



Original Research

Knowledge and Practice of Physicians towards the use of Influenza Vaccine in Chronic Obstructive Pulmonary Disease in UAE

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Abstract

Introduction: Chronic obstructive pulmonary disease (COPD) is an inflammation in airway that limits airflow to lungs. According to the GOLD guidelines based on the severity of airflow obstruction, it classified as mild, moderate, severe, and very severe. People at higher risk of developing flu complications like COPD patients. Flu vaccine was one of treatment to reduce severe exacerbation of COPD. Studies were conducted to express physicians' knowledge, attitude, and practices used to reduce the severity of COPD exacerbations. No studies have been conducted in UAE. This study will increase the awareness of recommending influenza vaccine in COPD patients by physicians. **Aim:** To determine the knowledge and practice of healthcare providers regarding the use of influenza (flu) vaccine in patients having COPD with severe exacerbations in UAE. **Methods:** An anonymous cross-sectional online survey was conducted in two hospitals, thirteen primary healthcare centers, and one preventive medicine center in the northern area of the UAE. The study covered 200 physicians. SPSS statistical software version 27 was used to analyze the data. **Results:** The study showed that 95.5% of physicians agreed there was a relationship between influenza infection and the severity of exacerbation in COPD patients (p-value=0.00). Around 70% of the physicians prescribe flu vaccines to COPD patients with severe exacerbation (P-value=0.00) and 61% of physicians reported that COPD patients do take the influenza vaccine annually (P-value=0.00). Many factors greatly impacted the practitioner's practices in recommending influenza vaccine to COPD patients. 79% of physicians considered patients risk for respiratory failure and severe exacerbations, following the GOLD guideline and information from experts (72% and 61% respectively) and reduction in the cost and burden of hospitalization (77.5%) directed them to prescribe influenza vaccine. **Conclusion:** This research is considered the first study conducted in Northern region of UAE regarding the use of influenza vaccine in COPD patients. The physicians agreed on the importance of prescribing influenza vaccines to COPD patients. Still, they recommended that policies should be established (following the GOLD guidelines) to mandate the use of influenza vaccine in COPD patients with severe exacerbations.

Keywords: Chronic Obstructive Pulmonary Disease (COPD), Influenza vaccine, Exacerbations, Physicians

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a common chronic progressive lung disorder that cannot be fully reversible and is characterized by obstruction and limitation of airflow to the lungs; due to inflammatory response in the airways¹. COPD is an encompassing term utilized to describe progressive lung diseases, comprising chronic bronchitis, emphysema, and refractory (irreversible) asthma². According to the functionality of the lung, COPD is divided into 4 stages: mild stage where 80% of the lung function is normal; moderate stage where 80-

50 % of lung function is normal; severe stage where 50-30 % of lung function is normal, and very severe stage where less than 30% of lung function is normal. Asthma attacks and COPD exacerbations occur when the lungs become tight and swollen³.

COPD symptoms may include productive cough (with sputum) and dyspnea or shortness of breath which may affect the daily activities of the patients¹. There are some risk factors which can increase the burden of developing COPD, which explains the more than 5% of COPD patients with high morbidity and mortality rates. In 90% of cases exposure to tobacco smoke is the main cause of COPD exacerbations¹. Patients with COPD or asthma are more susceptible to severe complications from influenza infection due to respiratory compromise that may require hospitalization⁴. It has been reported that $\leq 50\%$ of exacerbations may result from viral infection and influenza-related death occurs primarily in patients that manifest COPD and asthma⁴. Management of COPD can be achieved through smoking cessation, using bronchodilators and influenza vaccination, which can be helpful in decreasing hospitalization risk in COPD patients as well as the severity of further exacerbations, although there are some doubts related to efficacy of vaccine and its side effects in COPD patients⁵. The flu vaccine offers number of benefits that include protection against flu infection^{6,7,8}, severity⁹, and hospitalization^{10,11} reported that flu vaccination reduced hospitalization risk for

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pneumonia or influenza and death among elderly subjects by 27% and 48%, respectively. Similarly, one study found that Influenza vaccination is associated with lower risk of having heart and respiratory problems or worsening the symptoms¹².

