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109. Tobacco dependence and respiratory disease

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Acute effect of e-cigarette on pulmonary function in healthy subjects and smokers

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Electronic-cigarette is marketed as potentially safer tobacco exposure product, but there are not enough data concerning its impact on the respiratory system. Therefore, we set out to investigate the acute effects of an e-cigarette on respiratory functions in healthy subjects and in smokers with and without chronic airway obstruction (COPD and asthma).

We studied 32 consecutive subjects (16 men), 8 were never smokers and 24 were smokers (11 with normal spirometry, and 13 patients with COPD and asthma). Spirometry, static lung volumes, airway resistance (Raw), airway conductance (sGaw) and a single breath nitrogen test (the slope of phase III; $\Delta N_2/L$), were measured before and after the use of an e-cigarette smoked for 10 minutes.

Immediately after smoking an e-cigarette for 10 minutes there was: a) a statistically significant increase in Raw %pred (from 223 ± 80 to 246 ± 86 , $p=0.008$), b) a statistically significant decrease in sGaw %pred (from 46 ± 20 to 41 ± 17 , $p=0.005$), and c) a statistically significant increase in $\Delta N_2/L$ %pred (from 146 ± 100 to 164 ± 121 , $p=0.002$).

Ten minutes smoking of e-cigarette causes a significant increase in airway resistance and in the slope of phase III, and a decrease in airway conductance in our group. These data show that there is an immediate effect of a single e-cigarette smoking. Further studies are needed to establish the immediate and long-term effects of an e-cigarette smoking.

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Increased levels of exhaled carbon monoxide and their correlation with airflow obstruction in asthma and COPD

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Purpose: Quantify lung oxidative stress in patients with asthma and chronic obstructive pulmonary disease by measuring levels of exhaled carbon monoxide and carboxyhaemoglobin.

Method: Levels of exhaled carbon monoxide and carboxyhaemoglobin were evaluated in 30 patients with COPD, 30 asthmatic patients and 30 healthy volunteers respectively. Exhaled CO and %COHb was measured on a portable pICO⁺ smok-

erlyzer, using the method described by Jarvis et al. Exhaled CO level measured by the analyzer is reported to correlate closely with blood COHb concentration.

Results: Mean exhaled CO level was significantly higher among COPD (8.17 ± 0.66 ppm), asthmatic patients (7.73 ± 0.67 ppm) as compared to controls (5.37 ± 0.56 ppm, $p<0.01$; $p<0.05$ respectively). No significant difference in the levels of CO concentration between asthma and COPD ($p>0.05$). %COHb levels were remarkably higher in COPD and asthma patients as compared to control group. The values being 1.94 ± 0.11 , 1.91 ± 0.11 and 1.48 ± 0.09 respectively (COPD vs control, $p<0.01$; asthma vs control, $p<0.05$).

Conclusion: Levels of CO and %COHb in exhaled air have role in lung oxidative stress. These biomarker measurement in exhaled air is a simple, non-invasive and sensitive approach to monitor airway inflammation and assess the response to treatment.

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Smoking and COPD exacerbations

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Introduction: Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality throughout the world. And evidence shows that COPD exacerbations are a frequent cause of hospital admission, as an indicator of a poor prognosis and elevated mortality.

Objective: To study smoking habits among patients hospitalised/admitted for COPD exacerbations in a conventional hospital ward.

Material and methods: We carried out a retrospective descriptive study by reviewing discharge reports of patients admitted to our centre during the period of September 2010 to September 2011. We analysed epidemiological, clinical and smoking history.

Results: We studied 196 patients, of whom 180 men (91.8%) and 16 women (8.2%) with a mean age of 77 years. 41% have a diagnosis of severe COPD. The most frequent co morbidity found is cardiovascular. 18% associated cancer. The prevalence of current smoking is 26.5%, 52 patients continue to smoke including 47 males (27%) and 5 women (31%). The ex-smoker population represents 68.9% (131) while non-smokers comprise 1.5% (3). 73% of male smokers have a moderate to severe COPD degree. Pneumonia is present in 26% of smokers, (14), while in ex-smokers it is present in 23% (33). A total of 37 patients (18.8%) were readmitted within a year, of which 62% are severe COPD (28); 9 of them were still smoking.

