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Association Between The Knowledge Of The Elderly Patient's And Attitudes Among Real- Coverage With Pneumococcal Vaccination In Kingdom In Makah Al-Mukarramah At Saudi Arabia 2023

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Abstract

Background

Pneumonia represents the leading cause of infection-related death and the fifth cause of overall mortality, in the elderly. With increasing age, the human immune system undergoes characteristic changes which lead to increased incidence and severity of infectious diseases and to insufficient protectio[1]n following vaccination as antibody response of elderly vaccines are weaker and decline faster the periodic assessment of adherence to vaccination recommendations is an essential component of any vaccination process, Limited data exist regarding pneumococcal vaccination coverage among the elderly in Middle Eastern countries including Saudi Arabia . The role of vaccine acceptance has become increasingly evident. Yet, large-scale studies of the assessment of the on pneumococcal vaccines acceptance among the elderly are scarce. Hence, we assessed for the first time the current state of knowledge and pneumococcal vaccination coverage among the elderly and the role of health care educational intervention on the attitude, awareness, vaccine acceptance, and prompts for physician consultation regarding pneumococcal vaccines in Saudi Arabia. ***Aim of the study****: To assessment the association between the knowledge of the elderly patient's and attitudes among real- coverage with pneumococcal vaccination in kingdom in Makah Al-Mukarramah at Saudi Arabia 2023.* ***Methods****: This cross-sectional study was conducted among 300 participants from health care centers in kingdom of Saudi Arabia. A validated self-administered questionnaire was used. It includes questions on socio demographic variables, knowledge, attitude, and vaccine response, during the August to September 2023.* ***Results:*** *show regarding age most of participants > 80+ were (46.0%), gender majority of participants were(55.0%), marital status the most of participant were (49.0%) married, most of participant Primary school degree or below were (30.0%), occupation most of participant working were (67.0%) while not working were (33.0%).* ***Conclusion:*** *very low pneumococcal vaccination coverage was observed among the elderly in Saudi Arabia , the immunization education and recommendation is suggested to improve pneumococcal vaccine coverage among the elderly, aside from introducing public awareness program about elderly vaccination at state level, free of cost vaccination of elderly individuals should be done pneumococcal vaccination in Saudi Arabia*

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Keywords: *Assessment, Knowledge, attitudes, Patients, PHC, pneumococcal, Immunization, Saudi Arabia.*

Introduction

Pneumonia is the leading cause of infection-related death and the fifth cause of overall mortality among the elderly.[1] Streptococcus pneumonia is the most common pathogen responsible for pneumonia in old aged patients which according to WHO is taken as more than 60-y-old.[2] It is not just the age which is responsible for the susceptibility of elderly to pneumonia. Rather, comorbidities are also important risk factor.[3] It has also been documented that influenza infections can make people more susceptible to pneumococcal infections.[4]

Other risk factors include alcoholism, nursing home residence, and swallowing disorders.[5] Although, lifestyle modifications and nutritional support are also important elements in the prevention of pneumonia among the elderly,[6] the importance of vaccination against pneumonia holds its place as vaccination can play a key role in reducing the incidence of this disease. Due to lack of education, poor source of income, elderly population from low SES class are usually either unaware of the importance or even if they are aware, they do not feel the need to get vaccinated .[7] High susceptibility to contracting pneumonia and developing its complications7 makes old aged individuals more in need of immunization. Pneumococcal vaccination appears to be associated with a lower risk of bacteremia and a faster time to resolution of symptoms.[8]

According to a research, trivalent vaccines prevent about 45% of pneumonia cases, hospital admissions, and influenza-related deaths in long-term care centers [9] It has also been documented that the prevention of community acquired pneumonia (CAP) and nursing home acquired pneumonia (NHAP)relies on the combined use of influenza and pneumococcal vaccination, which decreases hospital admissions and in-hospital mortality for CAP.[10] Similarly, polysaccharide pneumococcal vaccine reduced the risk of death or ICU admissions due to pneumonia by 38% [11] Pneumonia is the leading cause of infection-related death and the fifth cause of overall mortality among the elderly.[12] Streptococcus pneumonia is the most common pathogen responsible for pneumonia in old aged patients which according to WHO is taken as more than 60-y-old.[13] It is not just the age which is responsible for the susceptibility of elderly to pneumonia. Rather, comorbidities are also important risk factor.[14] It has also been documented that influenza infections can make people more susceptible to pneumococcal infections.[15] Other risk factors include alcoholism, nursing home residence, and swallowing disorders.[16] Although, lifestyle modifications and nutritional support are also important elements in the prevention of pneumonia among the elderly,[17] the importance of vaccination against pneumonia holds its place as vaccination can play a key role in reducing the incidence of this disease. Due to lack of education, poor source of income, elderly population from low SES class are usually either unaware of the importance or even if they are aware, they do not feel the need to get vaccinated.[18]

