Indonesian Journal on Health Science and Medicine

ISSN 3063-8186. Published by Universitas Muhamamdiyah Sidoarjo

https://doi.org/10.21070/ijhsm.v1i2.39

Correlation Between Smoking Status and Respiratory Health Among Healthcare Workers in Hospitals of Mosul City/Iraq

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Abstract. This paper examines the effects of smoking on respiratory health in healthcare workers in the city of Mosul, Iraq. This was carried out in two main hospitals: Ibn Sina and Al-Salam Teaching Hospitals. A total sample of 162 participants was taken into consideration. The information obtained was through questionnaires interviews and tests of lung function, which included FVC, FEV1, and FEV1/FVC ratio. In this regard, it can be noticed that the percent distribution was: current smokers consisted of 30.9%, ex-smokers 4.3%, and nonsmokers, 64.8%. The research indicates that smoking is closely linked with asthma, bronchitis, and COVID-19. This finding reiterates the key that both smoking cessation programs targeting the smoker and improved chronic obstructive pulmonary disease control among healthcare employees are of immense importance.

الْخُلَاصَةُ

تَبْحَث هَذِهِ الْوَرَقَةِ فِي اثَارِ التَّدْخِين عَلَى صِحَّةِ الْجِهَازِ التَّنَفُّسِيّ لَدَى الْعَامِلِينَ فِي مَجَالِ الرِّعَايَةِ الصِّحِّيَّةِ فِي مَدِينَةِ الْمَوْصِلِ ، الْعِرَاق. تَمّ تَنْفِيذُ ذَلِكَ فِي مُسْتَشْفَيين رَئِيسِيّين: مُسْتَشْفَى ابْنُ سِينَا وَمُسْتَشْفَى السَّلَامُ التَّعْلِيمِيّ.

تَمَّ أَخَذَ عَيْنَهُ إِحْمَالِيَّة مِنْ 162 مُشَارِكًا فِي الِاعْتِبَارِ. وَكَانَتْ الْمَعْلُومَاتِ الَّتِي تَمَّ الْحُصُولِ عَلَيْهَا مِنْ خِلَالِ الِاسْتِبْيَانَات وَالْمَقَابَلَات وَاخْتِبَارَاتِ وَظَائِفِ الرِّئَة ، وَفِي هَذَا الصَّدَدِ ، يُمْكِن مُلَاحَظَةِ أَنَّ النِّسْبَةَ الْمِئَوِيَّة FVC, FEV1, وَالَّتِي شَمِلَتْ لِلتَّوْزِيعِ كَانَتْ: الْمُدَخِّنِون الْحَالِيُون يُتَأَلَّفُونَ مِنْ 30.9 ٪ ، وَالْمَدْخُنون السَّابِقُونَ 4.3 ٪ ، وَغَيْرِ الْمُدَخِّنِين 64.8٪.

تَظْهَرُ هَذِهِ الدِّرَاسَةِ أَنَّ هُنَاكَ عَلَاقَة كَبِيرَةٌ بَيْنَ حَالَةِ التَّدْخِين وَأَمْرَاضِ الْجِهَازِ التَّنَفُّسِيّ مِثْلِ الرَّبْو وَالْتِهَاب الشُّعَبِ الْهَوَائِيَّةِ وَكَوْفيد 19. مَرَّةً أُخْرَى ، يُؤَكِّدُ هَذَا عَلَى أَنَّ بَرَامِج الْإِقْلَاعُ عَنْ التَّدْخِين الْمُسْتَهْدفه وَالتَّدْخِلات الصِّحِّيَّة التَّنَفُّسِيَّة المُحْسِنَة بَيْنَ الْعَامِلِيْنِ فِي مَجَالِ الرِّعَايَةِ الصِّحِّيَّةِ يَجِبُ أَنْ تَكُونَ مَسْأَلَةُ مُلِحَّة.

ISSN 3063-8186. Published by Universitas Muhamamdiyah Sidoarjo

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Nomenclature & Symbols
%: Percentage
ARDS: Acute Respiratory Distress Syndrome
COPD: Chronic Obstructive Pulmonary Disease
COVID-19: Coronavirus Disease 2019
EHRs: Electronic Health Records
FEV1: Forced Expiratory Volume in 1 second
FVC: Forced Vital Capacity
Hs-CRP: High-sensitivity C-reactive protein
ICU: Intensive Care Unit
ILD: Interstitial Lung Disease
SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2

Highlights:

1. Smoking affects healthcare workers' respiratory health in Mosul hospitals.
2. Study links smoking to asthma, bronchitis, COVID-19, and COPD risks.
3. Urges smoking cessation programs and improved respiratory care for healthcare staff.

Keywords: Smoking, Hookah, Narghile, Lung function, FEV1, FVC, FEV1/FVC%, respiratory diseases, Healthcare workers, Hospitals

Introduction

Globally 10 % of adult users of tobacco consumed them and a few of them died from them another kind of smoking tobacco is hookah which similarly involves smoking shisha, bubble-bubble, Narghile, and water pipes. Hookah appeared more than 400 years ago, but it is a tendency that is observed at this time in all regions of the world, and within 45 minutes of one session, the smoker is exposed to 48. An increase of six to seven-fold smoke compared to smoking a cigarette [1]. Tobacco smoking is a very serious health hazard around the world that affects more and more people who have to deal with all the problems that it causes, including illness and a huge burden on the economy [2].