Conclusions: 1) Smoking is a major factor in COPD exacerbations. 2) There is a high prevalence of COPD exacerbations requiring admission to a hospital unit in those patients who continue to smoke. 3) Most smokers admitted for exacerbation of COPD were included in the severe COPD group. 4) There are 37 readmissions within a year, representing almost one fifth of all COPD exacerbations, 9 of whom continue smoking.

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Impairment of mucociliary clearance in COPD and smokers: Same or different?

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Mucociliary clearance (MC) is a key defense mechanism in airways. Smokers and patients with chronic obstructive pulmonary disease (COPD) exhibit modifications in MC, which predisposes these populations to recurrent infections. It is known that ex-smokers with normal lung function may present MC reversing after smoking cessation, but there are no studies that evaluate COPD ex-smokers' MC.

Aim: To evaluate and to compare the MC and exhaled carbon monoxide (eCO) in smokers and COPD ex-smokers.

Methods: We evaluated 83 subjects, divided in four groups: severe COPD (n=22), moderate COPD (n=19), current smokers (n=20) and nonsmokers (n=22). Severe and moderate COPD patients were ex-smokers (FEV1% = 38 [34-43] and 60 [53-63], 48 [11-100] and 50 [40-75] pack/years, respectively). Current smokers presented normal lung function and 40 [22-44] pack/years. Nonsmokers were matched for age and sex. Were evaluated eCO levels and MC by saccharin transit time (STT) test. Tests were conducted between 8 and 9 AM with air temperature and relative humidity controlled. Statistical analyses were performed using Kruskal-Wallis test followed by Dunn's test.

Results: STT was higher in smokers compared to control group ($p=0.006$). There was no difference in STT between smokers and COPD groups, but in both groups of COPD STT values were similar to control group. Also, there was no difference in STT between severe and moderate COPD. eCO levels was higher in smokers compared to other three groups ($p<0.0001$).

Conclusion: Smokers showed worse STT and moderate and severe COPD were

similar to nonsmokers. These results suggest that quitting smoking, even in people who developed COPD, may lead to MC's reversibility.

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Survival of patients with severe chronic obstructive pulmonary disease in relation to smoking habits

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Introduction: The increase in mortality and morbidity from chronic obstructive pulmonary disease (COPD) is occurring worldwide as a result of the epidemic-like and growing use of tobacco in developing countries.

Aims and objectives: Analysis of the correlation between smoking habits and mortality of the COPD patients, evaluation of the two-year survival and the five-year survival, depending on the smoking habits.

Methods: The two-year and the five-year survivals were followed up between 2001 and 2007 in respect to smoking habits. The sample consisted of 30 smokers and 30 nonsmokers of both sexes. Criteria for inclusion of smokers were: smokers or former smokers who had smoking experience over 30 years. Criteria for inclusion of non-smokers were: patients who never smoked or who were non-smokers over 12 years. Criteria for exclusion from the study were: patients who get pneumonia or lung cancer in the meantime. Statistical analysis was performed to determine the statistical difference between the groups using standard statistical methods (t-test), and the test of linear correlation was used to correlate these data.

Results: The results of the two-year survival were: 90% (27/30) of smokers, and 100% (30/30) of non-smokers survived. The difference was statistically significant at $p < 0.001$. The results of the five-year survival were: 46.66% (14/30) of smokers, and 66.66% (20/30) of non-smokers survived. The difference was statistically important at the level of $p < 0.05$.

Conclusions: Two and five years survival is significantly longer in non-smokers compared to smokers in the terminal stage of COPD.

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Loose cough as sign of hyper secretion and inflammation in airways in relation to smoking index

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Cough may be considered as a symptom of disease, an indicator of environmental pollution. In addition, the subject may produce cough through voluntary control. The aim of this study was to determine the quality and humidness of voluntary cough as a sign of inflammatory bronchial alterations leading to hyper secretion in patients chronic obstructive bronchitis (COB) in relation to "Smoking Index" (years x cigarettes per day). Evaluation of lung function included clinical examination, electrocardiogram, estimation of blood, urine and function of the lung. The diagnosis of a disease as a basis for cough can be established with measurements of indirect tests (forced expiratory flow in first second (FEV1), maximal expiratory flow at 25% and 50% of FVC (MEF 25%FVC, MEF 50% FVC), and direct tests by measurement of airway resistance to flow. The results presented in this study were done on 147. patients with COB. The control groups consisted 132. subjects, and none of these subjects had symptoms or a history of pulmonary or cardiac diseases. Beside the questionnaire MRC, there was obligation to each subject to perform the test of cough, which is established on the base that in healthy subjects with normal bronchial mucosa provoked voluntary cough is dry, while in patients with inflammation in bronchial mucosa, the cough is humid assessed by auscultation. In smokers with COB the presence of chronic productive cough was in a positive correlation with increase of "Smoking Index". In smokers with COB were negative correlation between "Smoking Index" and positive test of humid cough. Increase of "Smoking Index" was followed with decrease of the incidence of humid cough in patients with COB.