Nonetheless, despite the efficacy of the Influenza vaccine, there are some lingering questions regarding the relationship between viral infections in COPD patients and hospitalization and increased admission rates, the effect of viral infection on the severity of COPD exacerbations, capacity of routine annual influenza vaccination to decrease the severity of COPD exacerbations, and the key determinants of the decision of physicians to strongly recommend influenza vaccination, particularly in the UAE. Moreover, in the UAE, not much is known about physicians' knowledge and practice of Influenza vaccination among COPD patients. To answer these questions, the opinion of physicians with regards to recommending flu vaccine among COPD patients is needed. Therefore, the objective of this study is to determine the knowledge and practice of healthcare providers regarding the use of influenza (flu) vaccine in patients having COPD with severe exacerbations to reduce the rate of morbidity and mortality in UAE. This study also aims to identify the set of key factors that influence decisions of physicians to strongly recommend influenza vaccination in COPD patients in UAE. This will establish the relationship between viral infections and the severity of COPD exacerbations. This study will also improve understanding of the opinion of physicians in using Influenza vaccine to reduce the severity of COPD exacerbations in UAE.

The outcome of this study is pertinent as viral infection can lead to greater airway inflammation in patients with COPD, causing severe exacerbations and longer recovery time leading to hospitalization. Thus, this study will increase the awareness of recommending influenza vaccine in COPD patients by physicians, which can be helpful in reduction of hospitalization risk in COPD patients and reduce the severity of further exacerbations.

METHODOLOGY

Study design and participants

A cross-sectional study was conducted in Fujairah hospital, healthcare centers within the emirate of Fujairah (Qidfaa, Murabah, Qurayyah, Alfaseel, Dadna, Albedya, Hala, Madina, Khalabiya, Siji.WadiAlsader, Murashed), Fujairah Preventive Medicine Centre, and Sharjah Hospitals (kalba and Khorfakkan) in UAE. The study was conducted from 5th of July 2021 till 31st of August 2021. The study was carried out by distributing an online self-administered semi structured questionnaire through Survey Monkey. The study was approved by UAE Ministry of Health and Prevention (MOHAP) Research Ethical Committee (Approval Reference No: MOHAP/DXB-REC/MJ. J/No.47/2021) and Dubai Pharmacy College Research Ethical Committee (DPC-REC) (Approval Reference No: REC/PG/2021/13). The study included 200 physicians from participating hospitals and institutions. The physicians comprise general practitioners, emergency doctors, ENT specialists and pulmonologists. The study excluded physicians from other specialties, patients, pharmacists, and nurses.

Data collection and analysis

The distributed self-administered questionnaire comprised a total of 25 survey questions. The survey was formatted as an online survey and was composed of three sections. A survey link was distributed to all study participants via email emails, WhatsApp, and telegram. The whole data collected process was done over one month period, and after the completion of the data collected, all responses were analyzed using SPSS statistical software version 27. The collected responses were considered as the primary source of information of this study, while books and health publications were considered as secondary sources. The questionnaire was sent to three expert professors from Fujairah Hospital for validation. To measure the reliability, the survey was distributed to 5 specialists and 1 consultant, and Cronbach's alpha value was calculated using SPSS program version 27. The independent Cronbach alpha value was consistently higher than 0.60, demonstrating good internal consistency and suitability for application among physicians¹³.

RESULTS

Participants' Characteristics

The questionnaire included 2 main parts, namely: Knowledge and Practice. Each contained several questions. The answers to these questions were either correct (coded as 1) or incorrect (coded as 0). The participants' overall answers are categorized into 3 scores abbreviated as KS and PS respectively (Table 1), and each score has been subdivided into 3 categories, based on percentile as follows: Poor: <33%, Moderate: 33% – 67% and Good: >67%

Percentile	KS(Max score = 10)	PS (Max score = 7)
<33%	7	3
33%-67%	7-9	3-6
>67%	10	7

Based on the collected data (Table 2), 57.5% of the participants were male, while 42.5 % were female. Majority of the participants (45.5%) were aged above 50 and above, while 29% were aged between 31-40 years. 55% of the participants were general practitioners, which is more than half of the participants, while 32.5% were specialists and 12.5% were consultants. Among the GP, consultants and specialists, about 55% were emergency doctors. 52.5% of the participants had more than 10 years of experience, while 27.5% had 6-10 years of experience. Most of them (94%) dealt with "Geriatrics with COPD patients". 48% stated that more than 20 patients were hospitalized in their departments for pneumonia in the past 2 years, while others stated less numbers.