The risk of developing and worsening various lung diseases inclusive of COVID-19 infection is associated with smoking. Patients with a COVID-19 history of smoking or previous smoke exposure tended to have more severe manifestations of COVID-19 disease than non-smokers, therefore, we should know smoking behavior and also the patient smoking index which is an independent marker of the severity of chronic lung disease [3].

A major risk factor for the development of chronic obstructive pulmonary disease (COPD) is smoking but the prevalence of smoking-induced airflow limitation varies

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significantly in a population depending on environmental and host factors [4]. Currently, smoking is the root cause of more than 20 fatal diseases such as lung one, carcinogenic diseases, heart diseases and are stroke, chronic pulmonary obstruction disease cancer, and even lung cancer [5]. Because it is the first cause of preventable deaths around the world, which comes to a total of the death of 7 million people annually [5]. Smoking is associated with a more severe presentation of respiratory symptoms, less control of symptoms, more frequent visits to healthcare personnel, and decreased efficacy of the commonly used respiratory medications (e.g. inhaled corticosteroids) [5]. Even though smoking has been acknowledged as a risk factor for many respiratory diseases, there are disputing effects of influenza-associated morbidity and mortality [6].

It is not established whether smoking could increase the probability of COVID-19 hospitalization [7]. The understanding of current research is limited by the absence of proper controls, inadequate recording of smoking status, and the adjustment of related covariates [7]. Several studies took advantage of electronic health records (EHRs) that were regularly used to know the demographic characteristics, comorbidities, and smoking statuses involved in the study [7]. Respiratory health is affected negatively by tobacco smoke exposure [8]. The harmful effects of smoking on health differ greatly between men and women [2].

An evaluation of the health status and a study of the breathing process would be more preferred to the reporting of dyspnea, depending on whether the person is a smoker or has airflow limitation, in a group of working people [9]. Nevertheless, these assessments of the patients that were reported were found to be inaccurate in the smokers and individuals who had COPD that had been discovered by spirometry [9]. It is not easy to see evidence of independent roles of social class and smoking concerning obstructive airway diseases, but in fact, data on the impact of their interaction are scarce [10]. On the other hand, there is no evidence to show whether respiratory disease is also diminished in individuals who are not exposed to environmental tobacco smoke at their workplaces [11]. There is an indication that the regular practice of smoking was constantly linked with increased hospital admissions in people infected with influenza [6]. Although, most people present mild respiratory symptoms, susceptible populations such as pregnant women, children, older people, and those with some underlying chronic

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conditions could develop severe complications and have a high jeopardy of hospitalization or death [6].

Cigarette smoking is associated with the augmented hazard of severe trauma patients suffering acute respiratory distress syndrome (ARDS); however, the exact pathways are to be determined and explained [12]. Smoking history is an established risk factor for the development of chronic diseases such as lung diseases and is also one of the main reasons for making people more sensitive to COVID-19; still, the association of smoking with the poor prognosis of COVID-19 is not yet defined [13]. The connection between tobacco use and the severity of COVID-19 infection remains a hot topic [14].

Tobacco prevention and treatment programs have made a great deal of progress, but they still leave us with the problem of current tobacco use among low socioeconomic status individuals [15].

Related Works

Smoking is one major influencer factor which could be inherited and modifiable risk factor of several diseases such as cancer, or some common respiratory disorders and cardiovascular diseases [16]. Cigarette smoking may result in various pulmonary symptoms and diseases, starting from cough up to malignant neoplasms, and cigarette smoking is one of the most important causes of these conditions [17].

Air pollution is the biggest cause of asthma attacks, and smoking is the biggest cause of chronic obstructive pulmonary disease (COPD) and lower respiratory disease, Poverty-stricken people have no other option than to develop any form of respiratory disease [18].

The current coronavirus disease COVID-19 pandemic poses a great danger to public health, creating an instant threat to the health of the whole world population. Among many early results, an association was observed between smoking and severity of COVID-19 [19]. Chronic obstructive pulmonary disease (COPD) is among the most common long-term respiratory diseases that have high mortality rates and morbidity. It has emerged as the fifth most affected and the third most fatal disease in the world economy and continues to grow year by year [20].

The major risk factors for many cardiovascular and pulmonary diseases are smoking, lung cancer, and chronic obstructive pulmonary disease (COPD), respiratory disorders comorbid with diaphragmatic muscle dysfunction, for instance, pneumonia and

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respiratory infections, are the prominent health hazards faced by the aged depends largely on the diaphragm [21].

Smokers are generally more susceptible to infectious respiratory diseases and are at higher risk of developing severe complications from these infections. Conflicting reports exist regarding the impact of smoking on the risk of Coronavirus disease 2019 (COVID-19) infection [22].

The probability of breathing in hazardous substances is very high not only due to smoking but also to other environmental components, for instance, suspended particles in the air [23]. While not all chronic diseases related to tobacco smoking are the first step to quitting the smoking habit, although cessation is the most cost-effective of all medical interventions, it is still not properly utilized in healthcare settings [24].

Additionally, smoking even leads to certain infectious diseases that result in increasing rates of sickness all over the world and the growing numbers of those passing away because they are ill [25].