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COPD in elders (>80y): Smoking and air pollution

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We studied a group of Elders living in a Nursing home and affected by COPD. The diagnosis has been made in all of them five or more years ago. 63 Elders affected by COPD have been found among 282 (>80 y.) admitted into our geriatric nursing home: 22,3% of the total number. COPD has been associated to heart diseases (54%), cerebrovascular diseases (46%) and moderate or severe dementia (45%).

Concerning the Gender 17 are men and 46 women. For the age 18 are between 80/84 y., 25 between 85/89 y. and 20 over 90y.

Ex smokers (22): 6 m. and 3 w. in the first group, 5 m. and 5 w. in the second, 1 m. and 2 w. in the third. No smokers (41): 1 m. and 8 w. in the first, 2 m. and 13 w. in the second, 2 m. and 15 w. in the third.

No differences have been found between ex smokers and no smokers about the

numbers of exacerbations of COPD and the supplement of oxygen in the last year. The drug more used has been Tiotropium (more than half of elders) while only in few cases Beta2 long-acting and inhaled corticosteroids.

Unfortunately in ten women, no-smokers, it has been impossible to check their exposition to passive-smoke.

Conclusion: In women no smokers, without occupational exposures, ambient air pollution is a probable risk factor for the development of COPD. In our elders the evolution has been rather slow but has required continual treatment and has worsened their quality of life.

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P1060

Risk factors of development of endothelium dysfunctions at smokers

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Aim: To evaluate the risk factors of development of endothelium dysfunctions among smokers.

Materials and methods: The research has been conducted amongst 100 smoking patients. Brachial artery blood flow reactions to hyperemia were studied by doppler sonography in all patients. Data on risk factors, was gathered through questionnaires. We identified 2 groups, 1 of them – the patients having endothelium dysfunction (n=66) and 2- not having endothelium dysfunction (n=34). The OR (odd ratio) and 95% confidence interval (95%CI) were calculation.

Results: The risk factors significantly associated with female sex (OR=1,17; 95% CI: 0,36-3,68), beginning of smoking till 15 years (OR=1,34; 95% CI: 0,34-5,59), the beginning of smoking with 16 till 20 years (OR=1,06; 95% CI: 0,43-2,64), an index of smoking ≥ 30 pack/years (OR=1,18; 95% CI: 0,3-5,03), duration of smoking more than 30 years (OR=1,14; 95% CI: 0,35-3,83).

Conclusion: The risk factors of development of endothelium dysfunctions have greater impact on female sex ($p=0,00001$), beginning of smoking till 20 years ($p=0,03$), an index of smoking ≥ 30 pack/years ($p=0,0001$) and duration of smoking more than 30 years ($p=0,00001$).

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The influence of smoking on the level of proinflammatory cytokines in patients with COPD

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Smoking is a major risk factor for COPD. The mechanisms of the effect of smoking on the progression of the disease is not fully understood.

The purpose of: To identify the relationship of smoking and the activity of local and systemic inflammation in patients with COPD.

A total of 98 patients, 76 of them smokers with an average experience of smoking a pack of 25±1,8/year. Revealed that smokers C-reactive protein blood (12,7±4,

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5 mg/L), TNF α from bronchial washings (6,3 \pm 1,9 pg/ml) and TNF α from serum (12,19 \pm 4, 0 pg/ml) significantly ($p < 0,005$) higher than in nonsmokers (3,15 \pm 0,94 mg/L, 2,15 \pm 1,8 pg/ml, 8,57 \pm 4,03 pg/ml respectively). At the same time in smoking patients was significantly greater neutrophils in sputum and sputum IL-8. There were significant ($p < 0,005$) negative correlation between the level of IL-8 in sputum, and FEV1 ($r = 0,363$).

Conclusion: The study allowed to identify and confirm the relationship of smoking to the presence and activity of inflammatory process local and systemic in patients with COPD.