High susceptibility to contracting pneumonia and developing its complications7 makes old aged individuals more in need of immunization. Pneumococcal vaccination appears to be associated with a lower risk of bacteremia and a faster time to resolution of symptoms.8 According to a research, trivalent vaccines prevent about 45% of pneumonia cases, hospital admissions, and influenza- related deaths in long-term care centers.[19] It has also been documented that the prevention of community acquired pneumonia (CAP) and nursing home acquired pneumonia (NHAP)[20]

Due to the increased risk of pneumococcal disease among the elderly, the Advisory Committee on Immunization Practices (ACIP) recommended in 2019 that all adults aged ≥ 65 years should receive a single dose of pneumococcal polysaccharide vaccine [21] (PPSV23) while shared clinical decision-making is recommended regarding the administration of PCV13.8 Data on the global coverage of pneumococcal vaccine among

the elderly is still not available. However, vaccine coverage among the elderly varies between 30 and 70% in different countries such as the United States, Australia, Japan, and France.[22]

Literature Review

Study by Alreeme et al 2022 reported that the available data demonstrate that pneumonia is one of the most common problems in Mecca hospitals during the Hajj. However, there is generally a lack of research on the prevalence of pneumonia in the KSA or with a focus on vaccinations during the Hajj season, despite pneumonia being a serious disease that occurs during the year [23]

study by ( )We found that 200 (77.5%) participants were unvaccinated; on the other hand, the remaining 58 (22.5%) participants stated that they did not recall which vaccines they received. In Canada, 58% of the participants said that they were immunized against pneumonia [24]

A study conducted in Canada found that only 26% of their respondents heard about the pneumococcal vaccine but not from their healthcare provider [25]. However, in this study, the most frequently reported reasons for why the participants were not immunized was because their healthcare providers did not mention the pneumococcal vaccine to them (81.5% of the sample), and 76% of the participants did not have enough information to decide whether to receive the vaccine or not. This finding was unexpected because a high number of patients in study had comorbidities, but healthcare providers still did not offer them the vaccine. In 2018, the USA guidelines recommended that patients aged 65 years or older with comorbidities should receive the pneumococcal vaccine, and according to the Ministry of Health in the KSA, vaccines are an easily accessible way for all people to avoid contracting infectious diseases . [26]

A study, we found that 87.2% of the respondents strongly agreed that their healthcare provider's recommendations are important. Similarly, a study conducted in Australia found that 81% of their participants would not accept the vaccine if their general physician did not recommend it [27]. Therefore, we concluded that healthcare providers play a major role in educating their patients regarding pneumococcal vaccination

As vaccination coverage is influenced by patient awareness and health care provider's recommendation, studies in Jordan in this study assess the awareness of the elderly patient's knowledge and attitudes among Pneumococcal vaccination , for the first time in the Middle East, pneumococcal vaccination coverage among the elderly in Jordan and their awareness and attitude regarding the pneumococcal disease and its vaccine.[28]

Small-scale studies were conducted before regarding the impact of pharmacists on pneumococcal vaccine uptake among the elderly.[29]

Johnson DR et al. reported that 57% of their study population had similar reason for not getting immunized.[31] Majority of the participants believed that healthy persons do not need the vaccine, [22] which was also in accordance to another study which was performed Concerns regarding the cost of vaccine do not seem to be a major hindrance toward people getting vaccinated as similar finding was reported by Johnson DR et al. in their study.[31]

stude by Zaraketet al 2020 found that vaccine provision by a healthcare provider is consistently found to be one of the strongest independent predictors of pneumococcal and influenza vaccine receipt among the elderly [29], a finding reproduced in this study. Although most participants had access to a health care provider (97% had seen their primary care provider in the past year), and therefore the opportunity to be offered the vaccine, only 52% remembered their health care provider offering them the pneumococcal vaccine at any time.

Al-Lahham et al (2016) report, we showed that the majority of the elderly population in Jordan have at least one risk factor for invasive pneumococcal disease (70%) including diabetes (52.2%), coronary artery disease and myocardial infarction (30.5%), and immune compromising conditions (9%). Besides these, they have at least one risk factor for pneumococcal carriage (95.6%) where most of them have at least monthly contact with a child younger than 12 years old. This is critically important knowing that PCV13 is not

included in the child national immunization program in Jordan and that pediatric PCV13 uptake in Amman was 12.5% in 2016.[32]

Rational .
The lack of evidence for adhering to the recommended pneumococcal vaccines in any of the inspected electronic medical records could be due to various factors. For instance, there are no local policies or institutional immunization protocols to guide physicians in identifying vaccine-eligible patients. There is no designated electronic documentation platform to aid in assessing vaccination status for routinely recommended vaccines, and lastly there is no electronic reminder system integrated with the current electronic health record system to help healthcare providers identify unvaccinated individuals, the immunization adherence to recommended vaccines among elderly Knowledge gaps and misperceptions regarding elderly patient's pneumococcal vaccine contribute to the poor uptake rates. Conversely, elderly patient's education improves vaccination uptake and patient education could be provided using printed materials such as pamphlets and posters.