Even though the etiology of Interstitial Lung Diseases (ILDs) is multifactorial, cigarette smoking is pointed out as a major preventable factor that is at the root of their development and worsening [26].

In COVID-19 inpatients, mechanical ventilation is common and mortality is higher. But the role of the viral load on the results is unclear, Admission of SARS-CoV-2 viral load among hospitalized patients with COVID-19 has a distinct association with the issues of endotracheal intubation and in-hospital mortality. These data could be employed by therapists in helping to rule in or rule out a diagnosis in a patient [27].

Smoking is a major issue for COVID-19 outcomes according to the analysis, and it escalates the severity of the disease, the number of those who need to be hospitalized, and the number of patients who have to be admitted to the intensive care unit (ICU), the death rate, as well as presents the treatment process and changes the attitude of smokers, by extending their desire to quit smoking [28].

It is a known fact that lower respiratory microbiome is connected to disorders like asthma and bronchiectasis. Having repeated and uncontrolled inflammation is a direct cause of lung diseases that appear in various forms. The acquisition of lung diseases through smoking is linked to microbial exposure of the lung [29].

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Methods

This study was conducted in Iraq and carried out in two hospitals of Mosul City/ Nineveh Governorate, Ibn Sina Teaching Hospital, and Al-Salam Teaching Hospital. Mosul City is found in the northwestern part of Iraq, near the western shores of the great Tigris River. The likes of the second-largest city of the Republic of Iraq, after Baghdad city. It is approximately 400 kilometers north of Baghdad and about 100 kilometers to the west of Irbil (Kurdistan/Iraq capital).

The research involved:

1- A questionnaire and interview.
2- Lung function tests: Forced Vital Capacity, Forced Expiratory Volume in one second, and the ratio of them (FVC, FEV1, FEV1/FVC ratio).

Study Settings and Duration of the Study

Analytic Cross-Sectional Study, data was collected in Mosul, in which the questionnaire used to satisfy the purpose of the study was designed and distributed. Information was taken from interviews conducted with the personnel of the two hospitals in Mosul City, while data of 162 participants were gathered. The data collection occurred from the date of January 28th, 2024, till April 30th, 2024, which was the deadline.

Inclusion and Exclusion Criteria:

Inclusion Criteria: A small set of personnel from the two hospitals of Mosul City/Iraq.

Exclusion Criteria: Those avoiding pulmonary function tests, and who do not want to be engaged in the study

Result and Discussion

The smoking status and habits are explained in the following table,

Table (3.1.): This table represents general participants smoking status and habits, the current smokers' 50 participants about 30.9%, ex-smokers 7 participants about 4.3%, and those who do not smoke 105 about 64.8%. Narghile (Hookah) smoking: Currently smokers out of the total group, 11 participants were daily narghile smokers, and they smoke on average about 1.2 times daily (ranging between 1-2 times), based on an average of 2.7 annually (ranging between1-7 per year).

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Table (3.1.): Smoking Status of 162 Participants

Smoking Status		No.	%
Smoking cigarettes or any other type of smoking	**Current smoker**	50	30.9
	Ex-smoker	7	4.3
	Not smoker	105	64.8
Daily Narghile smoking (n=11)		1.2±0.4	(1-2)
Years Narghile smoking (n=11)		2.7±2.2	(1-7)
Daily Packs smoking (n=43)		1.3±0.7	(1-4)
Years Packs smoking (n=43)		5.4±6.3	(1-40)
Previously daily Narghile smoking (n=5)		1.4±0.5	(1-2)
Previously years Narghile smoking (n=5)		3.2±1.5	(1-5)
Previously daily Packs smoking (n=6)		2.2±1.8	(1-5)
Previously years Packs smoking (n=6)		8.8±9.5	(1-24)
Total number		**162**	

Previous narghile smoking: There were about 5 participants who smoked daily, they smoked 1.4 daily on average (ranging between 1-2 daily), and they smoked based on an average of 3.2 annually (ranging between 1-5 per year). Cigarette smoking: overall the group, 43 participants smoke cigarettes daily, and the average of smoking is 1.3 packs per day (ranging between 1-4 packs daily), and annually on average 5.4 yearly (ranging between 1-40 years). Ex-cigarette smokers were about 6 former smokers whose habit was to smoke a pack every single day, they smoked a daily average of 2.2 packets per day (ranging between 1-5 packs daily), and an annual basis average of 8.8 per year (ranging between 1-24 years).