P1063

Comaprison of COPD readmission rates in patients with and without a history of illicit drug smoking

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Our 960 bed inner city hospital has 3 full time COPD nurses providing a 7-day a week service reviewing patients admitted with COPD exacerbations. They are employed with a view to reducing length of stay and preventing re-admissions. The team audit their work prospectively.

Several patients have recurrent admissions with exacerbations of COPD. We analysed data from January 2009 to September 2011 and compared the number of admissions amongst those that have a history of smoking drugs and those that have never smoked drugs. We then further divided these drug smoking group into ex and active smokers and compared them.

Results:

Table 1

	No history of drug use	History of Drug Use
Average Age (yrs)	70.0	53.9
Number of Admissions	1114	252
Readmissions	328	144
Number of Patients	783	108
Average Readmissions	0.42	1.33
Average Admission Length (days)	7.3	6.3

Table 2

	No history of drug use	History of drug use	
		Ex-tobacco smokers	Active tobacco smokers
Average age (yrs)	70.0	57.3	53.1
Number of admissions	1114	42	210
Readmissions	328	21	123
Number of patients	783	21	87
Average readmissions	0.42	1.00	1.41
Average admission length (days)	7.3	9.1	5.6

Conclusion: There is a significantly higher admission rate amongst those with a history of smoking drugs when compared to those patients that have never smoked drugs. Patients with a history of smoking drugs that continue to smoke tobacco have an admission rate that is 41% higher than those that have stopped smoking tobacco. COPD patients who have a history of drug use are significantly younger than those who do not.

P1064

The influence of infrared radiation on the level of spontaneous cytokines in the treatment of experimental COPD

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Aim: To study the effect of infrared radiation (IR) on the level of spontaneous pro- and anti-inflammatory cytokines in the treatment of experimental COPD (eCOPD).

Methods: The model of COPD was reproduced in 45 albino rats by inhalation of tobacco smoke during two months in a special chamber. Phototherapy was carried out by IR using light of GI, KL, ZB lamps with a ceramic coating. Length of procedures were for 5 minutes the first 5 days and 10 minutes the next 5 days. Studies of cytokines in 20 intact rats and in the rats with eCOPD was performed before treatment, after 10 procedures and 30 days after treatment. Determination of cytokines in the serum was performed by enzyme immunoassay.

Results: Animals with eCOPD after treatment in compare with untreated rats had reduction of the spontaneous pro- and anti-inflammatory cytokines. Thus, compared with the original data content of the IL-1 was reduced by almost 1.5, IL-6 - by 1.7, TNF - by 1.4 times and levels of IL-10 - by 1.1 times. However, compared with the control of spontaneous levels of cytokines IL-1, IL-6, TNF remained elevated by 12.7, 41.4 and 40.6 times, respectively, whereas IL-10 - only by 2.64 times. Within 30 days after the action of infrared radiation, compared with the control, the levels of cytokines, although decreased, but remained elevated at 11.2, 33.0 and 36.2 times and the level of IL-10 remained elevated 2.48-fold. The differences were statistically significant ($p < 0.05$), except for changes of IL-10 in the process of therapy.

Conclusion: The phototherapy by IR has a marked significant decrease in levels of proinflammatory cytokines in eCOPD, without changing the level of anti-inflammatory IL-10.

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Vasomotor activity of the cerebral arteries in rats with experimental COPD

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The aim of the study was to evaluate the endothelium-dependent and endothelium-independent reactions of the cerebral arteries reproduced in vivo COPD model. The COPD model was reproduced by chronic smoking in rats within 6 months according to H.Zheng protocol. The experimental group consisted of six male Wistar rats. The control group breathed only clean air. Assessment of the endothelial vasomotor reactions were carried out in 6 months after the experiment start and in 2 months after smoking cessation. Acetylcholine and nitroglycerin were injected in the rats body to assess endothelium-dependent (EDVD) and endothelium-independent (EIDVD) vasodilation, N-monomethyl-L-arginine (L-NMMA) to assess endothelium-dependent constriction (EDVC). Using magnetic resonance imaging the degree of the cerebral arteries diameter change in the tomograms before and after drug administration was evaluated. The study revealed the cerebral arteries dysfunction in rat-smokers. Acetylcholine stimulation in the rat-smokers led to the pathological vasoconstriction. Test with nitroglycerin caused insufficient vasodilation ($p < 0.05$). Test with L-NMMA showed the abnormal vasodilation in contrast with the control group which set the expected EDVC. In 2 months after smoking cessation the pathological vasoconstriction remained in the acetylcholine test. EIDVD was paradoxical even leading to the vasoconstriction. In long-term tobacco smoking the violation of the endothelial vasomotor function of the cerebral arteries has the form of the pathological activity of the vasodilating management and intensification of the vasoconstriction. After smoking cessation the vasomotor disturbances are not only preserved but also exacerbated.

