Influenza knowledge and vaccination intentions in the community

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Abstract

Introduction: Influenza, commonly known as the flu, is a highly contagious respiratory ailment caused by influenza viruses. It presents a significant global public health challenge, impacting millions worldwide through seasonal outbreaks. The principal strategy for prevention is the influenza vaccine, which guards against prevalent strains of the virus. Vaccination not only lowers the chances of flu infection but also mitigates its severity and reduces the risk of complications. However, the adoption of the vaccine fluctuates, influenced by factors like its availability, public attitudes, and healthcare regulations. Elevating vaccination rates is essential in alleviating the toll of influenza on individuals and communities.

Materials and methods: Cross-sectional study conducted for the assessment the knowledge levels regarding influenza and vaccination in the community. The study was evaluated between 5th February/2024 to 25th February/ 2024 among Iraqi people in an online questioner. The sample consisted of (100) people from Iraq. Demographic data include age, gender, education level, residence area and occupation were collected. Questions about influenza were set to answered from people in order to evaluate their knowledge

Results: Most of the study population were male (68%) and (32%) were female and Most of them were between 25-34 year old (55%) also, about (40%) of them had a bachelor's degree.(19%) had clerical work and teaching (15%). About (25%) of them were from medical

field and (81%) of them live in urban places. (43%) had a good knowledge about influenza and (28%) had fair knowledge. (23%) received influenza vaccine in the past 12 months. (٤٠%) get their information from healthcare professionals and (٢٤%) from social media and (١٢%) from family and friend.

Conclusion: It was found that very few people received the vaccine and that few also intend to take the vaccine in the future, even though they have good knowledge of the disease, and this is what was found through the study. The study also found that most people preferred to obtain information regarding the vaccine from health professionals because of their high confidence in them, while others preferred to obtain information from television and social media. Family and friends also played a role in people getting the influenza vaccine

Chapter One

Introduction

Influenza, affecting around 5%–10% of the world's population annually, is the most common infection transmitted through airborne means, leading to a yearly mortality rate of 250,000–500,000[1]. The World Health Organization (WHO) recommends influenza vaccination for high-risk populations like children, hospitalized patients, pregnant women, and healthcare workers (WHO., 2018). Similarly, the American Center for Disease Control and Prevention (ACDCP) advises yearly vaccination for individuals older than 6 months[2].

Various studies globally highlight the crucial role of vaccination and preventive healthcare. In a German university hospital, healthcare workers cited self-protection as a significant motivator for vaccination compliance. With the emergence of new influenza strains, many countries have initiated mass immunization campaigns. Annual epidemics of seasonal influenza impose substantial burdens on society, including increased hospitalizations, workplace absences, and public anxiety[3].

Despite the high infection rates, a significant portion of the population remains unvaccinated. Reasons for this vary, with lack of knowledge and negative attitudes toward vaccination being primary factors. Studies reveal gaps in awareness among pregnant women regarding vaccination recommendations and safety concerns. Similarly, healthcare workers and the general population exhibit varying levels of awareness regarding influenza vaccine efficacy[4].

Time constraints pose another barrier to influenza vaccination, particularly among healthcare workers in the Eastern Mediterranean region[5]. Misconceptions about vaccine-induced influenza and doubts about its efficacy contribute to hesitancy, as seen in studies conducted in Saudi Arabia[6]. Additional barriers include fear of pain/discomfort, previous adverse reactions,

psychological factors, perceived low risk, and misinformation or lack of awareness from healthcare providers[7].

Aim of the study

Assess the knowledge levels regarding influenza and determine the intentions of community members to get vaccinated.

Influenza

Influenza, commonly known as "flu," is a highly contagious viral infection primarily caused by influenza viruses A or B. While it primarily affects the upper respiratory system, it can also involve other organs such as the heart, brain, and muscles. With pandemic, epidemic, or seasonal patterns, influenza occurs globally and leads to significant morbidity and mortality. Annual epidemics typically occur during autumn and winter in temperate regions, resulting in substantial illness and death. The virus spreads through respiratory droplets generated when an infected person coughs or sneezes, often requiring close contact for transmission. While most individuals recover within a few days, influenza can lead to complications and death, particularly in high-risk groups like pregnant women and those with weakened immune systems. Symptoms include high fever, body aches, headaches, severe fatigue, dry cough, sore throat, and runny nose, distinguishing it from the common cold based on clinical presentation[8].

