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The Effect of Smoking on Upper Respiratory Tract

ENT

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ABSTRACT

Objectives: The effects of cigarette smoking on lower respiratory tract such as cancer and chronic obstructive disease (COPD) have been extensively documented. In contrast, little information is currently available on the impact of cigarette smoking on upper airway health. So, this study is about the effect of smoking on upper airway tract.

Study design: Prospective random study

Methods: Sixty-two patient have been examined after taking history in the outpatient clinic of KFU health center in one week from ENT clinic and internal medicine clinic in April 2013. We made a questionnaire which included name, sex , age , smoker , non-smoker or passive smoker and then we asked about upper respiratory tract infection symptoms which included in the questionnaire,

Results: They were 13 smokers, 46 non-smokers and 3 passive smokers. Smokers complained mainly from nasal obstruction (7/13=53.8%), nasal discharge (6/13=64%) and sore throat (6/13=64%). While non-smokers complained mainly from nasal discharge (24/46=52%), sore throat (21/46=45.6%), nasal obstruction (17/46=36.9%), dry cough (17/46=36.9%) and headache (13/46=28.2%).

Conclusion: There is no significant difference between smokers, non-smokers or passive smokers on their upper respiratory tract infection.

KEYWORDS:

Smokers; smoking; upper respiratory tract; Al-Ahsa

Introduction:

Cigarettes are the single-most traded item on the planet, with approximately 1 trillion being sold from country to country each year. At a global take of more than $400 billion, it's one of the world's largest industries. Scientists claim the average smoker will lose 14 years of their life due to smoking [1]. Among current smokers, chronic lung disease accounts for 73 percent of smoking-related conditions. Even among smokers who have quit chronic lung disease accounts for 50 percent of smoking-related conditions[2]. Cigarette smoke contains over 4,700 chemical compounds including 60 known carcinogens. The number of these chemicals that are known to cause cancer in animals, humans, or both are reported to be in the range from 30 to 60[3], most of the toxic components of smoke are contained in particulate fraction. Mainstream smoke (45%of total) is which inhaled by puffing , whereas approximately 55% of cigarette smoke is side-stream smoke that plumes from the burning cigarette tip into the atmosphere [4]. Tobacco is the second major cause of death in the world. It is currently responsible for the death of one in ten adults worldwide (about 5 million deaths each year). If current smoking patterns continue, it will cause some 10 million deaths each year by 2020. Half the people that smoke today - that is about 650 million people - will eventually be killed by tobacco[5]. Nicotine is the component that causes clinical addication. However, other irritants such as acrolein , formaldehyde, ammonia , oxides of nitrogen, toluene, phenol and pyridine are also present in microgram amount per cigarette.

The components of the upper airway include the area extending from the nose through the nasopharynx, oropharynx, larynx , and trachea to major bronchi. The airway conducts inspired air to the alveoli where gaseous exchange takes place[6]. The respiratory tract is the most common site of infection by pathogens because it comes in direct contact with the physical environment and is exposed to airborne microorganisms[7]. However, the concept of the 'upper airway disease', evoked during recent years, should change our attitude regarding these diseases. Moreover, new agents in the occupational environment must be characterized. Furthermore, exposure to carcinogens has changed over the years, and in most cases risk should be reassessed. There is significant evidence that occupational allergic diseases of the upper airways can pose important health problems because they represent an early stage of allergy throughout the respiratory system. Allergens, irritants and carcinogens can all cause occupational diseases of the upper airways. Such diseases, especially those induced by allergens and irritants[8]. The nasal sinuses are frequently the site of both acute and chronic infections. In common with the palate and the nasopharynx, they are also the site of malignant neoplastic changes. Cancer of the larynx is much more common in smokers than in nonsmokers. The occurrence of upper airway obstruction has been documented in sleep laboratory studies. Sleep apnea, which sometimes involves upper airway obstruction, is characterized by cessation of breathing for up to a minute and by a marked fall in blood oxygen levels, thus arousing an affected individual from sleep[9].