Aim of the study
To assessment the association between the knowledge of the elderly patient's and attitudes among real- coverage with pneumococcal vaccination in kingdom in Makah Al-Mukarramah at Saudi Arabia 2023 .

Methodology

Study Design
A Cross-sectional descriptive study

Study area
The study was carried out in Saudi Arabia which is located at the center of the Western Region of Saudi Arabia . It has a holy value for all Muslims worldwide who travel to it annually to perform Hajj and to visit the Holy Masjid and Kaaba towards which Muslims turn in prayers. The city has seven sectors of PHC. Each sector consists of a group of Primary Health Care Centers. The researcher is concerned with one of the inner PHC .

Study Population
The study was conducted among elderly patient's attending PHC in Saudi Arabia during the period of study in 2023 .

Selection criteria:

A- Inclusion criteria:

- All elderly patient's.
- Both males and females.
- All nationalities.

Exclusion criteria:

- Age <60

Sampling technique:
The researcher used Multi-stage random sampling technique, giving each sector code number from PHC After that, by using random number generator, the minimum number was one, and the maximum was seven, the generation number. Then simple random sampling technique was applied to select the PHC. Also, convenience sampling technique was utilized to select the participants in the study.

Data collection tool:
A self-administered validated questionnaire was used. The questionnaire was translated to Arabic by forward-backward technique and then was piloted among 20 participants. after permission was taken through email from the researcher, with some modification and preamble letter was issued to explain the aim of the study, request to participate, and appreciation for a response. Then, the questionnaire was validated by three consultants. After that, the first part included questions on socio demographic characteristics such as age, sex, marital status, educational level and history of chronic disease. The second part included questions on influenza vaccination knowledge, attitudes and questions about vaccination status.

Data collection technique:
After the arrival of the patient to the PHCC, they should go to the reception first to register and ensure the presence of the center's card. Then, the receptionist gives a number to every patient who waits until called by the nurse to detect the vital signs. During that period of waiting the researcher will select patient conveniently until the target number achieves and gives the questionnaire for answering after taking the consent.

Data entry and analysis:
The Statistical Package for Social Sciences (SPSS) software version 24.0 was used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using Chi-Square tests (χ^2) to test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 was considered statistically significant.

Pilot study:
Was piloted among 20 participants, after permission was taken through from the researcher, with some modification and preamble letter was issued to explain the aim of the study, request to participate, and appreciation for a response. Then, the questionnaire was validated by three consultants. A pilot study was conducted in one PHC in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire was clear and no defect was detected in the methodology.

Ethical considerations:
The ethical approval for this study was obtained from the ethical committee for health research in Makah (2023). The objectives of the study were explained to the participants and confidentiality was assured. Participation was voluntary. A written consent was obtained from the participants. Permission from the Makah joint program of family medicine was obtained; permission from the Directorate of Health Affairs of the Holy Capital Primary Health Care was obtained.

Budget: Self-funded

Result

Table 1: Distribution of socio-demographic characteristics of patients .

	N	**%**
Age		
<65-70	72	24
70-< 80	90	30
>80+	138	46

Gender		
Male	135	45
Female	165	55
Marital status		
Single	60	20
Married	147	49
Divorced	36	12
Widow	57	19
Level of education		
Primary & secondary	90	30
School	63	21
University	54	18
College	93	31
Occupation		
Working	201	67
Not working	99	33
Pneumococcal vaccination		
Vaccinated	201	67
Non vaccinated	99	33
Frailty		
Very fit	72	24
Well	39	13
Well, with treated	66	22
co-morbid disease	123	41

The study included 300 patients, table 1 show the remaining socio-demographic characteristics of the patients, regarding age most of participants > 80+ were (46.0%) followed by 70-<80 years were (30.0%) , regarding the gender majority of participants were(55.0%) were female while male were (45.0%), regarding the marital status the most of participant were (49.0%) married while single were (20.0%) , regarding the level of education the most of participant Primary school degree or below were (30.0%) while college degree were (31.0%) while school were (21.0%), regarding Occupation most of participant working were (67.0%) while not working were (33.0%), regarding the Pneumococcal vaccination most of participant vaccinated were (67.0%) while Non-Vaccinated were (33.0%), regarding Frailty conditions most of participant co-morbid disease were (41.0%) while Very fit were (42.0%).

Table 2: Distribution of responses of awareness of the elderly patient's knowledge among Pneumococcal vaccination .