Viruses that cause influenza

Viruses do certainly cause influenza, with the most common ones being influenza A, B, and C viruses. These viruses primarily affect the respiratory system These viruses primarily spread through respiratory droplets when an infected person coughs or sneezes, and they can cause a range of symptoms, from mild to severe, depending on the individual's health and the strain of the virus[9].

Influenza A Virus

Influenza A virus, a virus type that primarily infects birds and mammals, including humans, is renowned for its capability to trigger seasonal outbreaks and pandemics. Influenza A virus accounts for most flu cases, often leading to more severe symptoms and complications compared to other influenza virus types[10].

Influenza B Virus

It predominantly impacts humans and is less prevalent in animals. Although it shares symptoms such as fever, cough, sore throat, and body aches with influenza A virus, it typically induces milder illness. Consequently, it contributes significantly to the burden of influenza-related illness globally, especially during the flu season[10].

Influenza C Virus

Influenza C virus ranks as the least prevalent among the three types of influenza viruses, typically leading to mild respiratory illness. Unlike influenza A and B, this virus is not linked to seasonal flu epidemics or pandemics and receives less research attention. Infections by Influenza C virus are frequently asymptomatic[11].

Symptoms of influenza

Influenza, presents with a range of symptoms affecting the respiratory system and overall well-being. These symptoms include[12]:

1. A sore throat
2. Persistent coughing
3. Frequent sneezing
4. Elevated body temperature often accompanied by fever
5. Generalized body aches
6. Pronounced fatigue
7. Persistent headaches
8. Nasal congestion manifesting as a runny or stuffy nose
9. Difficulty breathing
10. Potential loss of taste and/or smell

These symptoms collectively contribute to the discomfort and debilitation experienced by individuals affected by the flu.

Geographic features and influential factors affecting the spread of influenza

Understanding the spread of influenza involves considering various factors, including:

1. Climate: Climate plays a significant role in the spread of influenza. The virus thrives in colder, drier conditions. Cold weather can help preserve viral particles in the air and on surfaces, increasing the likelihood of transmission[13].

2. Population Density: High population density areas facilitate the spread of influenza due to closer contact between individuals. Crowded environments like urban centers and public transportation hubs can promote rapid transmission[13].

3. Travel Patterns: Global travel patterns contribute to the spread of influenza viruses across regions and continents. Infected individuals can easily transmit the virus through air travel, making international travel a significant factor in influenza transmission[14].

4. Socioeconomic Factors: Socioeconomic factors such as access to healthcare, sanitation facilities, and education can influence influenza transmission. Lower-income communities may face barriers to accessing healthcare and preventive measures, increasing their vulnerability to infection[14].

5. Vaccination Coverage: Vaccination coverage rates impact the level of immunity within a population. Higher vaccination rates can help reduce the spread of influenza and lessen the severity of outbreaks by limiting the pool of susceptible individuals[15].

6. Immune Status: Individual immune status, including previous exposure to similar strains of influenza and underlying health conditions, affects susceptibility to infection and the severity of illness. Immunocompromised individuals are at higher risk of complications from influenza[14].

7. Environmental Factors: Environmental conditions such as air pollution levels, humidity, and seasonal changes can influence influenza transmission. Cold, dry

conditions are conducive to virus survival, while humidity may affect viral stability in the air[15].

Influenza Vaccines

Every year, the composition of influenza vaccines undergoes review and updates due to the constant evolution of the influenza virus. Factors such as the prevalent strains causing illness, their spread, and the efficacy of the previous season's vaccine guide these updates[16].