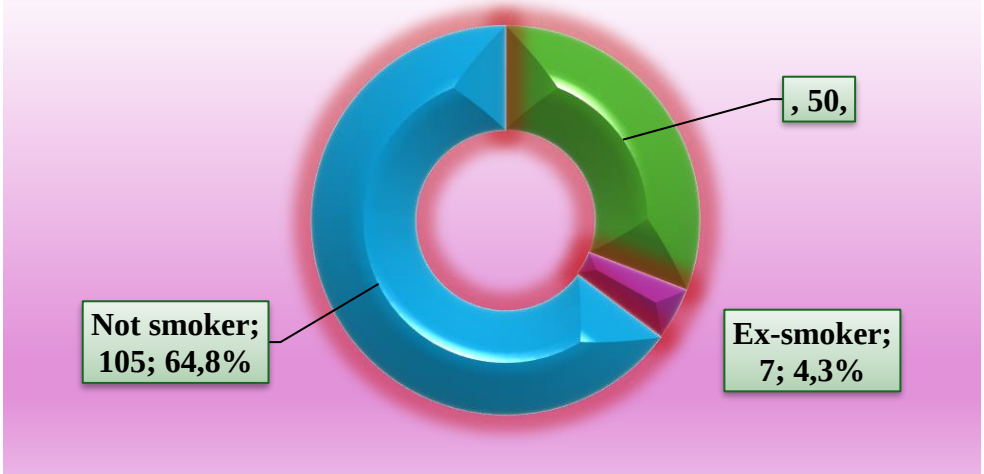

Figure (3.1): Smoking Status of 162 Participants, Smoking Cigarettes or any Other Type of Smoking

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Figure (3.1): This chart represents the smoking status of participants, in general, current smokers were about 50 participants 30.9%, ex-smokers were about 7 participants 4.3%, and those who did not smoke any type of smoking 105 were about 64.8%.

Table (3.2.): This table represents the data containing different diseases that have been diagnosed with certain patients. 5.6% of people have asthma, 4.9% suffer from acute bronchitis, 1.2% are diagnosed with chronic bronchitis, 2.5% were diagnosed with pneumonia, 10.5% have bronchitis by allergy, 3.7% have allergic rhinitis, and 0.6% have had cardiothoracic surgery, 0.6% have Chronic Obstructive Lung Disease (COPD), and 8.0% have COVID-19, while 62.3% of the people without any of these conditions are still the highest among their group. Emphysema, pulmonary fibrosis, interstitial lung disease (ILD), and immunological problems have not been reported. The most common problem remains that of allergic bronchitis which afflicts at the 10.5% rate of the population. COVID-19 virtually follows in frequency by affecting 8.0% of the population. The diagnosis of the other diseases included in the table as chronic bronchitis was 1.2%. The table concludes that the rest of the 62.3% of the individuals are not the worst for the diseases listed.

Table (3.2.): Prevalence of Medical Conditions Associated with the Lungs and Respiratory System

Ever been diagnosed with any:	**No.**	**%**
Asthma	9	5.6
Acute bronchitis	8	4.9
Chronic bronchitis	2	1.2
Emphysema	-	-
Pneumonia	4	2.5
Allergic bronchitis	17	10.5
Allergic rhinitis	6	3.7
Pulmonary fibrosis	-	-
Initialism of Interstitial Lung Disease (ILD)	-	-
Cardiothoracic surgery	1	0.6
Chronic Obstructive Lung Disease (COPD)	1	0.6
COVID-19	13	8.0
Any immunological diseases	-	-
None	101	62.3
Total number	162	

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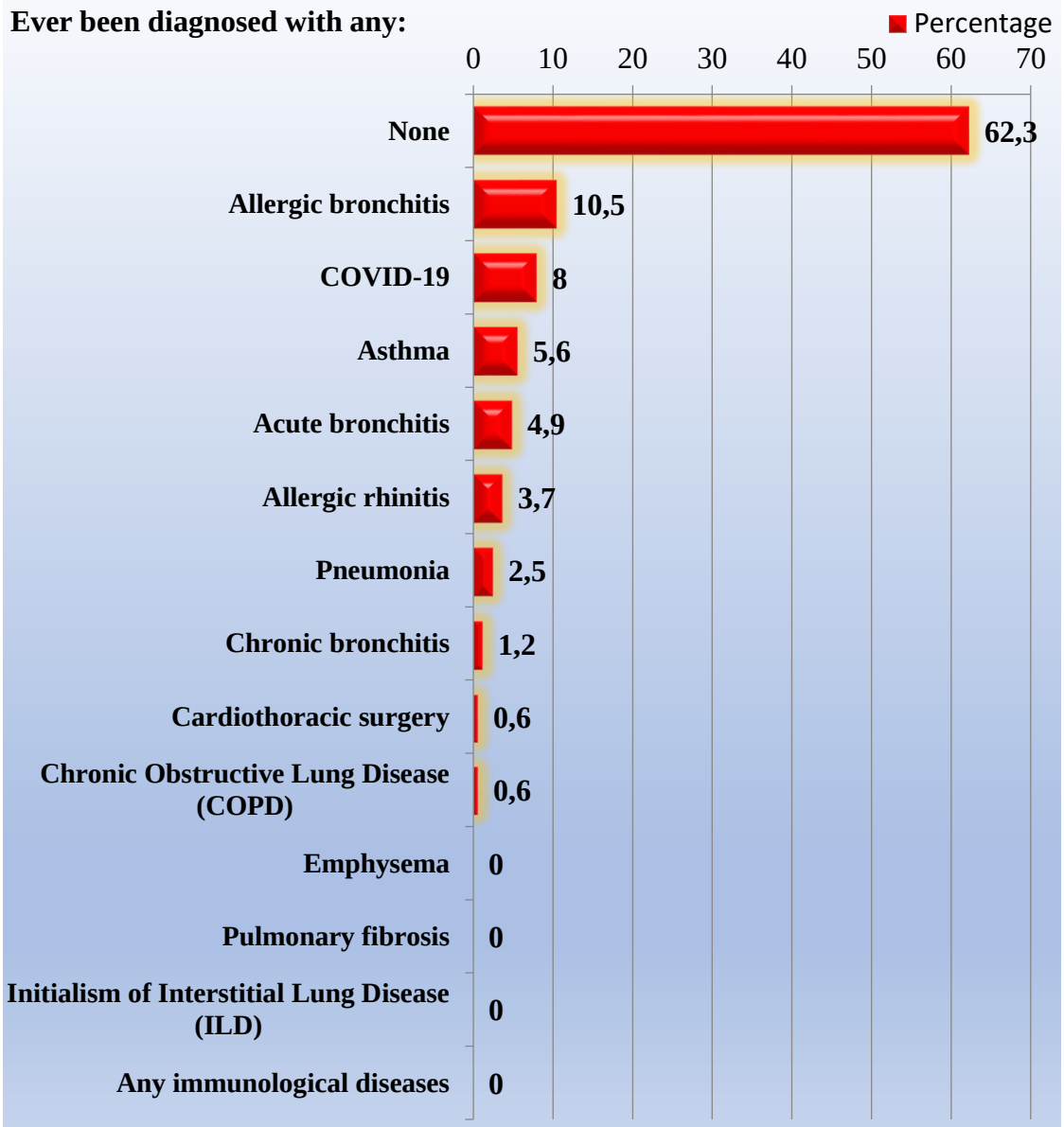

