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Vaccination Coverage Against Pneumococcal, Influenza and Herpes Zoster Among Older Adults in UAE, Single Centre Study

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ABSTRACT **Published Online: October 28, 2025**

Back Ground: The incidence of many infections is higher in elders, and these individuals are more prone to severe infections due to immunosenescense combined with progressive increase of proinflammatory status (inflammaging) which enhances susceptibility to morbidity, mortality and hospitalization.

Pneumococcal disease, influenza and HZV infections are known to cause high morbidity and mortality in older adults.

Objective: Aim of this study was to know prevalence of vaccination for Pneumococcal, influenza and HZV vaccines and associated comorbidities in elderly adults.

Method. This is cross section study of 1894 patients' elderly adults ages 65 and above from Hatta hospital registry for vaccination statuses of pneumococcal, Influenza and HZV vaccines. Associated comorbid conditions DM, heart disease, COPD, CKD, Dyslipidemia and cancer were noted.

Results: A total of 1894 patients were included in the study and analyzed. Male 1013 (53.5%), Female 881 (46.5%). 52% UAE nationals, 16.5% Omani and 31.5% were from other nationalities.

Over all 892 (47.2%) patients have comorbidities. Among chronic diseases 33% (626) had DM, 28.2% (535) heart diseases, 6.7% (127) CKD, 1.3% (24) COPD, 146 (7.7%) Dyslipidemia and 2.5% (48) had cancer.

Out of total, 232 (12.2%) had influenza vaccine, 84 (4.4%) pneumococcal and 34 (1.8%) got HZV vaccine. p-value was significant (<0.05) for pneumococcal, influenza and HZV vaccine with overall comorbidities and different individual comorbidities.

Conclusion: Vaccination coverage among elderly in our study was low. Most received was flu vaccine 12.2 % followed by 4.4% for pneumococcal vaccine < 2% for HZV. This highlights the need to take steps to overcome the vaccine hesitancy and increase the vaccination in elderly population.

KEYWORDS:
Elder adult, Pneumococcal vaccination, Influenza vaccination, HZV, comorbidity

INTRODUCTION

The elderly population in the world is increasing rapidly due to an extended life expectancy. Currently, around 8.5% of the world's population (or about 617 million people) are 65 years or older. This number is estimated to continue to increase and reach 17% by 2050 [1]. At that time, one in six people in the world will be elderly.

In the EU Between 2010 and 2020 the share of the population older than 65 years of age increased by 3 percentage points (from 17.6 to 20.6%) and is projected to further increase to more than 31% by 2100 [2].

The incidence of many infections is higher in older compared to younger adults [3]and are known to cause more than 33% of deaths in the elderly [4].

This increases in the prevalence and severity of infections observed in older populations is due to reasons such as

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immunosenescence which is decline in innate and adaptive immune functions in elderly [5,6] and progressive increase of proinflammatory status (inflammaging) along with increasing numbers of chronic diseases.

Pneumococcal disease

The Global Burden of Disease Study in 2016 estimated that there were 197 million cases of lower respiratory tract infections caused by pneumococcus with 1–2 million deaths worldwide.

Pneumococcal disease can affect a variety of organ systems resulting in a number of conditions including invasive pneumococcal diseases (IPD) [7-9]. IPD are highest in children under 5 and in adults over 65 with certain chronic health conditions.

A significant cause of disease morbidity and mortality worldwide is community-acquired pneumonia (CAP). In Switzerland, ~80% of fatal pneumococcal infections occur in adults 65 and older [10,11].

The United States Centers for Disease Control and Prevention reported that pneumococcal pneumonia, has a high mortality in older adults resulting in one death in 20 adults (5%) [12]

Introduction of pneumococcal vaccines has resulted in steep reductions in the incidence of PPV23- and PCV13-type IPD in US adults aged 65years by up-to 86.7%, from 1998 to 2016 [13].

INFLUENZA

Influenza can cause variety of illnesses, from mild colds to severe infections requiring hospitalization and death. The severe cases particularly occur in high-risk populations such the elderly, pregnant women, and individuals with chronic illnesses.

Worldwide, influenza annual epidemics are estimated to result in about 3–5 million cases of severe illness, and about 290.000–650.000 deaths [14]. In Europe only, 15,000-70,000 annual deaths, mainly in older adults

Data from the Global Burden of Disease Study in 2017 reported that as many as 54.5 million cases of lower respiratory tract infections were caused by influenza. As many as 8.2 million of these infections were serious cases that caused 145,000 deaths [15,16].

Annual influenza vaccination is considered the most effective strategy to prevent influenza by the World Health Organization (WHO)

HVZ

Primary infection with hepes zoster also called varicella-zoster virus (VZV) usually occurs in childhood and manifests as chickenpox. Reactivation of VZV can occur throughout life, under immunosuppression or with increasing age. reactivations can manifest as shingles or herpes zoster (HZ).