The effects of cigarette smoking on lower respiratory tract such as

cancer and chronic obstructive disease (COPD) have been extensively documented. In contrast, little information is currently available on the impact of cigarette smoking on upper airway health. Further, studies examining the role of cigarette smoking in subjects with persisting upper respiratory complain are lacking[10]. Blake and colleagues prospectively evaluated 1230 U.S. Army recruits (in three separate cohorts) to evaluate the relation between smoking and upper respiratory tract symptoms. Smoking was associated with a 35- to 50-percent increase in the risk of respiratory tract infection; rhinitis, sinusitis, bronchitis, and pneumonia were all diagnosed in the recruits. The duration of basic training was responsible for the range in risk, not the recruits' age, ethnicity, education, or geographic background. Although the diagnostic criteria for these infections were not precise, the results are believable because of the consistency among the three cohorts. Because respiratory epithelial cells damaged by noxious gases and aerosols (smoke) should not be more susceptible to viral invasion, most of these infections must have had a bacterial etiology[11]. From these points , research will be done in Al-Hasa , King Faisal University health center about the effect of smoking on upper airway tract.

Methods:

Sixty-two patient have been examined after taking history in the outpatient clinic of KFU health center as prosoective Study in one week from ENT clinic and internal medicine clinic in April 2013
They have been chosen randomly. We made a questionnaire (Figure 1) which included name, sex , age , smoker , non-smoker or passive smoker and then we asked about upper respiratory tract infection symptoms which included in the questionnaire, they are 12 symptoms as shown in the attached questionnaire. After that we described the signs which have been seen and diagnosis which was written by physician.

Statistic analysis:

The data are computerized Statistical analyses were performed using SPSS program, version 17.0 . Descriptive statistic are presented. Use crosstabs and option Chi-square to determine what is the relationship between smoker and non-smoker depend on three classes which are symptoms, sings and diagnosis. By apply null and alternative on P value which >0.05 (null) or P<0.05 (alternative) ,the result will determine what kind of relationship is present.

Results:

They were 13 smokers who were all males. Their age ranged between 16 to 45 years, and median age of 32 years

Non-smokers were 46, mainly males with only three females. Their age ranged from 12 to 60 years with median age of 27 years.

Passive smokers were only three males; their ages were 21,23 and 24 years.

Smokers complained mainly from nasal obstruction (7/13=53.8%), nasal discharge (6/13=64%) and sore throat (6/13=64%).

While non-smokers complained mainly from nasal discharge (24/46=52%), sore throat (21/46=45.6%), nasal obstruction (17/46=36.9%), dry cough (17/46=36.9%) and headache (13/46=28.2%).

Passive smokers mainly complained of sore throat (3/3=100%) and nasal discharge (2/3=66%).

Other symptoms, you can follow on table number 1

As you see smokers complained from nasal obstruction and sore throat more than non-smokers.

Non-smokers complained from nasal discharge, dry cough and headache more than smokers.

Both smokers and non-smokers didn't complain from tinnitus and hearing loss.

Figure 2 shows percentage of smokers who have more than one symptom against those have one symptom while figure 3 shows those of non-smokers

As regards signs, we found smokers had more congested throat (2/13=15.4%), while nonsmokers had both congested throat (6/46=13%) and congested nose (5/46=11%)

As you see in table 2 smokers had congested throat, congested nasal mucosa, congested pharyngeal wall and DS more than non-smokers. While non-smokers had congested nose more than smokers.

Diagnosis of cases in non-smokers were rhinitis in (13/46=28.2), URTI in (6/46=13%) and pharyngitis in (5/46=10.8%), while diagnosis of cases in smokers were rhinitis in (5/13=38%) and pharyngitis in (3/13=23%) as shown in table 3

Table 1:symptoms

Symptoms	Non-smoker(46)	Smoker(13)	passive smoker(3)
Nasal Discharge	24 (52%)	6 (46%)	2 (66%)
Sore throat	21 (45.6%)	6 (46%)	3 (100%)
Nasal Obstruction	17 (36.9%)	7 (53.8%)	1(33%)
Cough	17 (36.9%)	4 (30.7%)	2 (66%)
Headache	13 (28.2%)	3 (23%)	0 (0%)
Sneezing	6 (13%)	2 (15.4%)	1 (33%)
Epistaxis	4 (8.7%)	2 (15.4%)	0 (0%)
Ear pain	3 (6.5%)	0 (0%)	0 (0%)
Dry mouth	2 (4%)	1 (7 .7%)	0 (0%)
Fever	0 (0%)	1 (7.7%)	1 (33%)
Itching	1 (2%)	1 (7.7%)	0 (0%)
Post nasal discharge	4 (8.7%)	0 (0%)	0 (0%)
Hoarseness	1 (2%)	0 (0%)	0 (0%)
Ear discharge	1 (2%)	0 (0%)	0 (0%)
Change voice	1 (2%)	0 (0%)	0 (0%)
Dyspnea	1 (2%)	0 (0%)	0 (0%)
Smell	0 (0%)	1 (7.7%)	0 (0%)
Snoring	0 (0%)	1 (7.7%)	0 (0%)
Dysphagia	0 (0%)	1 (7.7%)	0 (0%)
Tinnitus	0 (0%)	0 (0%)	0 (0%)
Hearing loss	0 (0%)	0 (0%)	0 (0%)