Knowledge	**Knowledge**						**% of agreement**	**Chi-square**	
		Strongly agree	**Agree**	**Don't know**	**Disagree**	**Strongly disagree**		**X^2**	**P-value**

The pneumonia vaccine keeps a person from getting pneumonia	N	111	66	54	48	21	73.2	72.300	<0.001*
	%	37	22	18	16	7			
Perceived risk Pneumonia is a serious disease	N	96	63	69	33	39	69.6	42.600	<0.001*
	%	32	21	23	11	13			
Effective vaccine is available to prevent invasive pneumococcal disease in elderly.	N	120	63	51	36	30	73.8	86.100	<0.001*
	%	40	21	17	12	10			
I am at high risk for pneumonia	N	117	90	42	33	18	77	116.100	<0.001*
	%	39	30	14	11	6			
pneumonia vaccine can prevent serious complications among chronic diseases	N	84	57	39	63	57	63.2	17.400	0.002*
	%	28	19	13	21	19			
Pneumococcal infection is the principal causative agent of bacterial pneumonia, otitis media, sinusitis, meningitis and septicemia.	N	117	84	33	18	48	73.6	107.700	<0.001*
	%	39	28	11	6	16			
A person who does NOT get the pneumonia vaccine will probably get pneumonia	N	87	84	48	30	51	68.4	40.500	<0.001*
	%	29	28	16	10	17			
My doctor's/health care	N	87	33	36	75	69	59.6	39.000	<0.001*
	%	29	11	12	25	23			

provider's recommendations are important									
Elderly aged ≥65 years are at risk of invasive pneumococcal disease.	N	129	48	45	39	39	72.6	100.200	<0.001*
	%	43	16	15	13	13			

The results presented in table (2) showed that regarding the pneumonia vaccine keeps a person from getting pneumonia the majority of participant in the strongly agree were (37.0%) followed by agree were (22.0%) while a significant difference P=0.001 and X^2 72.300 , % of agreement were 73.2 while P=0.001, regarding the Perceived risk Pneumonia is a serious disease the majority of participant in the strongly agree were (32.0%) followed by don't know were (23.0%) while a significant difference P=0.001 and X^2 42.600 , % of agreement were 69.6, regarding effective vaccine is available to prevent invasive pneumococcal disease in elderly the majority of participant in the strongly agree were (40.0%) followed by agree were (21.0%) while a significant difference P=0.001 and X^2 86.100 , % of agreement were 73.8, regarding I am at high risk for pneumonia the majority of participant in the strongly agree were (39.0%) followed by agree were (30.0%) while a significant difference P=0.001 and X^2 116.100 , % of agreement were 77, regarding pneumonia vaccine can prevent serious complications among chronic diseases the majority of participant in the strongly agree were (28.0%) followed by disagree were (21.0%) while a significant difference P=0.001 and X^2 17.400 , % of agreement were 63.2, regarding Pneumococcal infection is the principal causative agent of bacterial pneumonia, otitis media, sinusitis, meningitis and septicemia the majority of participant in the strongly agree were (39.0%) followed by agree were (28.0%) while a significant difference P=0.001 and X^2 107.700 , % of agreement were 73.6, regarding A person who does NOT get the pneumonia vaccine will probably get pneumonia the majority of participant in the strongly agree were (29.0%) followed by agree were (28.0%) while a significant difference P=0.001 and X^2 40.500 , % of agreement were 68.4, regarding doctor's/health care provider's recommendations are important the majority of participant in the strongly agree were (29.0%) followed by disagree were (25.0%) while a significant difference P=0.001 and X^2 39.000 , % of agreement were 59.6, regarding Elderly aged ≥65 years are at risk of invasive pneumococcal disease the majority of participant in the strongly agree were (43.0%) followed by agree were (16.0%) while a significant difference P=0.001 and X^2 100.200 , % of agreement were 72.6 .

Table 3: Distribution of responses of awareness of the elderly patient's attitudes among Pneumococcal vaccination

Items		**Attitudes**					**% of agreement**	**Chi-square**	
		Strongly agree	**Agree**	**Don't know**	**Disagree**	**Strongly disagree**		**X^2**	**P-value**
In general, vaccines	**N**	132	75	60	33	0	79	69.840	<0.001*
	%	44	25	20	11	0			

are a good way to protect my heath									
I consider vaccines to be safe	**N**	69	102	63	48	18	70.4	62.700	<0.001*
	%	23	34	21	16	6			
I feel that getting the pneumonia vaccine is a wise thing to do	**N**	27	12	57	165	39	48.2	247.800	<0.001*
	%	9	4	19	55	13			
It is important for healthy elderly over the age of 65 to get the pneumonia vaccine	**N**	117	102	45	27	9	79.4	148.800	<0.001*
	%	39	34	15	9	3			
I consider the pneumonia vaccine to be safe	**N**	30	36	87	63	84	51	46.500	<0.001*
	%	10	12	29	21	28			
If there is an effective vaccine to prevent , I will take it	**N**	111	120	33	21	15	79.4	174.600	<0.001*
	%	37	40	11	7	5			