Knowledge of Physicians

The knowledge of physicians towards the use of flu vaccine in COPD patients was also analyzed. From Table 3, it can be inferred that 95.5% of the physicians agree that there is a relation



Table 2. Demographic data of the participants

Variable	Categories	Freq.	% (N= 200)
Job Title	General practitioner	110	55
	Specialist	65	32.5
	Consultant	25	12.5
	Emergency Doctor (GP)	110	55
Major	Specialist /Consultant (ENT Physicians + Pulmonologist)	90	45
Gender	Female	85	42.5
	Male	115	57.5
Age	25-30	38	19
	31-40	58	29
	41-50	13	6.5
	>50	91	45.5
Years of Experience	Less than 1 year	11	5.5
	1-5 years	29	14.5
	6-10years	55	27.5
	More than 10 years	105	52.5
Population Usually Dealt with	Adults with COPD	12	6
	Geriatrics with COPD	188	94
No. Of COPD patients hospitalized for Pneumonia in past 2 Years in the department	<5	21	10.5
	05-Oct	42	21
	Nov-20	41	20.5
	>20	96	48

Table 3. Knowledge of Physicians towards the use of flu vaccine in COPD patients

Questions	Answers	N(%)	
		Yes	No
Q1: What are the causes of COPD Exacerbations?	Smoking and other triggers	19(9.5%)	181(90.5%)
	Viral infection	18(9%)	182(91%)
	Bacterial infection	3 (1.5 %)	197(98.5%)
	All of the above	160(80%)	40(20%)
Q2: Do you agree that there is a relation between influenza infection and the severity of exacerbation in COPD patients?	Yes	191(95.5%)	9(4.5%)
	NO	9(4.5%)	191(95.5%)
Q3: Do you agree with this statement; "viral infections in COPD patients can lead to increase hospitalization and admission rates"?	Yes	136(68%)	64(32%)
	NO	64(32%)	136(68%)
Q4: Are you aware about the recent studies that are correlating Viral Infection with the severity of COPD exacerbations?	Yes	165(78%)	35(17.5%)
	No	44 (22%)	156(78%)
Q5: How much greater is the risk of developing severe COPD exacerbations in patients with viral infections?	2 times greater	160(80%)	
	5-10 times greater	0(0%)	
	Don't know	40(20%)	
Q6: Influenza vaccine can reduce inflammation and severity of COPD exacerbation?	Yes	131(65%)	69(34.5%)
	NO	69(34.5%)	131(65%)
Q7: If Yes, when influenza vaccine should be given?	Every year	146(73%)	
	Every 2 years	39(19.5%)	
	Every 5 years	15(7.5%)	



Q8: Antiviral medications or influenza vaccination are helpful with COPD patients in reducing hospitalization rates and severity of illness?	Yes	200(100%)	0(0%)
	NO	0 (0%)	200(100%)
Q9: Usually patients with severe COPD exacerbation have flu-like symptoms?	Yes	125(62%)	75(37.5%)
	NO	75(37.5%)	125(62%)
Q10: What were the major symptoms of COPD exacerbations that have been reported by the patient or patient's relatives during respiratory viral infection?	Fever	3(1.5%)	197(98.5%)
	Worsening cough	7(3.5%)	193(96.5%)
	Increased shortness of breath	10(5%)	190(95%)
	All of the above	180(90%)	20(10%)

between influenza infection and the severity of exacerbation in COPD patients, and 68% of them believe that viral infections in COPD patients can lead to increase in hospitalization and admission rates. 78% of the physicians reported they are aware of recent studies that correlate viral Infection with the severity of COPD exacerbation. 80% of practitioners reported that viral infections increase the risk of COPD exacerbation by two times.

Majority of physicians (65%) approved that the inflammation and severity of COPD exacerbation can be reduced in patients taking Influenza vaccine every year. All of the physicians agreed that antiviral medications or influenza vaccination were helpful with COPD patients in reducing hospitalization rates and severity of illness. The major symptoms of COPD exacerbations that have been reported by the patient or patient's relatives during respiratory viral infection includes: flu-like symptoms (62%), fever (1.5%), worsening cough (3.5%), increased shortness of breath (5%) and 90% reported all symptoms.