The most common complication of herpes zoster is postherpetic neuralgia (PHN), which can last for months and sometimes years. The risk of developing PHN increases with age. 10– 13% of individuals over the age of 60 who have herpes zoster will develop PHN. Other complications of herpes zoster include eye complications (Herpes Zoster Ophthalmicus).

According to a survey from Australia in 2015, it was reported that three diseases with the largest DALYs were pneumococcal pneumonia, influenza, Herpes Zoster, especially in the elderly over 65 years [17].

These diseases can be prevented with vaccination [18,19]. Globally, vaccination is an important public health intervention that has cost-effectively averted millions of annual deaths [20]. Accordingly, due to vaccination there are decreases in hospitalisation rates, workforce reductions, morbidity and mortality rates, and economic losses (Koldas, 2017; Toprak et al., 2018).

The Immunization Agenda 2030 endorsed in 2021 and Global Vaccine Action Plan endorsed at the 2012 World Health Assembly [21], both proposed a life-course approach to immunization to fight vaccine-preventable diseases.[22].

Many countries follow CDC vaccination guidelines for elder adults. Likewise, Dubai health and Department of health (DOH) @MOH United Arab Emirate has vaccine schedule for elderly against these three diseases.

Here we aimed to estimate and analyse the prevalence of 3 vaccine in elderly adults age 65 and above.

Methodology (study design, data source and data analysis)

Our study is across-sectional Retrospective data study conducted in Family Medicine department, Hatta Hospital.

Sample & Data Source. 2440 patients' record of Hatta Hospital registry were reviewed, out these 546 were excluded due either no proper medical record like due single ER visit, single Covid vaccine visit and those who expired.

The study included 1894 elder adult patients who turned 65years of age from January 2005 to December 2015. We extracted immunization data record for Influenza, Pneumococcal and HZV and co morbidities from EMR (electronic medical record).

Study Variables. Gender, nationality, chronic medical conditions like Diabetes, CKD, COPD, cancer, heart disease including HTN and Dyslipidaemias were noted.

Data analysis.We estimated the prevalence of three diseases vaccines viz pneumococcal vaccine, influenza vaccine and HZV vaccine. Receipt of one or more dose of pneumococcal, influenza and HZV vaccine was considered as "vaccinated," for statistical estimate.

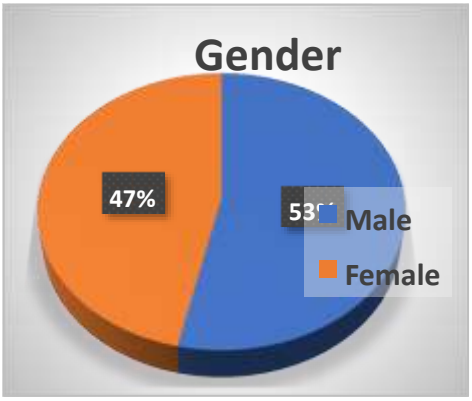
Descriptive statistics such as frequencies, percentages and mean for categorical variables calculated.

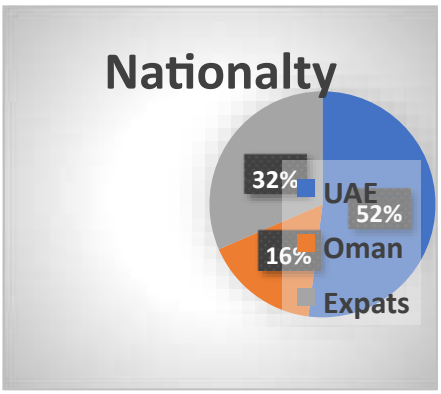
A multivariable logistic regression estimated for comorbidities among patients who got vaccines.

RESULTS

Total 1894 patients age 65 years and above were included in our study. Age ranges from 67 to 78 years with mean age was 71.64 SD ± 3.03.

Males 1013 (53-5%) and 881 (46.5%) females. UAE nationals 984 (52%), Omani 312 (16.5%) & other expats 598 (31.5%).