In the United States, three types of influenza vaccines are available: inactivated influenza vaccine (IIV), live attenuated influenza vaccine (LAIV), and recombinant influenza vaccine (RIV). Trivalent vaccines contain three inactivated viruses: type A(H1N1), type A(H3N2), and type B. Quadrivalent influenza vaccines, introduced in the 2013–2014 season, include an additional type B strain alongside the antigens found in trivalent vaccines(9).

ACIP advises against using any influenza vaccine beyond its FDA-approved age indication. Information regarding current influenza vaccines and recommendations from the Advisory Committee on Immunization Practices (ACIP) is updated annually[16].

Influenza Vaccines Characteristics

Inactivated Influenza Vaccines (IIV)

Inactivated Influenza Vaccines (IIV) have been in use since the 1940s. The majority of influenza vaccines distributed in the United States are either subvirion (split-virus) or subunit inactivated vaccines. IIV, which is currently licensed and distributed in the United States, is administered via the intramuscular route[16].

These vaccines come in various presentations, including manufacturer-filled syringes, single-dose vials, and multidose vials, and are available in preservative-free formulations. The viruses used in IIV production are grown either in chicken eggs (egg-based) or cell culture (cell culture-based). Egg-based

IIV products may contain residual egg protein. Thimerosal, a preservative, may be used in some influenza vaccines to prevent microbial growth. For the most up-to-date information on influenza vaccine ingredients, the FDA package inserts should be consulted annually[16].

Recombinant Influenza Vaccine (RIV)

RIV, or Recombinant Influenza Vaccine, was initially approved for use in 2013. Its manufacturing process utilizes recombinant DNA technology, eliminating the need for an egg-grown vaccine virus. The vaccine produced through this process contains recombinant hemagglutinin[17].

Live, Attenuated Influenza Vaccine (LAIV)

LAIV, or Live Attenuated Influenza Vaccine, was initially approved for use in the United States in 2003. The vaccine viruses are grown in chicken eggs, resulting in the final product containing residual egg protein. These viruses are cold-adapted and replicate effectively in the mucosa of the nasopharynx. LAIV is administered intranasally via a manufacturer-filled, single-use intranasal sprayer, with half of the dose sprayed into each nostril. Vaccinated children may shed vaccine viruses in nasopharyngeal secretions for up to 3 weeks. While transmission of shed LAIV viruses from vaccine recipients to unvaccinated persons has been documented, it has not been reported to be associated with serious illness[18].

Vaccination Schedule and Use

Influenza vaccination is recommended annually for individuals aged 6 months and older, except those with contraindications. Priority should be given to high-risk groups and those in close contact with them, like healthcare personnel. Vaccination should ideally occur before the onset of influenza activity, with the CDC recommending vaccination by the end of October. However, vaccination efforts should continue throughout the influenza season[19].

Both IIV and RIV should be administered via intramuscular injection and can be given on the same day as other vaccines. If administered concurrently with other injectable vaccines, they should be given at separate sites. LAIV is administered intranasally and can be given on the same day as other live or inactivated vaccines. If not administered concurrently with other live vaccines, there should be at least a 4-week gap between LAIV and other live vaccines[19].

Individuals aged 9 years or older should receive 1 dose of an age-appropriate vaccine each season. Children aged 6 months through 8 years who have not previously received 2 or more doses of any influenza vaccine before July 1 should receive 2 doses of an age-appropriate vaccine, spaced at least 4 weeks apart[20].

Immunogenicity and Vaccine Efficacy

The duration of immunity following influenza vaccination is typically less than one year due to vaccine-induced antibody waning and the antigenic drift of circulating influenza viruses. Influenza vaccine effectiveness varies based on factors such as the similarity between vaccine strains and circulating viruses, recipient age and health status, and the type of vaccine administered. While vaccination can reduce the risk of influenza illness by 40% to 60% in the overall population when strains match, its effectiveness may be lower, particularly among individuals aged 65 years and older[21].

Over recent influenza seasons, adjusted overall vaccine efficacy has ranged from 19% to 60% in individuals aged 6 months and older. Notably, the efficacy can be influenced by significant viral drift, as seen with the A/H3N2 influenza viruses in the 2014–2015 season[21].