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Vasomotor activity of the aorta in rats with experimental COPD

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The aim of the study was to evaluate the endothelium-dependent and endothelium-independent reactions of the aorta reproduced in vivo COPD model. The COPD model was reproduced by chronic smoking in rats within 6 months according to H.Zheng protocol (2009). The experimental group consisted of six male Wistar rats. The control group breathed only clean air. Assessment of the endothelial vasomotor reactions were carried out in 6 months after the experiment start and in 2 months after smoking cessation. Acetylcholine and nitroglycerin were injected in the rats body to assess endothelium-dependent (EDVD) and endothelium-independent (EIDVD) vasodilation, N-monomethyl-L-arginine (L-NMMA) to assess endothelium-dependent constriction (EDVC). Using magnetic resonance imaging the degree of the aorta diameter change in the tomograms before and after drug administration was evaluated. It was found that COPD model has insufficient EDVD and EIDVD (6,6 \pm 0,76% and 3,7 \pm 0,02% at a rate of 10 and 15% respectively). The test with L-NMMA showed the abnormal vasodilation in contrast to the control group which set the expected EDVC. In 2 months after smoking cessation in the acetylcholine test vasodilation was even less significant decreasing from 6,6 \pm 0,76% to 3,07 \pm 1,25%, while EIDVD was paradoxical leading to the vasoconstriction ($p < 0.05$). In response to the vasoconstrictor L-NMMA injection the pathological vasodilation was preserved. Thus the COPD model revealed the violation of the aortic endothelial vasomotor function in the form of the insufficient activity of the vasodilating management and intensification of the vasoconstriction. After smoking cessation vasomotor disturbances are not only preserved but also exacerbated.

P1067

Knowledge of the general population about COPD and its determinants:

Current status and recent changes in Spain

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Background: The objective of this study was to determine the level of knowledge about COPD and its determinants in the general population of Spain, and to compare it with a similar survey conducted in 2002.

Methods: We conducted a cross-sectional, observational, epidemiological study in September 2011, by means of a telephone interview with a representative sample of those aged 40-80 years living in all 17 regions of Spain.

Results: A total of 6.528 responses were obtained, 53% female, mean age of 59.8 years. With respect to tobacco, 19.4% were current smokers while 27.9% reported being former smokers. Only 17.0% spontaneously reported they knew the term COPD. Valencia was the region with the highest degree of ignorance of COPD (91%), while Aragon was the lowest (73.7%). Yet, COPD is considered a severe disease, just under angina pectoris. Comparing these results with the previous

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survey in 2002, we observed significant improvements relative to knowledge of COPD (8.6% vs. 17.0%), with a marked variability within regions ($p < 0.05$). Currently, only 4.7% of the Spanish population knows that there is a National Strategy for COPD, although 86.0% have a favorable/very favorable opinion about the new Anti-Tobacco Law.

Conclusion: The lack of knowledge about COPD and its determinants in the general population remains high, therefore more and better teaching and awareness interventions are needed.

P1068

To determine the prevalence and predictors of smoking and smokeless tobacco use amongst women in Karachi, Pakistan

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Study design: Cross sectional study.

Study sample: A Convenient sample of 485 female attendants was taken for the study. A standard questionnaire for tobacco use, developed by WHO, was used.

Results: *Prevalence of tobacco:* Overall, 96 (19.6%) admitted to using tobacco in one form or another. 13 (2.7%) of the total respondents were smokers and 83 (17.1%) were smokeless tobacco users.