Figure (3.2): Respiratory Conditions that Affect Healthcare Workers in their Workplace

Figure (3.2): This figure represents some respiratory symptoms that come in association with some healthcare workers in their workplace, the majority of participants were about 62.3% while those who have been diagnosed with chronic obstructive lung diseases were about 0.6%, this figure shows some respiratory issues and their percentages.

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Table (3.3.): The statistics that were displayed in the data table show the percentage of different illnesses that a group of 162 persons had in the last 12 months. The primary line of the example tells that 76.5% of the individuals collected (124 out of 162) reported that they had any of the above-mentioned diseases at some point in the past year. The other group 23.5% (38 out of 162) said that they suffered from no symptoms. Each specific symptom is listed in the following rows complete with the percentage of respondents who had it. The most frequent complained-about cough was the most common, which was ailing over 53.1% of the participants. The second-place malfunction that 30.9% of all those included in the sample complained of was a headache. The individuals who made up nearly 25% of the population were those who complained about shortness of breath, and slightly more than 17.9% of them described it as dyspnea while being active.

Table (3.3.): Healthcare Worker's Symptoms of the Past 12 Months

		No.	%
Have experienced the following symptoms in the past 12 months	**Yes**	124	76.5
	No	38	23.5
Cough		86	53.1
Headache		50	30.9
Shortness of breath		39	24.1
Dyspnea on exertion		29	17.9
Chest tightness		17	10.5
Wheezing		12	7.4
Shortness of breath at rest		7	4.3
Fatigue		7	4.3
Pulmonary fibrosis (chronic lung conditions)		2	1.2
Others		-	-

The less common problems such as chest tightness (10.5%), wheezing (7.4%), shortness of breath at rest (4.3%), and fatigue (4.3%) made up the rest of the list of symptoms. Only 1.2% of the participants pointed out that they had pulmonary fibrosis, or one or other chronic lung conditions. The visualization of the "Others" category in the context of the table does not give them any definite symptoms to be specified, which hence implies that those people might have been affected by other symptoms that are not even mentioned from the beginning.

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Table (3.4.): The number of 45.7% of the participants, 54.3% were registered with restrictive or obstructive abnormality, and the rest of the participants were identified with a normal clinical status. A striking 54.1% of participants with abnormalities had a mild case, and 45.9% had a serious form of the situation. Moderate group records were not accessible. FVC ranged from 1.27 to 7.46 liters and the average volume was 3.65 liters. Additionally, the index for FEV1 results varied from 1.19 to 5.89 liters, the mean was 3.40. Whereas the FEV1/FVC ratio was concentrated near the mean and, the highest and lowest values entered at 71.76% and 100% respectively, the average ratio was 94.19%.

Moreover, the table is the full assessment of the lung function state of the study group. The restrictive or obstructive patterns in the lung as well as the prevalence of data abnormalities are shown by significant abnormal data. These lung function tests give evidence about the patient's respiratory health state in the medical staff's observation and help diagnose their disease.

Table (3.4.): FCV, FEV1, and FEV1/FCV % of the 162 Participants

		No.	**%**
Restrictive/Obstructive Abnormality	**Restrictive/Obstructive**	74	45.7
	Normal	88	54.3
Restrictive/Obstructive Abnormality type	**Slight**	54.1	
	Moderate	-	
	Serious	45.9	
	FCV (/Liter)	3.65±1.06	(1.27-7.46)
	FEV1 (/Liter)	3.40±0.87	(1.19-5.89)
	FEV1/FCV Ratio (%)	94.19±6.38	(71.76-100)