Studies have shown various benefits of influenza vaccination, including reduced illnesses, medical visits, ICU and hospital admissions, and fewer days spent in the ICU and hospital. While fewer deaths have been demonstrated in children, vaccinated individuals who still contract influenza often experience reduced illness severity. Moreover, influenza vaccination has positive outcomes

for people with chronic health conditions, such as lower rates of cardiac events among those with heart disease, and for pregnant women, such as a reduced risk of hospitalization and acute respiratory infection[22].

Each influenza season, multiple vaccines from different manufacturers are available. The Advisory Committee on Immunization Practices (ACIP) does not express a preference for any specific vaccine when multiple options are appropriate for a given recipient[22].

Contraindications to vaccination

Include[23]:

1. Severe allergic reactions (anaphylaxis) to any vaccine component
2. Infants under 6 months old
3. Children or adolescents taking aspirin/salicylate-containing medications
4. Children aged 2 to 4 years with asthma or recent wheezing/asthma history
5. Immunocompromised individuals
6. Close contacts/caregivers of severely immunosuppressed persons
7. Pregnant women
8. Individuals with active communication between the cerebrospinal fluid and certain body parts
9. Persons with cochlear implants
10. Recent administration of influenza antiviral drugs

Precautions:

Include[23]:

1. Moderate/severe acute illness with or without fever
2. History of Guillain-Barré syndrome within 6 weeks of influenza vaccine receipt
3. Additional precautions for LAIV recipients with asthma aged 5 years and older
4. Precautions for patients with medical conditions predisposing them to influenza complications

Egg Allergy

Include[23]:

1. Individuals with hives after egg exposure may receive appropriate influenza vaccines
2. Persons with more severe egg allergy symptoms may still receive recommended vaccines under clinician supervision

Vaccine Safety

Inactivated Influenza Vaccine (IIV)

Studies indicate the safety of annual IIV vaccination in both children and adults. The most common adverse reactions are local reactions at the injection site, such as soreness, redness, tenderness, or swelling, typically lasting 1 to 2 days. Pain at the injection site during the first week after vaccination can occur in up to 65% of vaccinated individuals[24].

Nonspecific systemic symptoms like fever, chills, malaise, and myalgia are less common and usually occur in individuals with no previous exposure to the viral antigens in the vaccine. These symptoms typically appear within 6 to 12 hours of vaccination and last 1 to 2 days. Recent reports indicate that systemic symptoms are not more common after IIV compared to a placebo injection[25].

In some influenza seasons, IIV has been associated with an increased risk of febrile seizures, particularly in young children on the day of and the day after vaccination. However, most febrile seizures are brief and have a good prognosis. ACIP has reviewed the risks and benefits of febrile seizures after IIV and has not made changes to the recommendations for administering pediatric vaccines[20].

Guillain-Barré syndrome (GBS), a serious neurological condition, has been rarely reported after influenza illness and IIV vaccination. Safety monitoring over many years has not detected a clear link between IIV and GBS.

If there is a risk of GBS from IIV, it is estimated to be no more than 1 to 2 cases per million vaccinated individuals. Studies suggest that the risk of GBS after influenza illness is higher than the potential risk after vaccination[25].

Recombinant Influenza Vaccine (RIV)

Studies have demonstrated the safety of RIV in adults. During pre-licensure clinical trials, the most common injection-site reactions among adults aged 18 through 49 years were tenderness (48%) and pain (37%), while the most common solicited systemic adverse reactions were headache (20%), fatigue (17%), and muscle pain (13%). Two serious adverse events, pleuropericarditis, and vasovagal syncope, were assessed as possibly related to RIV vaccination[22].

Following licensure, a review of reports to the Vaccine Adverse Event Reporting System (VAERS) from 2013–2016 identified 88 reports related to RIV. Allergic reactions were the most commonly reported adverse event, with other reported adverse events including injection site reactions, fatigue, myalgia, headache, and fever. There were four serious reports, but no deaths were reported in association with RIV vaccination[22].