The use of tobacco was found to increase with age and was highest among the age group of 66 years and above ($P < 0.01$, 95% CI). A higher prevalence of tobacco use was found in women who had never gone to school and the prevalence of tobacco use decreased with increasing education ($P < 0.001$, OR=4.6 with 95% CI). When the association between marital status and tobacco use was assessed it was found that tobacco use was more prevalent amongst married women ($P < 0.001$, OR=6.13 with 95% CI). It was found that tobacco use was more prevalent amongst the working/employed women as compared to the non working women/house wives ($P < 0.05$, OR=1.90 with 95% CI). When the participants were asked about the extent of harm tobacco can cause, 69.5% participants were of the view that it was very harmful while 6.8% thought that it was harmless. The remaining participants thought that it caused little harm.

Being hospital based, our study may have the shortcomings of a hospital based study. Another limitation could be due to the fact that it was done in Karachi and the results may not be generalisable across the whole country. Investment in epidemiological studies of tobacco use and its predictors in different areas of the country among different population groups would be very beneficial in our fight against tobacco.

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Repeated questionnaire about smoking at the annual meetings of the Japanese Respiratory Society held in 1996, 1999, 2001, 2003, 2005, 2007, 2010, and 2012

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Questionnaire was distributed at the Annual Meetings of the Japanese Respiratory Society held in 1996, 1999, 2001, 2003, 2005, 2007, 2010, and 2012 repeatedly, in order to know how attendants think and behave about smoking as respiratory care specialists. Questionnaire paper was handed to the attendants around the table for meeting registration, and was recovered voluntarily in the boxes. Smoking prevalence of all attendants in 1996, 1999, 2001, 2003, 2005, 2007, and 2010 was 22.7%, 19.7%, 15.1%, 13.9%, 7.9%, 5.8%, and 3.7% respectively. Recovery rate of questionnaire in 1996, 1999, 2001, 2003, 2005, 2007, and 2010 was 64.7%, 70.4%, 48.6%, 52.2%, 85.9%, 93.2% and 87.8%, respectively. Smoking prevalence of physician in 2001, 2003, 2005, 2007, and 2010 was 12.9%, 12.7%, 5.1%, 3.9%, and 2.4% respectively. Attendants from smoke-free hospital in 1996, 1999, 2001, 2003, 2005, 2007, and 2010 was 7.5%, 15.8%, 21.7%, 28.4%, 61.1%, 61.1%, and 72.5% respectively. Tobacco sales in the hospital retail shop were 55.2%, 49.1%, 44.8%, 39.0%, 19.4%, and 10.0%, respectively. Tobacco sales in the hospital vending machine was 50.3%, 41.5%, 37.2%, 31.1%, 12.3%, 7.1%, and 3.1% respectively. New 2012 data will be merged with those data, which will show that smoking behaviors of the attendants have improved for 16 years. Japanese government recently accelerated to promote smoke-free lifestyle, planning to reduce smoking prevalence from 20% to 12% in the next ten years. Japanese Respiratory Association is responsible to encourage its members to intervene in smoking behavior or policy of hospitals which has been generous for tobacco sales.

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Is subjective sleep quality better in quitters?

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Aims: Smokers have 4-5 times higher risk of sleep-related breathing disorders. We studied subjective sleep quality, weight gain and changes in pulmonary functions in quitters and non-quitters.

Methods: Among 692 patients registered for smoking cessation clinic, who were smoking 10+ cigarettes/day, followed at least 1 year and agreed to participate in the study were included. Pittsburgh sleep quality index (PSQI), Epworth sleepiness

scale survey, measurements of exhaled carbon monoxide, body weights and PFTs were obtained and evaluated. Cases with PSQI ≤ 5 points were classified as having better sleep quality.

Results: Among the cases ($n=106$, 67 male, 39 female), 39.6% had quit and 60.4% had not quit. Mean age of quitters were 50.7 ± 11 years, while non-quitters' was 47.4 ± 11.1 years. Better sleep quality was observed in 23.8% of quitters, while in 7.8% of non-quitters ($p < 0.01$). Better sleep quality was evident in quitters in spite of weight gain. Mean 8.33 kg weight gain and 3.13 increase in BMI were observed in quitters ($p < 0.01$). Gaining more than 10% of body weight was observed in 52.4% of quitters while 7.8% of non-quitters ($p < 0.01$). Pulmonary function changes were not different among quitters and non-quitters.

CONCLUSION: Quitters had better sleep quality than non-quitters in spite of more weight gain. This difference was not related to improvement in pulmonary functions. This data can be used as a motivational tool for smokers' quitting. And also it can be a clue for the importance of smoking cessation in patients with sleep-related breathing disorders.