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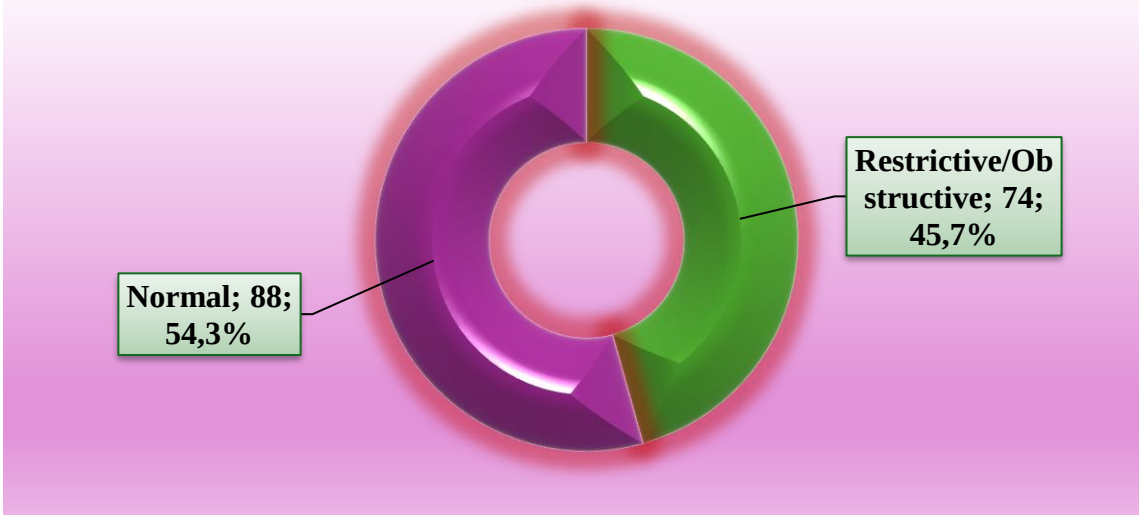

Figure (3.3.): The Restrictive/Obstructive Abnormality

Figure (3.3.): This chart shows the restrictive obstructive abnormality of 162 participants that have normal function tests Forced Vital Capacity, Forced Expiratory Volume in one second, and the ratio of them (FVC, FEV1, FEV1/FVC ratio), where the lung function tests of the 88 participants were normal and about 54.3%, and those 74 participants with restrictive and or obstructive abnormality were about 45.7%.

Discussions

The present study shows that (50) current smokers were a little bit more than the rest of the participants of different ages while (30.9%) were ex-smokers; precisely, there were (7) participants, and the others were non-smokers, who accounted for around (4.3%) with the majority of them around (105) participants, the total number of whom was approximately (64.8%), this result is somehow matching with the earlier study done by Sharifi et al (2020) in the north of Iran province. The researcher found that the smoking status was as follows: the non-smokers were the majority, approximately (778) participants, and that was nearly (78.3%), the other group of smokers at the time were (219) participants (21.7%) [30].

In this, the findings from one more study done in Belgium by De Troeyer et al (2022) are completely in line with it, as they mention that those who never smoked almost 50% of 450 participants (40%), former smokers of about 30% (308) of them, and finally, current smokers on 35% of 356 participants (32%) [31]. According to this research, the majority of the participants were non-smokers, which was also the case in

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the investigation that was run in a province in North Iran, even though this was not the case in Belgium. However, the percentage in the current study was higher than that in Iran, while it was similar to Belgium.

Possibly, the ex-smokers in this study deliberately covered up non-compliance or confessed due to the lower prevalence of relapse on the part of those in Belgium, which might indicate different motives and reasons for successful quitting or occasional non-reporting. These challenges can be attributed to cultural differences that are deep-seated in the society and the nation's condition regarding the smoking cessation program. In conclusion, these similarities serve as a reminder of the value of site-specific factors in smoking behaviors and the implementation of public health measures.

In related research done by Siddiqui et al (2019) on 150 male volunteers, the study used the total number of pack-years they had smoked, and the levels of hs-CRP and serum lipid profiles was measured to determine cardiovascular risk. It states that the longer the pack-years, the higher levels of dyslipidemias and raised hs-CRP will be, which means more cardiovascular diseases will be a problem, especially in groups with 21 – 30 and 31 – 40 pack years [32].

The present study reveals a more detailed picture of smoking-rate differences among respondents with the classification of it as former (4.3%), current (30.9%), and nonsmokers (64.8%). This data reveals the average number of cigarette packets they smoke and the years of smoking and hookah smoking habits among the current smokers. However, it does not take into account the health outcomes. These are the outcomes of the specific research on smoking behavior when carried out in combination with the clinical data given by Siddiqui et al (2019). Improved cardiovascular health might be the consequence of people being aware of the different smoking habits and the times during which they are involved. The well-known, comprehensive health strategy was proving to be instrumental in identifying as well as dealing with, multiple physical problems that are caused by various smoking methods.

The current study shows that the rate of smoking (former 4.3%, current 30.9%, and nonsmokers 64.8%) is much higher among the respondents who are categorized as former smoking former categories. Therefore, the findings reveal that the number of cigarettes and the years of smoking as well as the habit of hookah smoking are the main factors that affect current smokers. However, it does not account for the health

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https://doi.org/10.21070/ijhsm.v1i2.39

outcomes. These are the results of the specific research on smoking behavior when it is conducted combined with the clinical data provided by Siddiqui et al (2019). Better cardiovascular functioning could be achieved by such awareness of smoking methods, which can be the employed hours of people. The predominant health program that has been applied in the past was effective in identifying as well as dealing with, the many physical issues that are brought about by different ways of smoking.