Live, Attenuated Influenza Vaccine (LAIV)

Studies have affirmed the safety of LAIV. In pre-licensure clinical trials, the most common adverse reactions across all ages were runny nose or nasal congestion, fever in children aged 2 through 6 years, and sore throat in adults. Clinical trials indicate that LAIV4 has a safety profile similar to the previously used trivalent LAIV, except for slightly more reports of fever after the first dose of LAIV4 compared to trivalent LAIV in children aged 2 through 8 years who were being vaccinated for the first time. In adults, other adverse events reported more frequently after LAIV than after placebo included headache, sore throat, tiredness/weakness, muscle aches, cough, chills, and sinusitis[20].

However, limited data exist regarding the safety of LAIV among individuals at high risk for influenza complications, such as immunosuppressed individuals or those with chronic pulmonary or cardiac disease. Therefore,

individuals at high risk of influenza complications should receive IIV instead of LAIV[26].

Chapter Two

Patients and methods

Study design

Cross-sectional study conducted for the assessment the knowledge levels regarding influenza and vaccination in the community. The study was evaluated between 5th November /2023 to 25th February/ 2024 among Iraqi people.

Setting of the study

This is a cross-sectional study, the sample consisted of (100) people from Iraq.

Demographic data include age, gender, education level, residence area and occupation were collected. Questions about influenza were set to answered from people in order to evaluate their knowledge like when they get the vaccine, if don't will they have the intention to get it, how they rate their knowledge about influenza and if they can name at least three symptoms of influenza. Information like who they prefer to get their information about the vaccine from and how much they trust the provided information were collected.

Method of data collection

The data were collected through the utilization of an assessment tool interview technique as a mean of data collection process to assess the people's knowledge concerning influenza.

Statistical data analysis

Descriptive statistical analysis was carried out to display the various variables in terms of frequency and percentage. Analytical statistical analysis employed Pearson's Chi-square test (χ^2 test) to compare proportions, with the application of Fisher's exact test when needed. A p-value of less than or equal to 0.05 was considered to be statistically significant. All statistical analyses were

carried out using SPSS-28 (Statistical Package for the Social Sciences, version 28).

Chapter Three

Results

Observation frequencies and percentages of demographical characteristics variables in the study group

Table (1), represent the demographic characteristics of the study population were (100) people were involve in this study and it show that most of them were male (68%) and (32%) were female. Most of our study population were between 25-34 year old (55%) also, about (40%) of the study population had a bachelor's degree and most of them had clerical work (19%) or teaching (15%). About (25%) of the study population were from medical field and (81%) of them live in urban places.

Table (1): Demographic characteristic of students involved in the study

Characteristics		Frequency	%
Gender	Male	68	68%
	Female	32	32%
Age	18-24yrs.	14	14%
	25-34 yrs.	55	55%
	35-44 yrs.	16	16%
	45-54 yrs.	9	9%
	55-64 yrs.	6	6%
	Over 64 year	0	0%
Education background	Illiterate	11	11%
	Able to read and write	16	16%
	High school or below	20	20%
	Bachelor's degree	40	40%
	Postgraduate degree	13	13%
Occupation	Teaching	15	15%
	Clerical work	19	19%
	Agriculture	19	19%

	Freelancer	4	4%
	Food industry	5	5%
	Medical field	25	25%
	Public transportation	2	2%
	Unemployed	11	11%
Residential area	Urban	81	81%
	Rural	19	19%

Assess the knowledge of people about influenza

In order to assess the people knowledge about the influenza a couple questions was set and when they asked about how they rate their knowledge about influenza most of them said they had a good knowledge about influenza (43%) and (28%) had fair knowledge. (93%) of the study group said they can name three common symptoms of influenza and (45%) of people said that influenza is transmitted when an infected person cough or sneeze while (28%) said it is transmitted through touching surface or objects with the virus and then touching the face.