As shown in Table 4, 86.4% of the general practitioners, 73.8% of the specialists and 68% consultants reported that the combination of smoking, viral infections, and bacterial infections could trigger COPD exacerbations, whereas only 6.4% of general practitioners, 10.8% of the specialists and

20% consultants opine that smoking was the main factor that triggered COPD exacerbations. Likewise, it was noted that 6.4% of general practitioners, 12.3% of the specialists and 12% consultants had the opinion that viral infections could lead to COPD exacerbations. Glaab (2012) indicated that the two most important risk factors that cause symptoms of COPD exacerbation were smoking (99% of the physicians) and followed by bacterial and/or viral infections (29%). Thus, it can be inferred that the respondents that not one factor, but a combination of several factors, lead to the exacerbation of COPD.

As shown in Table 5, 46% of the physicians demonstrated good knowledge, whereas 29.5% and 24.5% of physicians demonstrated poor and moderate knowledge.

As shown in Table 6, it was noticed that emergency doctors (GP) exhibited good knowledge (60.9%) when compared to specialist (33.8%) and consultants (12%) (p-value = 0.00). This could be because the sample size of specialist and consultants was less compared to the GP (p-value=0.00). Comparatively speaking, 55% of females had better knowledge than males (39%). It was found that as the age and years of experience of the participants significantly increased the level of knowledge (p-value = 0.00). 46.3 % and 41.7% of the physicians reported good knowledge regarding geriatric patients COPD patients and adult COPD patients, respectively. This demographic variable of "category of COPD patients being dealt with" had a p-value of 0.337, because there was not much difference between the two categories. The practitioner's knowledge increased significantly with increasing number of hospitalized patients (p-value = 0.00).

Table 4. Causes of COPD exacerbations according to job title

Causes of COPD Exacerbations			
What is your job title?		Frequency	%
General practitioner	Smoking and other triggers	7	6.4
	Viral infection	7	6.4
	Bacterial infection	1	0.9
	All of the above	95	86.4
	Total	110	100
Specialist	Smoking and other triggers	7	10.8
	Viral infection	8	12.3
	Bacterial infection	2	3.1
	All of the above	48	73.8
	Total	65	100
Consultant	Smoking and other triggers	5	20
	Viral infection	3	12
	All of the above	17	68
	Total	25	100

Table 5. Overall physicians' knowledge

Indicator	Variable	
	KS	
Minimum	2	
Maximum	10	
Median	9	
Mean	7.94	
SD	2.44	
Score Categorization (%)	Poor	29.50%
	Moderate	24.50%
	Good	46.00%



Table 6. Association between demographic variables and physicians' knowledge

Demographic Variable	Categories	N	Poor Knowledge	Moderate Knowledge	Good Knowledge	P-value
Job title	General practitioner	110	21.80%	17.30%	60.90%	0
	Specialist	65	32.30%	33.80%	33.80%	
	Consultant	25	56.00%	32.00%	12.00%	
	Emergency Doctor (GP)	110	21.80%	17.30%	60.90%	
Major	ENT Physicians +Pulmonologists (Specialist /Consultant)	90	57.10%	42.90%	0.00%	0
Gender	Female	85	30.60%	14.10%	55.30%	0.009
	Male	114	28.70%	32.20%	39.10%	
Age	25-30	38	57.90%	21.10%	21.10%	0
	31-40	58	32.80%	19.00%	48.30%	
	41-50	12	15.40%	38.50%	46.20%	
	>50	91	17.60%	27.50%	54.90%	
Years of experience	Less than 1 year	11	27.30%	63.60%	9.10%	0
	1-5 years	29	55.20%	31.00%	13.80%	
	6-10 years	55	40.00%	16.40%	43.60%	
	More than 10years	104	17.10%	22.90%	60.00%	
Category of COPD patients dealt with	Adults with COPD	12	16.70%	41.70%	41.70%	0.337
	Geriatrics with COPD	187	30.30%	23.40%	46.30%	
No. of COPD patients hospitalized for pneumonia in past 2years in the department	<5	21	66.70%	19.00%	14.30%	0
	05-Oct	42	59.50%	35.70%	4.80%	
	Nov-20	41	36.60%	36.60%	26.80%	
	>20	95	5.20%	15.60%	79.20%	