Table 2: Signs

Signs	Non-smoker(46)	Smoker(13)	passive smoker(3)
Congested Throat	6 (13%)	2 (15.4%)	2 (66%)
Congested Nose	5 (10.8%)	1 (7 .7%)	2 (66%)
Congested nasal mucosa	3 (6.5%)	1 (7 .7%)	0 (0%)
Congested Pharyngeal wall	2 (4%)	1 (7 .7%)	1 (33%)
DS	2 (4%)	1 (7 .7%)	0 (0%)
Congested Pharynx	2 (4%)	0 (0%)	0 (0%)
Congested vocal fold	2 (4%)	0 (0%)	0 (0%)
Long uvula	1 (2%)	0 (0%)	0 (0%)
Pale nasal mucosa	1 (2%)	0 (0%)	0 (0%)
Nasal edema	1 (2%)	0 (0%)	0 (0%)
Deviated septum	1 (2%)	0 (0%)	0 (0%)
Nasal secretion	1 (2%)	0 (0%)	0 (0%)
Congested larynx	1 (2%)	0 (0%)	0 (0%)
Uvula edema	1 (2%)	0 (0%)	0 (0%)
Congested malleus	1 (2%)	0 (0%)	0 (0%)
Congested Tymp. Memb.	1 (2%)	0 (0%)	0 (0%)
Granular pharynx	0 (0%)	1 (7.7%)	0 (0%)
Big tonsils	0 (0%)	1 (7.7%)	0 (0%)
Congested tonsils	0 (0%)	1 (7.7%)	1 (33%)

Table 3: Diagnosis

Diagnosis	Non-smoker(46)	Smoker (13)	passive smoker(3)
Rhinitis	13 (28.2%)	5 (38%)	0 (0%)
Upper Respiratory Tract Infection	6 (13%)	1 (7 .7%)	2 (66%)
Pharyngitis	5 (10.8%)	3 (23%)	0 (0%)
Allergic rhinitis	3 (6.5%)	1 (7 .7%)	0 (0%)
Rhinopharyngobronchitis	3 (6.5%)	0 (0%)	0 (0%)
NAD	4 (8.7%)	0 (0%)	0 (0%)
DS	2 (4%)	1 (7 .7%)	0 (0%)
Acute Bronchitis	1 (2%)	1 (7 .7%)	0 (0%)
Acute pharyngitis	2 (4%)	1 (7 .7%)	0 (0%)
Sinusitis	1 (2%)	1 (7 .7%)	0 (0%)
Common cold	2 (4%)	1 (7.7%)	0 (0%)
Laryngitis	2 (4%)	0 (0%)	0 (0%)
Congested pharyngitis	1 (2%)	0 (0%)	0 (0%)
Rhino bronchitis	1 (2%)	0 (0%)	0 (0%)
Cholesteatoma	1 (2%)	0 (0%)	0 (0%)
Snoring	1 (2%)	0 (0%)	0 (0%)
Rhinophyrangitis	1 (2%)	0 (0%)	0 (0%)
Congested throat	1 (2%)	0 (0%)	0 (0%)
Acute otitis media	1 (2%)	0 (0%)	0 (0%)
Rhinotonslitis	1 (2%)	0 (0%)	0 (0%)
Acute tonsillitis	0 (0%)	1 (7.7%)	0 (0%)
Acute tonsillo pharyngitis	0 (0%)	0 (0%)	1 (33%)

Figure 1: Questionnaire

Figure2: smokers who have multiple symptoms or one symptoms:

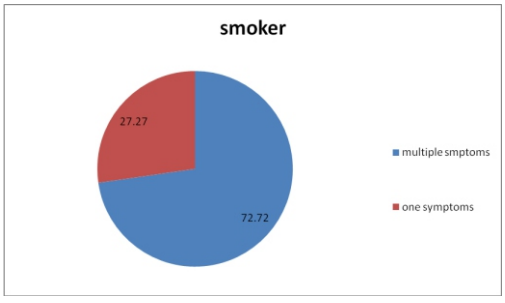
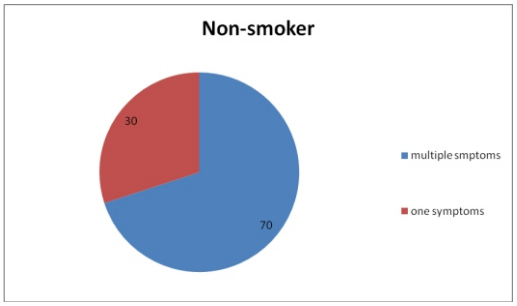


Figure3: smokers who have multiple symptoms or one symptoms:

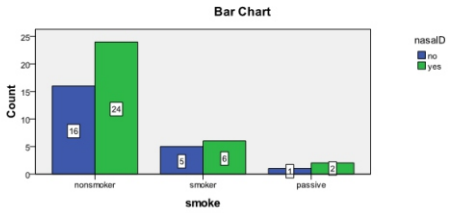


Statistical results:

The most common symptoms, nasal discharge: the P value > 0.05 so the null is accepted and there is no relationship between smoking and Nasal Discharge.

Chi-Square Tests

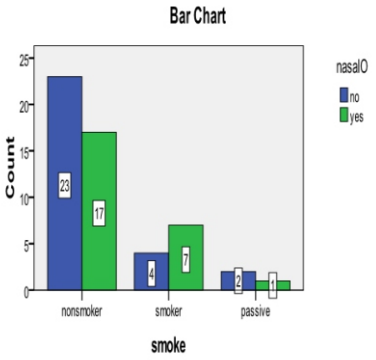
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.179a	2	.915
Likelihood Ratio	.179	2	.914
Linear-by-Linear Association	.001	1	.972
N of Valid Cases	54		



Nasal obstruction: the P value > 0.05 so the null is accepted and there is no relationship between smoking and Nasal obstruction.

Chi-Square Tests

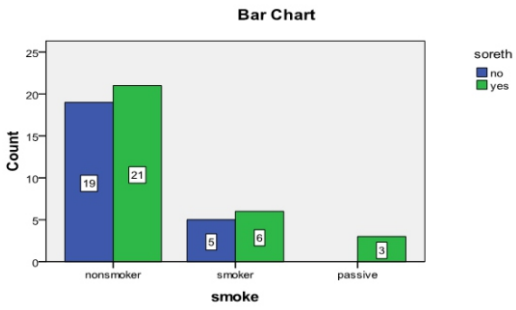
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.765a	2	.414
Likelihood Ratio	1.775	2	.412
Linear-by-Linear Association	.285	1	.593
N of Valid Cases	54		



As regards sore throat: the P value > 0.05 so the null is accepted and there is no relationship between smoking and sore throat.

Chi-Square Tests

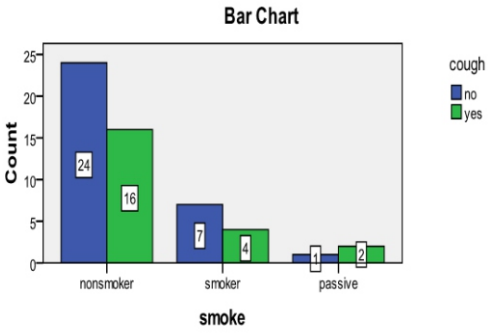
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.556a	2	.279
Likelihood Ratio	3.682	2	.159
Linear-by-Linear Association	1.471	1	.225
N of Valid Cases	54		



Cough: the P value > 0.05 so the null is accepted and there is no relationship between smoking and cough.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.932a	2	.628
Likelihood Ratio	.917	2	.632
Linear-by-Linear Association	.266	1	.606
N of Valid Cases	54		



Discussion:

Our study on the effect of smoking on upper respiratory system tract, did not find a difference between smokers and non-smokers on the upper respiratory tract.

A similar but a subjective study done in 1999, found only one symptom, which is smell, is reduced. Smell is significantly different between smokers, non-smokers, and passive smokers. They concluded that smokers are four times and passive smokers six times more likely to report a diminished sense of smell (13).

In another study in 2003, they did not find significant difference between children exposed or unexposed to smoking on their upper respiratory tract (14).

Conclusion:

There is no significant difference between smokers, non-smokers or passive smokers on their upper respiratory tract infection.

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