The results presented in table (3) showed that regarding the responses of awareness of the elderly patient's attitudes among Pneumococcal vaccination show regarding the In general, vaccines are a good way to protect my heath the majority of participant in the

strongly agree were (44.0%) followed by agree were (25.0%) while a significant difference P=0.001 and X^2 69.840 , % of agreement were 79.0 while P=0.001, regarding I consider vaccines to be safe the majority of participant in the agree were (34.0%) followed by strongly agree were (23.0%) while a significant difference P=0.001 and X^2 62.700 , % of agreement were 70.4were , regarding I feel that getting the pneumonia vaccine is a wise thing to do the majority of participant in the disagree were (55.0%) followed by don't know were (19.0%) while a significant difference P=0.001 and X^2 247.800 , % of agreement were 48.2 , regarding It is important for healthy elderly over the age of 65 to get the pneumonia vaccine the majority of participant in the strongly agree were (39.0%) followed by agree were (34.0%) while a significant difference P=0.001 and X^2 148.800 , % of agreement were 79.4, regarding I consider the pneumonia vaccine to be safe the majority of participant in the don't know were (29.0%) followed by strongly disagree were (28.0%) while a significant difference P=0.001 and X^2 46.500 , % of agreement were 51.0, regarding If there is an effective vaccine to prevent , I will take it the majority of participant in the agree were (40.0%) followed by strongly agree were (37.0%) while a significant difference P=0.001 and X^2 174.600 , % of agreement were 79.4,

Table 3: Distribution of the Knowledge about the elderly patient's among Pneumococcal vaccination

	Knowledge		**Chi-square**	
	N	**%**	**X^2**	**P-value**
Weak	84	28	29.76	<0.001*
Average	144	48		
High	72	24		
Total	300	100		
Range	19-38.			
Mean±SD	28.154±3.456			

This table shows the majority of participant (48.0%) have average of the knowledge towards Pneumococcal vaccination followed by (28.0%) of participant weak but high were (24.0%) while Range(16 -38) and Mean ±SD(28.154±3.456) X^2 29.76 and a significant relation P=0.001

Figure (1): Distribution of the Knowledge about the elderly patient's among Pneumococcal vaccination

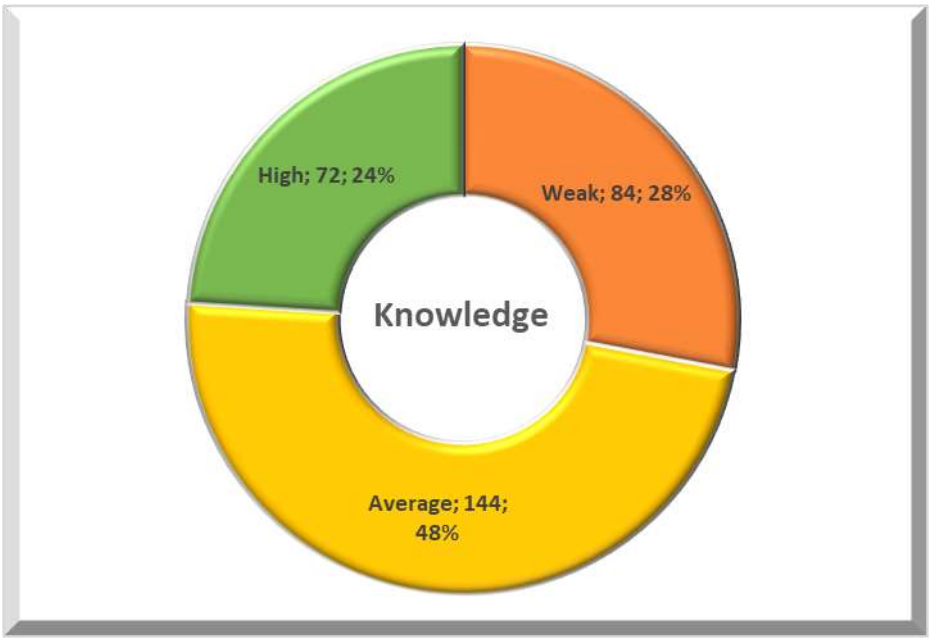

Table 4: Distribution of the attitudes about the elderly patient's among Pneumococcal vaccination

	Attitudes		Chi-square	
	N	%	X^2	P-value
Negative	117	39	14.083	0.0002*
Positive	183	61		
Total	300	100		
Range	7-30.			
Mean+SD	19.57±4.215			

This table 4 shows the majority of participant (61.0%) have Positive of the attitudes towards Pneumococcal vaccination followed by (39.0%) of participant negative while Range(7 - 30) and Mean ±SD(19.57±4.215), X^2 70.26 and a significant relation P=0.002