Table 7. Physicians' practice in using Influenza vaccine for COPD patients

Questions	Answers	N%	
		Yes	No
Q1: Do you often deal with COPD patients?	Yes	136 (69%)	64 (32%)
	No	64(32%)	136 (69%)
Q2: What is the age of COPD patients that you have dealt with?	20-40 years	36 (18%)	-
	41-50 years	36 (18%)	
	Above50 years	128 (64%)	
		N%	
		Yes	No
Q3: Usually physicians in your hospital increasing the awareness and knowledge of patients and patient's relatives regarding COPD exacerbation and its risk factors?	Yes	121(60.5%)	79(39.5%)
	No	79(39.5%)	121(60.5%)
Q4: Have you ever seen any improvement in COPD patients' case since their last flu vaccination?	Yes	121(60.5%)	79(39.5%)
	No	79(39.5%)	121(60.5%)
Q5:Accordingtopatient'shistory, are COPD patients taking flu-vaccines annually?	Yes	122(61%)	78(39%)
	No	78(39%)	122(61%)
Q6: Regarding elderly patients with COPD, would you give influenza vaccine?	Yes	133(66.5%)	67(33.5%)
	No	67(33.5%)	133(66.5%)
		N%	



		Poor	Good
Q7: What are the factors associated with your practices as a practitioner made you strongly recommend influenza vaccine for COPD patients?	Patients risk for respiratory failure and severe exacerbation.	42(21%)	158(79%)
	Recommendations from expert groups.	78(39%)	122(61%)
	Reduce the risk of hospitalization and death.	68 (34%)	132(66%)
	Patients' interest and desire to be vaccinated.	55 (27.5%)	145 (72.5%)
	Follow GOLD standards of yearly vaccinate all COPD patients.	56 (28%)	144 (72%)
	Reduce the cost of hospitalization.	45 (22.5%)	155 (77.5%)

69% of the patients regularly dealt with COPD patients, as presented in Table 7. According to the patient's history, 61% of physicians noted that COPD patients do take influenza vaccine annually. 66.5% of the physicians were likely to prescribe Influenza vaccine to elderly patients afflicted with COPD. 60.5% of the physicians found improvement since their last vaccination. It was also noted that 60.5% of physicians increased awareness among patients towards COPD exacerbations and their risk factors. Majority of COPD patients that the physicians dealt with were aged over 50 years.

Many factors greatly impacted practitioners' practice of recommending Influenza vaccine to COPD patients. 0.79% of physicians considered patients at risk for respiratory failure and exacerbations, which influenced their prescribing vaccine. 72% and 61% of the physicians adhere to the GOLD guidelines and information from experts, respectively, which influenced their decision to strongly recommend influenza vaccine. The reduction of cost and burden of hospitalization was a factor that influenced 77.5% of the physicians to prescribe the flu vaccine. Patients' desires and interest to be vaccinated also influenced the physicians to vaccinate them. 66% of the physicians also considered hospitalization and death as important factors that influence their decision to recommend Influenza vaccine.

As shown in Table 8, 47% of physicians demonstrated good

Table 8. Overall physicians' practice

Indicator	Variable	
	PS	
Minimum	0	
Maximum	7	
Median	6	
Mean	4.62	
SD	2.57	
Score Categorization (%)	Bad	32.50%
	Moderate	20.50%
	Good	47.00%

practice, whereas 32.5% and 20.5% of physicians demonstrated bad and moderate practice.

As presented in Table 9, 60.9% of the emergency doctors (GPs) exhibited good practice when compared to 3.6% of the ENT physicians and pulmonologists (specialist /consultant) (p-value =0.00). This could be attributable to the lesser sample size of specialists and consultants compared to that of the GP (p-value =0.00). Emergency doctors (GP) often deal with COPD patients and have seen non-improvement in patients taking flu vaccine

Table 9. Association between demographic variables and physicians' practice

Demographic Variable	Categories	N	Poor Practice	Moderate Practice	Good Practice	P-value
Job title	General practitioner	110	23.60%	15.50%	60.90%	0
	Specialist	65	41.50%	21.50%	36.90%	
	Consultant	25	48.00%	40.00%	12.00%	
	Emergency doctor(GP)	110	23.60%	15.50%	60.90%	
Major	ENT physicians + pulmonologists (Specialist/Consultant)	90	67.90%	28.60%	3.60%	0
Years of experience	Less than 1year	11	72.70%	9.10%	18.20%	0
	1- 5 years	29	62.10%	24.10%	13.80%	
	6 – 10 years	55	38.20%	21.80%	40.00%	
	More than 10 years	105	17.10%	20.00%	62.90%	
Population usually dealt with	Adults with COPD	12	16.70%	41.70%	41.70%	0.178
	Geriatrics with COPD	188	33.50%	19.10%	47.30%	
No. of COPD patients hospitalized for pneumonia in past 2 years in the department	<5	21	66.70%	28.60%	4.80%	0
	05-Oct	42	59.50%	33.30%	7.10%	
	Nov-20	41	51.20%	26.80%	22.00%	
	>20	96	5.20%	10.40%	84.40%	