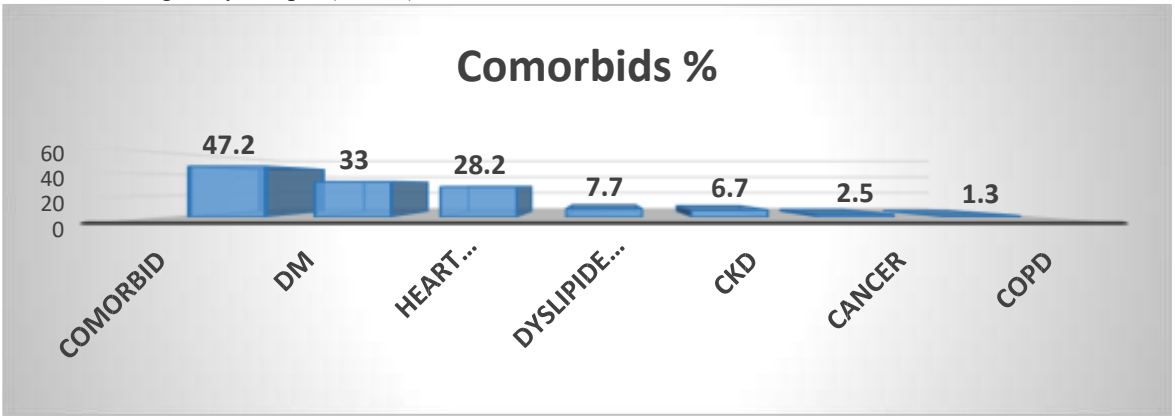




47.2% (n 894) of patients have one or more chronic disease (comorbidity).
Among comorbidity 626 (33%) had DM, 535 (28.2%) heart diseases, 127 (6.7%), CKD, COPD 24 (1.3%), 146 (7.7%) Dyslipidemia and 48 (2.5%) patients had cancer. [Table-1]

Total	Comorbidit y ALL	Diabetes	Heart Disease	CKD	COPD	Cancer	Dyslipidaemia
N-1894	894 (47.2%)	626 (33%)	535 (28.2%)	127 (6.7%)	24 (1.3%)	48 (2.5%)	146 (7.7%)

Comorbidities status among study sample (table 1)



Over all 84 (4.4%) patients received Pneumococcal vaccine, 232 (12.2%) Influenza vaccine, and 56 (3%) only got HZV vaccine shown with gender wise status table 2.

Gender	Total n-1894	Pneumococcal V n-84 (4.4%)	Influenza V n-232 (12.2%)	HZV- v n- 56 (3%)
Male	1013 (53.5%)	39	120	28 (50%)
Female	981 (46.5%)	45	112	28 (50%)

Gender wise vaccination status (table 2)

Comparison of three vaccines with other variables frequencies of are shown in table 3.

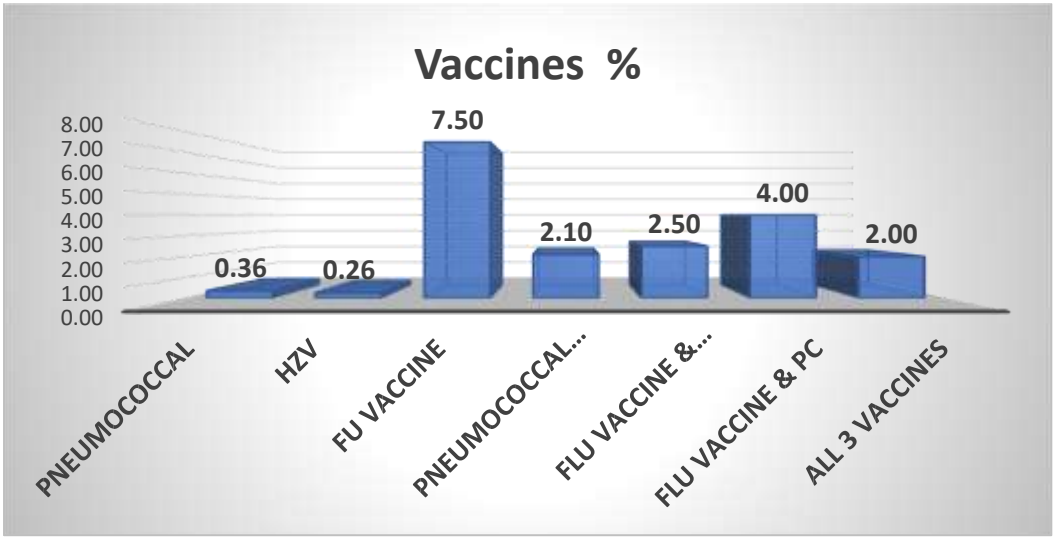
		Vaccination and Comorbidities, p-value					
Variable	Description	Pnemococcal vaccine. N- 84		HZV vaccine. N- 56		Influenza Vaccine. N- 232	
		Taken	p-value	Taken	p-value	Taken	p-value
Sex	M	39	0.218	28	0.684	120	0.575
	F	45		28		112	
Comorbidty	Yes	77	0	51	0	195	0
	No	7		5		37	
DM	Yes	56	0	33	0	137	0
	No	29		23		95	
CVD-HTN	Yes	51	0	35	0	125	0
	No	33		21		107	
CKD	Yes	14	0.001	8	0.05	27	0.003
	No	70		48		205	
Cancer	Yes	5	0.58	6	0.002	10	0.074
	No	79		50		222	
COPD	Yes	6	0	3	0.032	8	0.006
	No	78		53		224	

Estimate of three vaccines as single, two and all three is shown below in table 4.