Figure (2): Distribution of the attitudes about the elderly patient's among Pneumococcal vaccination

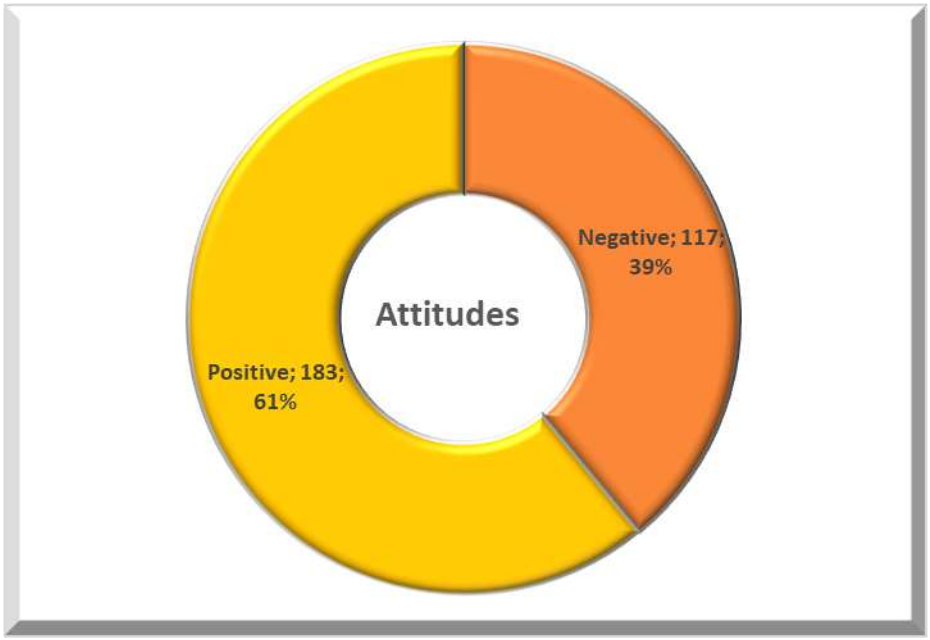

Table 5 : Distribution of the Correlations between Knowledge and attitudes about the elderly patient's among Pneumococcal vaccination

	Knowledge		
	r	**P-value**	**N**
Attitudes	0.650	0.000	300

This table 5 shows the heave correlations between Knowledge and attitudes while r were 0.650 and a significant relation were P-value=0.000 and N(300).

Figure (3): Distribution of the Correlations between Knowledge and attitudes about the elderly patient's among Pneumococcal vaccination