annually, as 60.9% of them strongly recommend the flu vaccine, thus increasing the awareness among COPD patients. Although the ENT physicians and pulmonologists (specialist/consultant) are experts in their fields, only 3.6% strongly recommend the flu vaccine (p-value = 0.00) as there are no policies in UAE to mandate flu vaccine. The vaccines might be recommended in chronic cases but not in acute cases (p-value = 0.00). In addition, the majority of physicians (47.3%) dealt with geriatrics COPD patients, while 41.7% reported dealing with adult COPD patients (p-value = 0.178). The consistency in rates can be attributed to the similarity between these two categories. Physicians' practice increased significantly with increase in the number of hospitalized patients (p-value = 0.00).

From Table 10, ANOVA test results showed the comparison between job title and factors that strongly influence the recommendation of flu vaccine. It is apparent from the p-values that all factors are significant with the exception of "patient risk of respiratory failure and severe exacerbation" ((p-value = 0.051 (>.050)). All healthcare practitioners agreed that the good practice is to recommend yearly Influenza vaccination to all COPD patients in adherence to the GOLD standards, thereby reducing the cost of hospitalization.

DISCUSSION

A number of studies evaluated knowledge about influenza and attitudes toward the use of vaccine among healthcare professionals^{12,14,15,16}. A study conducted a cross-sectional survey to assess the awareness, knowledge, and attitudes of the public in different countries toward use of influenza vaccine and barriers preventing them from taking the vaccine. Our

results showed that the job title, major, and years of experience of the physicians, as well as number of COPD patients hospitalized for pneumonia in past 2 years in the department significantly influenced their recommendation of flu vaccine to COPD patients¹⁷. More specifically, GPs, emergency doctors, physicians with more than 10 years' experience and physicians treating over 20 COPD patients showed the highest rates of good practice in their respective categories. It can be deduced that experience helped physicians to be aware of previous vaccination rates and uptakes, clinical vaccination card reminders, and patients' records, which influence their knowledge and practice of flu vaccination.

Overall, the results from the current study showed an acceptable median score of knowledge of influenza among the participants. Obviously, physicians are the main source that COPD patients sought to gain information about influenza. In this study, 60.9% and 36.9% of GPs and specialists exhibited the good practice of strongly recommending the use of Influenza vaccine for the treatment of COPD elderly patients. In a much earlier study, 86% and 75% of GPs and specialists, respectively, were reported to strongly recommend influenza vaccinations to their elderly patients¹¹. In a study conducted among healthcare workers at King Abdul Aziz hospital in Saudi Arabia stated that misconceptions about influenza vaccination were prevalent, given that 95% of the respondents believed that self-protection from illness was one of the most common reasons for being vaccinated and vaccine is ineffective in disease protection¹⁸. A study assessed the rate of vaccine uptake among medical students at a University Hospital in Saudi Arabia and found that the significant determinants of vaccine uptake were clinical years of medical study (p < 0.05) and previous history

Table 10. Factors associated with practitioners' strong recommendation of Influenza vaccine to COPD patients according to job title

Factors implicated in recommendation of Influenza vaccine (Q7)	Job Title	Bad practices	Good practices	Sig
Q7a: Is "patient risk of respiratory failure and severe exacerbation" a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	36.00%	64.00%	0.051
	Specialist	24.60%	75.40%	
	General practitioner	15.50%	84.50%	
Q7b: Are "recommendations from expert groups" a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	72.00%	28.00%	0.001
	Specialist	33.80%	66.20%	
	General practitioner	34.50%	65.50%	
Q7c: Is the "reduction the risk of hospitalization and death" a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	44.00%	56.00%	0.012
	Specialist	61.50%	38.50%	
	General practitioner	73.60%	26.40%	
Q7d: Is "patient interest and desires to be vaccinated" a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	44.00%	56.00%	0
	Specialist	41.55%	58.50%	
	General practitioner	15.50%	84.50%	
Q7e: Is "following GOLD standards to yearly vaccinate all COPD patients" a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	44.00%	56.00%	0.002
	Specialist	38.50%	61.50%	
	General practitioner	18.20%	81.80%	
Q7f: Is the reduction of hospitalization cost a strong factor for the recommendation of flu vaccine for COPD patients?	Consultant	40.00%	60.00%	0.006
	Specialist	29.20%	70.80%	
	General practitioner	14.50%	85.50%	



