, Health Policy 16 (1990) 199–208.
[10] J. Barth, T. Jacob, I. Daha, J.A. Critchley, Psychosocial interventions for smoking cessation in patients with coronary heart disease, Cochrane Database of Systematic Reviews 7 (2015) CD006886.
[11] M.J. Eisenberg, S.M. Grandi, A. Gervais, et al., Bupropion for smoking cessation in patients hospitalized with acute myocardial infarction: a randomized, placebo-controlled trial, Journal of the American College of Cardiology 61 (2013) 524–532.
[12] A.M. Gotto Jr., The Multiple Risk Factor Intervention Trial (MRFIT). A return to a landmark trial, The Journal of the American Medical Association 277 (7) (1997) 595–597.
[13] C. Georgiadou, M. Lavdaniti, M. Psychogiou, et al., Factors affecting the decision to quit smoking of the participants of a hospital-based smoking cessation program in Greece, Journal of Caring Sciences 4 (1) (2015) 1–11.
[14] E. Imbalzano, M. Vatrano, S. Quartuccio, et al., Effect of type D personality on smoking status and their combined impact on outcome after acute myocardial infarction, Clinical Cardiology 41 (2018) 321–325.
[15] E.C. Hansen, M.R. Nelson, Staying a smoker or becoming an ex-smoker after hospitalization for unstable angina or myocardial infarction, Health 21 (2017) 461–477.
[16] E. Sverre, J.E. Otterstad, E. Gjertsen, et al., Medical and sociodemographic factors predict persistent smoking after coronary events, BMC Cardiovascular Disorders 17 (2017) 241.
[17] M. Katz, A.G. Laurinavicius, F.G. Franco, et al., Calculated and perceived cardiovascular risk in asymptomatic subjects submitted to a routine medical evaluation: the perception gap, European Journal of Preventive Cardiology 22 (8) (2015) 1076–1082.
[18] S.S. Jolly, S. Yusuf, J. Cairns, et al., Radial versus femoral access for coronary angiography and intervention in patients with acute coronary syndromes (RIVAL): a randomised, parallel group, multicentre trial, Lancet 377 (9775) (2011) 1409–1420.
[19] W.P. Klinke, J.D. Hilton, R.N. Warburton, et al., Comparison of treatment outcomes in patients > or =80 years undergoing transradial versus transfemoral coronary intervention, American Journal of Cardiology 93 (10) (2004) 1282–1285.
[20] E.C. Hansen, M.R. Nelson, How cardiac patients describe the role of their doctors in smoking cessation: a qualitative study, Australian Journal of Primary Health 17 (2011) 268–273.
[21] L.S. Rallidis, G. Pavlakis, The fundamental importance of smoking cessation in those with premature ST-segment elevation acute myocardial infarction, Current Opinion in Cardiology 31 (2016) 531–536.
[22] A. Hackshaw, J.K. Morris, S. Boniface, et al., Low cigarette consumption and risk of coronary heart disease and stroke: meta-analysis of 141 cohort studies in 55 study reports, British Medical Journal 360 (2018) j5855.
[23] U.Y. Cavus, Z.H. Rehber, O. Ozeke, E. Ilkay, Carbon monoxide poisoning associated with narghile use, Emergency Medicine Journal 27 (5) (2010) 406.
[24] K. Kim, S.M. Park, K. Lee, Weight gain after smoking cessation does not modify its protective effect on myocardial infarction and stroke: evidence from a cohort study of men, European Heart Journal 68 (2018) 1523-1531.
[25] B. Acar, O. Ozeke, S. Unal, et al., Change in left ventricular systolic function in patients with ST elevation myocardial infarction: evidence for smoker's paradox or pseudo-paradox?, Indian Heart Journal 68 (2016) 816–820.
[26] D.L. Patrick, A. Cheadle, D.C. Thompson, et al., The validity of self-reported smoking: a review and meta-analysis, American Journal of Public Health 84 (1994) 1086–1093.
[27] N.A. Rigotti, C. Clair, M.R. Munafo, L.F. Stead, Interventions for smoking cessation in hospitalised patients, The Cochrane Database of Systematic Reviews 5 (2012) CD001837.