Table (2): Assessment of people knowledge about influenza

Questions		Frequency	%
How would you rate your knowledge of influenza?	Very good	23	23%
	Good	43	43%
	Fair	28	28%
	Poor	6	6%
Can you name at least three common symptoms of influenza?	Yes	93	93%
	No	7	7%

How is influenza transmitted ?	Through the air when an infected person cough or sneeze	45	45%
	Touching surface or objects with the virus and then touching the face	28	28%
	Direct contact with an infected person	24	24%
	Other	3	3%

Assess the knowledge of people about influenza vaccine

In order to assess the knowledge of people toward influenza vaccine they asked if they received influenza vaccine in the past 12 months only (23%) said yes. People were asked how likely they get vaccinated (20%) said very likely, (23%) said they likely get vaccinated. When people were asked about the factors would influence their decision to receive influenza vaccine (٣5%) said it is concerns about the severity of influenza symptoms, (٢٥%) said it is fear of transmitting influenza to others.

Table (3): Assessment of people's knowledge about influenza vaccine

Questions		Frequency	Percentage %
Have you received an influenza vaccination in the past 12 months	Yes	23	23%
	No	4٩	4٩%
	Not sure	28	28%
How likely are you to get vaccinated against influenza in the next 12 months	Very likely	20	20%
	Likely	23	23%
	Neither likely nor unlikely	24	24%
	Somewhat unlikely	24	24%
	Very unlikely	9	9%
What factors would influence your decision to receive the influenza vaccine?	Recommendation from healthcare professionals	٢1	٢1%
	Concerns about the severity of influenza symptoms	٣5	٣5%
	Pervious negative experience with vaccine	1٠	1٠%

	Convenience of vaccine availability	٦	٦%
	Fear of transmitting influenza to others	٢٥	٢٥%
	Lack of awareness about vaccine importance	٢	2%

Source of information for people about influenza vaccines

In table (4), people were asked where they get their information about influenza and influenza vaccine and (٤٠%) get it from healthcare professionals and (١٩%) from social media and (١٢%) from family and friend.

Table (4): Information source for people about influenza vaccines

Questions		Frequency	%
Where do you usually get information about influenza and influenza vaccines?	Healthcare professionals	٤٠	٤٠%
	News media	٢٤	٢٤%
	Social media	١٩	١٩%
	Family and friends	١٢	١٢%
	Official health organizations	٥	٥%

Trust average of people in their source of information regarding influenza and influenza vaccine

The effect of several sociodemographic characteristics on influenza knowledge was explored, however, only age (p = 0.004) and occupation (p = 0.046) turned out to have a statistically significant effect, as shown in Table 5.

Table 5: Association of influenza knowledge with age and occupation.

Variable	Category	Influenza knowledge										p-value
		Poor		Fair		Good		Very good		Total		
		No.	%	No.	%	No.	%	No.	%	No.	%	
Age group (years)	<25	0	0.0	6	20.7	7	16.3	1	4.3	14	14.0	.004*
	25-<35	2	40.0	10	34.5	26	60.5	17	73.9	55	55.0	
	35-<45	1	20.0	3	10.3	7	16.3	5	21.7	16	16.0	

	45-<55	0	0.0	7	24.1	2	4.7	0	0.0	9	9.0	
	≥55	2	40.0	3	10.3	1	2.3	0	0.0	6	6.0	
	Total	5	100.0	29	100.0	43	100.0	23	100.0	100	100.0	
Occupation	Unemployed	1	20.0	7	24.1	3	7.0	0	0.0	11	11.0	.046*
	Teaching	0	0.0	5	17.2	7	16.3	3	13.0	15	15.0	
	Clerical work	4	80.0	4	13.8	7	16.3	3	13.0	18	18.0	
	Agriculture	0	0.0	4	13.8	10	23.3	5	21.7	19	19.0	
	Freelancer	0	0.0	2	6.9	0	0.0	2	8.7	4	4.0	
	Food industry	0	0.0	2	6.9	3	7.0	0	0.0	5	5.0	
	Medical field	0	0.0	5	17.2	12	27.9	9	39.1	26	26.0	
	Public transportation	0	0.0	0	0.0	1	2.3	1	4.3	2	2.0	
	Total	5	100.0	29	100.0	43	100.0	23	100.0	100	100.0	

*Significant difference between percentages using Pearson's Chi-square test at 0.05 level.