Only pneumococcal vaccine was taken in 7 (0.36%), pneumococcal with HZV in 40 (2.1%) & pneumococcal with flu vaccine in 75 (4%) patients.

Only HZV vaccine was in 5 (0.26%), HZV with pneumococcal in 40 (2.1%) and HZV with flu vaccine in 49 (2.5%) patients. Only Flu vaccine taken in 143 (7.5%) patients, flu vaccine with pneumococcal in 75 (4%) and flu vaccine with HZV in 49 (2.5%) patients. All three vaccines were taken in 38 (2%) patients.

T	**able # Number of vaccine table**		
No. of Vaccines	**Type**	**No.**	**%**
Single vaccine	Pneumococcal	7	0.36
	HZV	5	0.26
	Fu vaccine	143	7.50
2 vaccines	Pneumococcal & HZV	40	2.10
	Flu vaccine & HZV	49	2.50
	Flu vaccine & PC	75	4.00
All 3 vaccine	All vaccine taken	38	2.00



DISCUSSION

Adult vaccination plays an important role in preventive medicine, is easily applicable and is efficient and cost-effective.

In our study at Hatta Hospital, 232 (12.2%) patients received Influenza vaccine, 84 (4.4%) Pneumococcal and 56 (3%) got HZV vaccine.

Unfortunately, adult vaccination rates continue to be below the objectives for 2020 for most of the routinely recommended vaccines

In an Indian study of 64714 adults older than 45 years vaccination coverage for influenza was 0.6% and for pneumococcal vaccine was 1.9%. Vaccine uptake was higher among patient with diabetes, heart disease and lung disease than those without any such chronic condition.

Ali Abbas et al [23]

In a 2020 study from China estimated Flu vaccination among older adults was 2.4% (1651 out of 74484).[24]

In a Turkish study that included 2918 elderly adult patients, the rate of influenza vaccination was 12.3%, and 3% of the participants had received the pneumococcal vaccine whereas 2.8% received both the pneumococcal and influenza vaccines (Erbay et al., 2018). [25]

In another study at family medicine department, training and research hospital, Ankara Turkey among 200 patients age above 65 years 2.5% (total 5 patients) had received pneumococcal vaccine,17.5% (n=35) of the participants had received Influenza vaccine. [26]

A 2021 study of claims in the main French national health insurance scheme found that ~10% of all adults had a risk condition predisposing for pneumococcal disease [27]. However, an analysis published by the French High Council for Public Health estimated that only 20% of at-risk adults are vaccinated [28]. In a separate study of claims data, ~7% of chronic obstructive pulmonary disease or congestive heart failure patients, and ~2% of those with diabetes were vaccinated within 2 years of diagnosis, although vaccination was indicated for these conditions [29].

Peetermans et al. reported that having a chronic disease is a primary predictive factor for pneumococcal vaccination. In our study, it was found that having a chronic disease affected the pneumococcal vaccination rate (see tables).

In the study by Ozisik et al, the lack of knowledge cited as the reason for not receiving the vaccine by 71.4% regarding the pneumococcal vaccine and 64% with regards to the influenza vaccine. Other most common reason in many studies in elderly not being vaccinated is vaccine hesitancy and missed opportunity.

Ethical approval.

Study was approved from DH audit committee (Ref). No patient consent was required since data was obtained from EMR (Electronic Medical Record) and data access was approved from F Med Department and HH admin data source.

CONCLUSION

Adult vaccination plays an important role in preventive medicine, is easily applicable, is efficient and cost-effective. Unfortunately, these rates are not sufficient and adult vaccination rates continue to be below the objectives even for 2020

Our findings provide insight into Influenza, HZV vaccination and pneumococcal vaccination patterns in adults aged 65 years. Despite DH, DOH @ MOH guidelines and recommendations for vaccination of elderly adults the observed estimate is very low. A major barrier for potential vaccine recipients is missed opportunities and vaccine hesitancy. Although chronically ill patients visit their doctors frequently and opportunities for vaccination had been missed in this group. Together, these findings suggest that interventions by a healthcare provider specifically among at-risk individuals, may be an effective way to promote elderly vaccination. Larger multicentre studies are

needed to allow generalization the findings to the larger populations.

Follow-up for chronic diseases should include vaccination reminders and have vaccination recommended and administered during encounters with health care professionals in primary care.

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