of vaccination ($p < 0.0001$)¹⁹. One study has shown that vaccination in patients with COPD resulted in reduction in risk of hospitalizations and death rates (52% and 72% respectively) during influenza season. This was similar to our findings as per 66%.47% of the physicians demonstrated good practice, whereas 32.5% and 20.5% of physicians demonstrated bad and moderate practice¹¹.

It is observed in our study that as the age and years of experience of the participant increased, the level of knowledge also significantly increased (p -value = 0.00). These findings are consistent with a recent study¹⁸, which reported that 15.9% of physicians below the age of 36 years had poor knowledge compared to 53.4% of physicians above 45 years old (p -value=0.045). In addition, the practitioner's knowledge increased significantly with increasing the number of hospitalized patients (p -value = 0.00). Similar study conducted in Italy indicated that 64.7% of the participants were aware that influenza can be prevented with vaccines and that patients with chronic diseases are at higher risk of developing severe complications²⁰. Less than 13% of all groups of physicians that viral infection was the cause of COPD exacerbation, which is consistent with a similar study that reported the two most important risk factors of COPD exacerbation are smoking (99% of the physicians) and bacterial and/or viral infections (29%)²¹.

Similarly, a study showed that only 71% of the physicians administer influenza vaccination annually to their patients with severe COPD, although influenza vaccine can reduce serious illness and death by about 50%²². It was noted that one-third of physicians adhered to the GOLD standards in the prescription of influenza vaccine. In another study, it was found that 86% and 75% of the generalists and subspecialists strongly recommended influenza vaccine to their elderly patients. Over 45% of respondents indicated that these vaccinations were cost saving, while above 50% of the respondents recognized patient's risk for illness and recommendations from expert groups as important factors in prescribing vaccine²¹. From previous studies, it was found that COPD patients vaccinated for influenza experienced lower risk of respiratory problems or worsening the symptoms^{1,12,24}.

One study explored the attitudes, beliefs and practice of Egyptian healthcare workers towards seasonal influenza vaccine²³. Vaccination uptake was reported to be suboptimal, mainly among those working in university hospitals²³. A study determined whether the influenza vaccination in people with COPD reduces respiratory illness, reduces mortality, is associated with excess adverse events, and is cost effective. Inactivated vaccine was reported to decrease exacerbations in people with COPD¹. There was a mild increase in transient local adverse effects with vaccination, but no evidence of an increase in early exacerbations.

Limitation

It is important to note that this study had some limitations. The sample size was small, which may not allow the research findings to be generalized nationally. Also, there is a chance that some responders may have provided careless responses due to large number of questions.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CONCLUSION

This is the first study conducted in the Northern region of the UAE exploring influenza vaccine utilization among COPD patients. While physicians acknowledged the importance of prescribing the influenza vaccine, they emphasized the need for structured policies—aligned with GOLD guidelines—to mandate annual vaccination for COPD patients, particularly those with frequent exacerbations, to reduce hospitalization rates and associated healthcare costs.

To enhance vaccination uptake, this study recommends several actionable strategies:

- Implementation of standardized flu vaccination protocols as part of routine COPD management.
- Targeted educational campaigns for physicians and healthcare teams to reinforce current guidelines and emphasize the benefits of influenza vaccination.
- Expansion of pharmacists' roles to include educating patients, providing reminders, and administering vaccines, thereby improving accessibility and compliance.

Pharmacists can play a pivotal role in increasing influenza vaccination rates among COPD patients by delivering personalized counseling, managing reminder systems, and offering point-of-care vaccination services.

Overall, this study can serve as a framework for interprofessional collaboration in chronic disease prevention, promoting a coordinated approach among physicians, pharmacists, and public health officials to enhance vaccine coverage and reduce the burden of COPD.

CONFLICTS OF INTEREST

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