Table 6 exhibits a statistically significant relationship between educational background (p = 0.005) and occupation (p = 0.010) on one hand, and knowledge of at least three symptoms of influenza on the other. The rest of the sociodemographic characteristics taken into account did not show a significant association.

Table 6: Association of knowledge of at least three symptoms of influenza with educational background and occupation.

Variable	Category	Knowledge of at least three symptoms of influenza						p-value
		Poor		Very good		Total		
		No.	%	No.	%	No.	%	
Educational background	Illiterate	1	16.7	10	10.6	11	11.0	.005*
	Able to read and write	4	66.7	11	11.7	15	15.0	
	High school or below	1	16.7	19	20.2	20	20.0	
	Bachelor's degree	0	0.0	41	43.6	41	41.0	
	Postgraduate degree	0	0.0	13	13.8	13	13.0	
	Total	6	100.0	94	100.0	100	100.0	
Occupation	Unemployed	0	0.0	11	11.7	11	11.0	.010*
	Teaching	1	16.7	14	14.9	15	15.0	
	Clerical work	2	33.3	16	17.0	18	18.0	
	Agriculture	0	0.0	19	20.2	19	19.0	
	Freelancer	2	33.3	2	2.1	4	4.0	
	Food industry	1	16.7	4	4.3	5	5.0	
	Medical field	0	0.0	26	27.7	26	26.0	
	Public transportation	0	0.0	2	2.1	2	2.0	
	Total	6	100.0	94	100.0	100	100.0	

*Significant difference between percentages using Pearson's Chi-square test at 0.05 level.

A statistically highly significant association was demonstrated between educational background and history of influenza vaccination (p = 0.004), as displayed in Table 7. Conversely, statistical analysis did not yield a significant

result when exploring the relationship of the rest of sociodemographic characteristics with history of influenza vaccination.

Table 7: Association of history of influenza vaccination with educational background.

Educational background	History of influenza vaccination										p-value
	Never		Not sure		Occasionally		Regularly		Total		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Illiterate	0	0.0	1	9.1	6	22.2	4	16.7	11	11.0	.004*
Able to read and write	2	5.3	1	9.1	4	14.8	8	33.3	15	15.0	
High school or below	8	21.1	2	18.2	5	18.5	5	20.8	20	20.0	
Bachelor's degree	22	57.9	7	63.6	7	25.9	5	20.8	41	41.0	
Postgraduate degree	6	15.8	0	0.0	5	18.5	2	8.3	13	13.0	
Total	38	100.0	11	100.0	27	100.0	24	100.0	100	100.0	

*Significant difference between percentages using Pearson’s Chi-square test at 0.05 level.

Chapter Four

Discussion

This is a cross sectional study done online by simple questioners set for this purpose and get (100) people involved in it and it was found that most of the people involved in the study were male (68%) and most of their ages range between 25-34 year (55%), these results agree with a study done Alhatim et al., 2022 to evaluate the knowledge, attitude, and practice of seasonal influenza and influenza vaccine immunization among people visiting primary healthcare centers in Riyadh, Saudi Arabia, and it found that most of the involved people in the study were male (63.5%) and most of them had an average age of 36.5±12.5 year[27], also the result of our study opposite a study done by Jiang et al., 2022, in china to evaluate the awareness, knowledge and attitude toward influenza vaccination in several population groups in China and it found that most of the involved people were female (67.4%) but their mean age were 32.0±10.3[28].