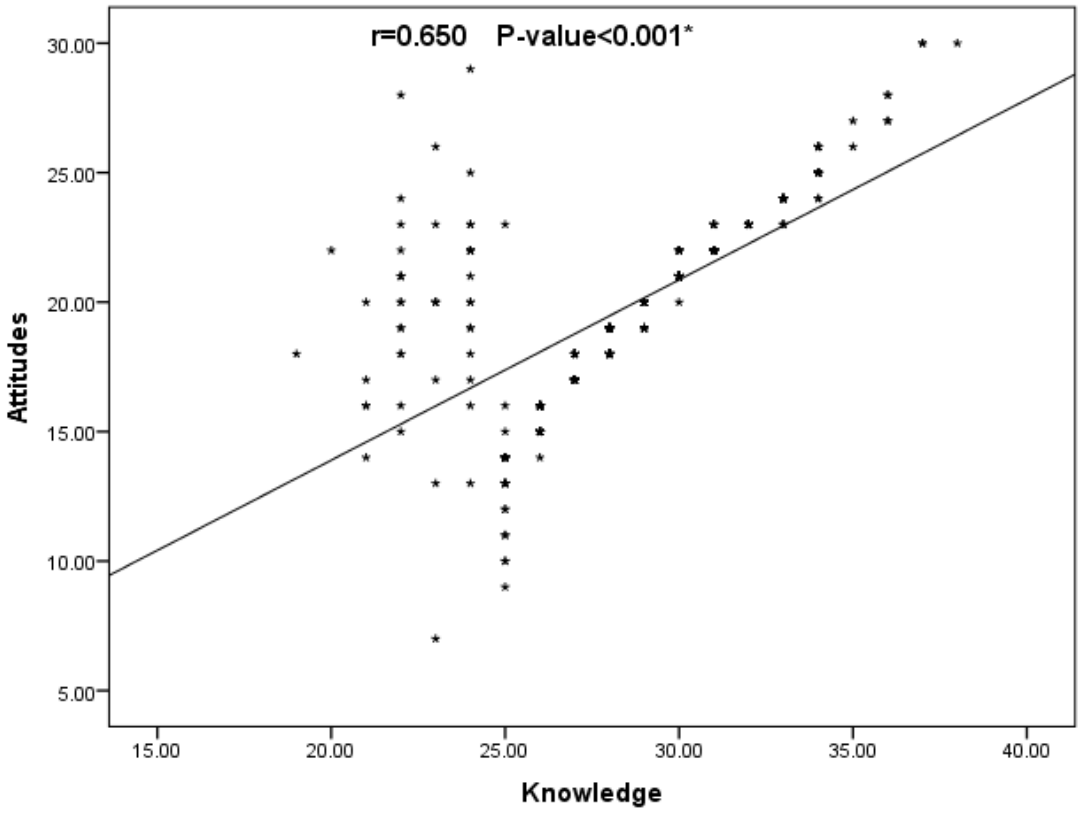

Table 6 Distribution of the relationship of the Socio-demographic characteristics attitudes about the elderly patient's Pneumococcal vaccination

		N	Attitudes	F or T	ANOVA ro T-test	
			Mean ± SD		Test value	P-value
Age	**65-70**	72	23.444 ± 2.600	F	82.007	0.000
	70-80	90	18.678 ± 2.379			
	>80	138	17.906 ± 3.614			
Gender	**Male**	135	20.319 ± 2.596	T	3.586	0.000
	Female	165	18.770 ± 4.433			
Marital status	**Single**	60	20.367 ± 3.194	F	2.307	0.077
	Married	147	19.517 ± 4.350			
	Divorced	36	19.194 ± 3.003			
	Widow	57	18.561 ± 3.065			
Level of education	**Primary & secondary**	90	18.078 ± 3.393	F	102.468	0.000
	School	63	15.587 ± 1.433			
	University	54	20.685 ± 3.167			
	College	93	22.731 ± 2.158			
Occupation	**Working**	201	19.512 ± 2.926	T	0.297	0.766
	Not working	99	19.374 ± 5.142			

Pneumococcal vaccination	**Vaccinated**	201	20.065 ± 4.130	T	3.985	0.000
	Non vaccinated	99	18.253 ± 2.624			

Table (6) Distribution of the relationship of the Socio-demographic characteristics and knowledge of awareness and attitudes about the elderly patient's Pneumococcal vaccination show regarding age increase in age 65-70 years (Mean± SD 23.444 ±2.600) heave significant relation were P-value=0.001, F test were (82.007) , regarding the gender status is a significant relation the heave were P-value=0.000, T test were (3.586) increase in male were respectively (Mean± SD 20.319 ±2.596) followed by female were (18.770±4.433), regarding the Marital status is a significant relation the heave were P-value=0.077, F test were (2.307) increase in Married followed by divorced were respectively (Mean± SD 19.517±4.350 and 19.194±3.003), regarding the Educational level a significant relation heave were P-value=0.000, F test were (102.468) increase in college and university were respectively (Mean± SD 22.731±2.158and 20.685 ±3.167), regarding the Occupation no significant relation heave were P-value=0.766, T test were (0.297) increase in working and not working were respectively (Mean± SD 19.512±2.926 and 19.374±5.142), regarding the Pneumococcal vaccination a significant relation heave were P-value=0.000, T test were (3.985) increase in Vaccinated were respectively (Mean± SD 20.065±4.130).

Table 7 Distribution of the relationship of the Socio-demographic characteristics and knowledge of awareness about the elderly patient's Pneumococcal vaccination

		N	**Knowledge**	**F or T**	**ANOVA ro T-test**	
			Mean ± SD		**Test value**	**P-value**
Age	**65-70**	72	32.361 ± 2.260	F	203.533	0.000
	70-80	90	28.167 ± 1.775			
	>80	138	25.601 ± 2.615			
Gender	**Male**	135	29.593 ± 2.103	T	8.189	0.000
	Female	165	26.685 ± 3.924			
Marital status	**Single**	60	29.500 ± 2.703	F	39.592	0.000
	Married	147	29.109 ± 3.292			
	Divorced	36	26.250 ± 2.273			
	Widow	57	24.632 ± 2.925			
Level of education	**Primary & secondary**	90	27.356 ± 2.733	F	23.174	0.000
	School	63	25.571 ± 1.593			
	University	54	29.148 ± 3.417			
	College	93	29.581 ± 4.161			
Occupation	**Working**	201	27.726 ± 3.180	T	-1.711	0.089
	Not working	99	28.535 ± 4.141			
	Vaccinated	201	28.358 ± 3.759	T	2.793	0.006