The current study and the study conducted by Helexandra et al. (2022), have the same basic topic in both of them examining smoking behavior, but the former has a slightly different emphasis. The study by Helexandra et al. (2022), classifies the respondents into non-smokers, ex-smokers, and current smokers, besides the first one would include more than half of the population [3]. The paper focuses on smoking behavior pattern details alone without discussing any other health issues. However, it brings out that smoking status has been a factor in COVID-19 patients' outcomes and that the smoking index is the cause of the disease progression in those who have taken treatment at Dr. M. Djamil General Hospital [3]. On the other hand, smoking is also the major cause behind the COVID-19 progression and recovery, and the patient's smoking status is correlated with the clinical outcomes. While this study is about smoking behavior concerning clinical outcomes, the second research is more about the health outcomes of respiratory diseases such as COVID-19 patients related to smoking behavior.

Muwfaq Younis et al. (2023) and the current research papers both talk about the negative health effects of tobacco usage, albeit in different ways. In this research, a smoking status is found to be connected with worsening effects in COVID-19 patients, in that case, smoking is implicated in the severity and progression of the disease. On the other hand, health workers' increasing use of electronic hookahs as demonstrated in Younis et al.'s study is another issue the study faces [1]. However, it also shows that a correctly targeted health intervention can change smokers' behaviors [1]. The present study brings to light the immediate health risks of smoking, on the one hand, and the work of Younis et al. is a reminder of the importance of preventive approaches to smoking as the way to a healthier environment in the long run [1]. All these studies together reflect that the tobacco issue should be dealt with in the eradication of tobacco use in all its shapes and forms.

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The current study and Josephs et al. (2017) depict the smoking effects as dangerous in both their works, but in different circumstances. The current study shows that smoking aggravates the condition of respiratory diseases like COVID-19, leading to worse disease progression and faster recovery. The study by Josephs et al. concentrates on COPD and reveals that ex-smokers have better survival rates, fewer hospitalizations, and a lower mortality rate as compared to current smokers [4]. Over the years, smokers have been taught their dangers including the immediate dangers of smoking during a pandemic and the long-term benefits of quitting smoking parallel with chronic illnesses. The two studies agree that smoking cessation should be considered by everyone and that smoking is not healthy mainly to achieve better health.

The research by Jaakkola et al. (2019) and the current study both look at the relationship between smoking and lung health. However, the approaches to these studies are different. Jaakkola et al. mainly concentrate on working-age adults recently diagnosed with asthma, while they showed that smoking significantly reduces lung function, namely in large and small airways, through the dose-response relationship [33]. This study contains detailed spirometric data, demonstrating that even quitters who do it for the last time have impaired lung function. And on the other hand, tests a population and concentrates on smoking habits and the connection to different respiratory diseases and symptoms like asthma, bronchitis, and COVID-19. While it does not supply minute lung function readings, it demonstrates the respiratory signs among smokers, which in turn shows that smoking causes a wider range of health problems.

All in all, Jaakkola et al. present a concentrated study of smoking's immediate impact on the newly diagnosed asthmatics' lung function [33], at the same time, the current research offers a broader epidemiological picture of smoking's connection with numerous respiratory diseases and symptoms in the general population. Both studies highlight the high health risks of smoking.

The studies by Sprio et al. (2020) and the present study recently conducted both underlined the adverse effects of smoking on respiratory health, though from different perspectives. Sprio et al. concentrated on asthmatic smokers who are the worst-case scenario, where they found out that heavy smokers have much more severe lung injuries, like airflow obstruction and inadequate response to steroid treatment, compared to light or non-smokers [34]. Besides, they reported that this group of patients also

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https://doi.org/10.21070/ijhsm.v1i2.39

suffered less from allergies but the most notable lung function decline [34]. In contrast, recent research was aimed at a wide range of people. This included healthcare workers and people with different smoking statuses. The study showed that although some of the people had normal lung function, mild restrictive and obstructive lung issues appeared in some of them. The study informed the usual causes of respiratory problems such as allergic bronchitis and COVID-19. However, the incidence of chronic diseases like COPD was reported to be less. All in all, these two pieces of research stand to support the common notion that smoking is a major threat to lung health. Smoking heavily is hence particularly dangerous for asthmatics, while smoking lightly, could also cause severe respiratory problems.

The research conducted by Tajlil et al. (2020) showed that the smoking prevalence among patients with COVID-19 was lower than the averages of the general population, inferring a possible protective role or some data that was not reported on this topic [35]. On the contrary, the present study revealed that 30.9% of the respondents were smokers. This is the agreeable statistic of typical populations. Likewise, the current research gave specific statistics of respiratory problems, such as (8.0%) COVID-19 and (45.7%) lung function deficiencies. While Tajlil et al focused on the link between smoking and COVID-19, the current study gives a broad perspective on smoking habits by discussing the link of smoking with respiratory health, which shows the intensity of smoking, lung function, and respiratory diseases [35].