Residence area has a great impact on increasing the knowledge of people as people who live in urban place had more knowledge and awareness about the disease and vaccination and in our study most of the involved people live in urban places (81%) and only (19%) live in rural places, also education level had a great impact on increase knowledge as educated people will know more about the importance of the vaccination and in our study most of the involved people (40%) had a bachelor's degree and about (25%) of them work in medical field, (19%) in clerical work and (15%) in teaching. The results of this study agree with a study done by Jiang et al., 2022, in china to evaluate the awareness, knowledge and attitude toward influenza vaccination in several population groups in China and it found that most of the involved people live in urban places (81.8%)[28], also agree with a study done Alhatim et al., 2022 to evaluate the knowledge, attitude, and practice of seasonal influenza and influenza vaccine immunization among people visiting primary healthcare centers in Riyadh,

Saudi Arabia, and it found that most of the involved people are worker (70.9%)[27].

Living in urban places, having high education level and working in medical field or teaching lead to great knowledge about influenza and may increase the acceptability of vaccination and that show in our study when we asked people how they evaluate their knowledge about influenza and (43%) said good and (23%) said it is very good and that agree when we asked them to name three influenza symptoms and (93%) of them were able to and also, most of them answered correct about how the influenza is transmitted. The result of this study agree with the study of Alhatim et al., 2022 to evaluate the knowledge, attitude, and practice of seasonal influenza and influenza vaccine immunization among people visiting primary healthcare centers in Riyadh, Saudi Arabia which most of the people which most of the people knew the right symptoms of influenza[27].

Obtaining the vaccine is considered one of the ways to prevent influenza, but it is not accepted by many people, especially in Iraq, for several reasons. In our current study, we found that a very small number had received the vaccine, about (23%). When we asked them if there was a possibility for them to be vaccinated in the next few months, Over the next 12 months, we got mixed results, so we tried to find out what factors could increase their acceptance of the vaccine and show that (٢1%) said recommendation from healthcare professionals may help to increase their acceptance for the vaccine, (٣5%) was Concerns about the severity of influenza symptoms and (٢٥%) was afraid of transmitting the influenza to other and that show the importance of healthcare professionals on increasing the awareness about any disease or vaccine in order to get more accepted by people. The results of this study opposite the results found by Zakhour et al., 2021, to evaluate the knowledge, attitude and practice of influenza vaccination among Lebanese parents and it show that (62.2%) get their kids vaccinated[28].

In order to increase awareness and acceptance about influenza and the influenza vaccine, we wanted to know where people prefer to obtain health information about the vaccine. It was found that most people (٤٠%) obtain information from health personnel, and therefore it was found that the average of people trust in their information provided by healthcare professionals is (4), which mean they are almost very trustworthy and this is very important in order to increase the awareness campaigns carried out by the health staff because it has a great impact in increasing people's awareness. The results of this study agree with a study done by Jiang et al., 2022, in china to evaluate the awareness, knowledge and attitude toward influenza vaccination in several population groups in China and it found that doctors are the most welling to give information about vaccine to other people (55%)[28]. With the increase in the spread of social media, as it has become accessible to everyone and is used throughout the day by people, it was found that (٢٤%) of people get their information from the media and news, and (١٩%) get it from social media and the average of people's trust the information from these sources was (3) which mean they are trustworthy, and from this we believe that it is necessary to increase awareness through social media and under medical supervision. It is found that (38%) of people get their information about the influenza vaccine from family and friends. This means that family and friends have an important and significant influence on increasing acceptance of the vaccine. The results of this study agree with a study done by Zakhour et al., 2021, to evaluate the knowledge, attitude and practice of influenza vaccination among Lebanese parents, which show that doctors were the main source of information about vaccine to parents and other sources were TV and internet[28].

Conclusion

1- It was found that very few people received the vaccine and that few also intend to take the vaccine in the future, even though they have good knowledge of the disease, and this is what was found through the study.
2- The study also found that most people preferred to obtain information regarding the vaccine from health professionals because of their high confidence in them, while others preferred to obtain information from television and social media.
3- Family and friends also played a role in people getting the influenza vaccine.

Recommendation

1. Increasing health campaigns by health staff to raise awareness about the vaccine to increase its acceptance among people.
2. Television advertisements or through social media by the Ministry of Health for the purpose of increasing awareness and acceptance of vaccines among people.
3. Reducing the literacy rate because education has a significant impact on increasing people’s awareness