Pneumococcal vaccination	**Non vaccinated**	99	27.253 ± 2.925			

Table (7) Distribution of the relationship of the Socio-demographic characteristics and knowledge of awareness about the elderly patient's Pneumococcal vaccination show regarding age increase in age 65-70 years (Mean± SD 32.361±2.260) heave significant relation were P-value=0.000, F test were (203.533) , regarding the gender status is a significant relation the heave were P-value=0.000, T test were (8.189) increase in male were respectively (Mean± SD 29.593±2.103) followed by female were (26.685±3.924), regarding the Marital status is a significant relation the heave were P-value=0.000, F test were (39.592) increase in Married followed by single were respectively (Mean± SD 29.500±2.703and 29.500±2.703), regarding the Educational level a significant relation heave were P-value=0.000, F test were (23.174) increase in college and university were respectively (Mean± SD 29.581±4.161 and 29.148±3.417), regarding the Occupation a significant relation heave were P-value=0.089, T test were (-1.711) increase in not working and working were respectively (Mean± SD 28.535±4.141 and 27.726 ±3.180), regarding the Pneumococcal vaccination a significant relation heave were P-value=0.006, T test were (2.793) increase in Vaccinated were respectively (Mean± SD 28.358 ±3.759).

Discussion

Pneumonia is a common health problem in the KSA and worldwide. [12] The available data demonstrate that pneumonia is one of the most common problems in Mecca hospitals during the Hajj. However, there is generally a lack of research on the prevalence of pneumonia in the KSA or with a focus on vaccinations during the Hajj season, despite pneumonia being a serious disease that occurs during the year ,[22]

The study shows that a high proportion of people over 60 years old in Saudi Arabia are willing to the pneumonia vaccine. The proportion of elderly people willing to take an pneumonia vaccine in Saudi Arabia is relatively high, which is similar to the study results from the Jiaojiang District of Taizhou City [33] and Chongqing City [34], revealing that elderly people are subjectively willing to take an pneumonia vaccine. The most of elderly population with primary school degree or below, which was contrary to the results of [23] show regarding age most of participants > 80+ were (46.0%), gender majority of participants were(55.0%), marital status the most of participant were (49.0%) married, most of participant Primary school degree or below were (30.0%), occupation most of participant working were (67.0%) while not working were (33.0%), regarding the Pneumococcal vaccination most of participant vaccinated were (67.0%) while Non-Vaccinated were (33.0%)(See table 1) also news media reports of a small number of severe have heightened concerns about vaccination among the highly educated. [30] In Canada, 58% of the participants said that they were immunized against pneumonia [24].

Moreover, the outcome of this research showed that the great majority of the participating patients were not able to identify the Pneumonia , such as poor control and increased risk of hospitalization chronic diseases . These results are consistent with the findings of [30] who found that South African chronic diseases patients were able to identify the symptoms and complications of Pneumonia. Investigating the participants' perceptions towards Pneumonia vaccination showed significant differences between vaccinated and non-vaccinated diabetic patients' perceptions regarding the safety, effectiveness and side effects of the seasonal flu vaccine. Previously vaccinated diabetic patients had more positive perceptions towards Pneumonia vaccination compared to non-vaccinated vaccines. The results of the present study are similar to the findings of Ahmed et al., (2023) who found that Jordanian elderly patients have a good level of knowledge and attitudes about seasonal flu and vaccination. However, the context of the two studies is different as our study focused on elderly patients [35] On the other hand, those who were not vaccinated justified that by having alternative protection or considering Pneumonia as

a mild illness or considering that the vaccine is not effective and not safe. This results highlights that there is still a need to increase the public awareness and knowledge about Pneumonia. In addition, this result might be attributed to the absence of national tracking strategy to the Pneumonia vaccination process among the patients. Moreover, it was found that both attitudes and knowledge are significantly associated with increased likelihood of taking the Pneumonia vaccine, which could be referred to patients' realizing of the benefits of the Pneumonia vaccine and its effect in reducing the complications that might happen among patients. A major strength of this study is the scarcity of the local studies in Saudi Arabia that examine the knowledge and attitudes towards Pneumonia and vaccination among elderly patients [36].

study in Jordan , we show that the majority of the elderly population in Jordan have at least one risk factor for invasive pneumococcal disease (70%) including diabetes (52.2%), coronary artery disease and myocardial infarction (30.5%), and immune compromising conditions (9%). Besides these, they have at least one risk factor for pneumococcal carriage (95.6%)

Conclusion

The immunization adherence to recommended vaccines among elderly in Saudi Arabia can be significantly improved in several ways. First, a national platform should be established to help track elderly immunization status and to provide an electronic record for all vaccines administered in any authorized health facility across the country. Second, for vaccine-eligible individuals, proof of vaccination for routine vaccines should be requested prior to college acceptance or hiring. Third, the scope of vaccination awareness campaigns should be broadened by promoting all recommended routine adult vaccines. Fourth, healthcare providers should be educated on the efficacy, safety, indications, and contraindications of vaccines as a preventative healthcare tool. Fifth, any authorized healthcare facility (primary, secondary, tertiary health centers, and community pharmacies) should have clear immunization policies and regular staff training on vaccine administration. Sixth, an electronic reminder system for missed vaccinations should be used

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