The Asfaw et al. (2018) study has made it very easy to identify the key risk factors for chronic respiratory symptoms which are smoking, previous respiratory diseases, family history, and occupational exposure to dust [36]. By comparing this to the present study on the general participants, we find some commonalities, such as the negative effects of smoking. In the current study, 30.9% were smokers, and there was smoking in both cigarette and hookah usage. The emergence of respiratory diseases such as bronchitis (10.5%) and asthma (5.6%) from the new study is identical to the long-lasting diseases that Asfaw et al. noticed [36]. Respiratory diseases and workplace exposures were one of the major contributors to health issues in the study. For instance, the lung function tests in the present study demonstrated that 45.7% of participants had restrictive or obstructive anomalies, thus making it comparable to the workers as they were manifesting symptoms of being sick which were related to pollution and smoking.

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https://doi.org/10.21070/ijhsm.v1i2.39

Both studies focus on the negative impacts of smoking and environmental factors on respiratory health, thus clearly displaying the necessity of public health measures for prevention.

Similarities in the health effects of smoking are witnessed in both the current study and Ng et al. (2020). In the aspect of smoking being the main cause of health problems and also respiratory ones, both studies are on the same page. The study at present discovered 30.9% of participants to whom smoking is a habit, with the majority of them smoking daily. This is in line with the study of Ng et al. (2020), which pointed out that the weight of tobacco smoke is a possible health risk [37]. The present study also deals with narghile (hookah) smoking, which further builds on an understanding of smoking-related risks. Both of the studies agree that there is a very good bond between the smoking and the respiratory conditions. The present study showed a high level of allergic bronchitis (10.5%) and COVID-19 (8.0%), which is echoed in the results of Ng et al. (2020) lungs and smoking [37]. The present study data on lung function ridicules 45.7% of the cases with restrictive or obstructive abnormalities, agreeing with Ng et al. (2020) research findings indicating that there is smoking-related lung impairment [37]. This detailed breakdown gives a deeper insight into how tobacco use influences lung health. In the end, both research papers point to the necessity that smoking cessation programs and mother respiratory health management plans be very effective.

The Baliunas et al. (2023) study indicates that the cessation of smoking might bring about such negative health impacts as a rise in diabetes and COPD [38], the current study provides a different view of the health status of people who smoke and how smoking affects them. There are fewer instances of COPD and more common other respiratory illnesses in the current study, meaning that types and intensities of smoking are paramount in health outcomes. As a whole, these studies give a detailed account of the intricate relationship between smoking, cessation, and health, which calls for such measures as individually tailored public health strategies and further research so that these dynamics can be fully grasped

Conclusion

1- A key Statistic: A key statistic is the high correlation between smoking and asthma, bronchitis, and COVID-19.

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https://doi.org/10.21070/ijhsm.v1i2.39

2- Smoking Prevalence: The data revealed that 30.9% were current smokers, 4.3% were ex-smokers, and only 64.8% were non-smokers among the participants.
3- Health Risks: The more severe respiratory symptoms and the reduced efficacy of respiratory medications are the main side effects of smoking.
4- Smoking Cessation: The survey underscores the critical necessity of smoking cessation programs and the provision of better respiratory health intervention programs to healthcare workers.
5- Lung Function: Lung function tests found that a significant portion of the subjects had restrictive patterns or airway flow obstruction so, it is reasonably smoking that is affecting their respiratory system

Recommendations

1- Phased in smoke-free policies:

At the start you should establish smoking zones the areas are non-smoking which is away from patient care, select low smoke-free areas and put them on your list of places to build upon these as you learn more about the cultural practice of smoking.

2- Healthcare workers Education:

Organize local peer-motivated awareness sessions by trusted medical practitioners, and illustrate the health effects of smoking with related case studies.

3- Affordable health screenings:

Ensure the respiratory screenings are inexpensive, even on a tight budget, and work with international bodies to donate screening equipment.

4- Strengthen hospital infrastructure to the best of one's capacity:

Always prioritize cheap ventilation upgrades such as opening windows as needed, and clean the living place to limit inhalable particles that may irritate your lungs.

5- Realistic incentive programs:

Provide non-monetary incentives-created an extra break for nonsmokers, and identify and praise people on your staff who manage to quit smoking.

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https://doi.org/10.21070/ijhsm.v1i2.39

6- Collaborate on research:

Collaborate with universities in your countries to continue researching smoking and health, and disseminate the results to other hospitals in your country so that you can create a national data set.

7- Strengthen current occupational health services:

Educate designated current staff members on smoking-related health matters, and create a network of referrals for specialized care as necessary.

8- Collaborate with Government Health Agencies:

Support more effective national tobacco control policy, and advocate for government assistance with anti-smoking programs in healthcare places.

9- Indigenous communication:

Old Media: Use traditional media (radio, TV) along with new methods of communication (e.g., social media and SMS), for anti-smoking messages, and work with credible community faces as part of a communication strategy.

10- Confront waterpipe (shisha) use:

Education should cover the risk of water pipe smoking, and develop targeted smoke cessation intervention strategies for water pipe use.

11- Consider economic factors:

Work with local businesses for small rewards to incentivize quitting.

12- Address security concerns:

Make sure that smoking areas do not compromise the security of the hospital, and build smoking-related fire safety within hospital emergency protocols.

13-Capacity Building:

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https://doi.org/10.21070/ijhsm.v1i2.39

Build a group of smoking cessation specialists among the prevailing healthcare workers, and provide the next level see more of the trainer training to boost mastery in several hospitals thus achieve excellence in different fields.

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