Awareness of the Population in Al-Baha Region about Influenza

By

Ahmed Saleh Saeed Minqash*

*General Medicine Resident, AlBaha Cluster

Mohammed Hassen Ahmed Alghamdi**

**Health Informatics Technician, AlBaha Cluster

Omar Ali Abdullah Alghamdi ***

***Emergency Medical Services Technician, AlBaha Cluster

Mohammed Bashh Mohammed Alghamdi****

******Health Management Specialist, AlBaha Cluster.

Yousef Matouq Ahmed Alghamdi*****

*******Nursing Technician , AlBaha Cluste

Abstract: The present study aims to investigate levels of awareness of the population in Al-Baha region about influenza. The population of the study consisted of all Saudi citizens residing in Al-Baha city; the sample included (120) individuals representing the population. The study adopted the analytical descriptive research methodology, and data were collected using questionnaire. The findings of the study show that levels of awareness about influenza Al-Baha, supporting the findings of other similar studies conducted in the Saudi context. The study's recommendations include the following: Conducting further research on public awareness on influenza across different regions of Saudi Arabia; and that healthcare institutions in Al-Baha launches educational campaigns on the nature, risk factors, and impacts of influenza.

Keywords: awareness - influenza - Al-Baha region.

Introduction: According to the World Health Organization (WHO), approximately one billion people are infected with influenza annually. The disease is estimated to result in 3-5 million cases of several illness globally as well as 250,000-650,000 deaths each year (Arghittu et al., 2020; Ren et al., 2019; Chen et al., 2022; Bertoldo et al., 2019; Cherif et al., 2021; Yan et al., 2021; Barry et al., 2020).

Influenza has become a major public health problem. In 2009, the WHO announced that influenza is a serious threat to public health. The organization recommends implementing a variety of measures for protection against the disease, such as washing hands frequently using soap, use of antiviral drugs, seeking medical tests (especially during the influenza season), and wearing protective gloves and masks when interacting with influenza patients at hospitals.

However, it is argued that the most effective solution for prevention against influenza is vaccination (Alfouzan et al., 2022).

Therefore, having proper awareness of influenza is crucial for responding to the disease. Awareness is not limited to being conscious of the disease's presence or symptoms, but it also includes knowledge of other important aspects, such as symptoms, treatment, and prevention.

Thus, the risk of spread of a certain infectious disease in a society is influenced by the level of awareness about that disease in that society. The present research is interested in investigating awareness of the population in Al-Baha Region about influenza.

Statement of the Problem

The importance of influenza vaccination has been highlighted in recent medical research globally. A crucial factor that influences the likelihood that someone receives vaccination is self-protection, which is reliant on one's awareness. With the development of new strains of influenza viruses, many countries around the world have directed increased attention to launching mass immunization campaigns. In addition to the emergence of new strains, there are other challenges such as the annual epidemics of seasonal influenza, which burden healthcare systems and raise fears among people (Aljamili, 2020).

Raising awareness of the importance of influenza vaccination is a growing public health concern in Saudi Arabia, especially prior to pilgrimage season, a time at which influenza is especially more likely to spread.

However, public awareness of the importance of vaccination is still poor, even among groups that are highly vulnerable to the disease, such as healthcare workers and pregnant women (Alqahtani et al., 2017).

Several recent studies have highlighted the problem of poor public awareness about the influenza disease. The study Al Masoud et al. (2020) reported low levels of awareness of community member across Saudi Arabia of the necessity of protection against the disease, reflected in the low percentages of vaccination. Only 35.6% of sample members as well as 41.9% of healthcare workers and 30.9% of children included in the sample received influenza vaccination received vaccination. Moreover, 59.2% of the sample viewed awareness campaigns as the main solution for encouraging people to receive vaccination; thus, a large proportion of the sample does not believe in the importance of awareness campaigns.

The preceding discussion highlights the problem that the present study aims to address. Although vaccination is medically proven to be an effective solution for preventing the spread of influenza, it is still not viewed as such by many Saudis. Research is needed for further investigation of the levels of awareness among Saudis, including in the context of Al-Baha region, which has been largely neglected by relevant research. Therefore, the present study aims to investigate Awareness of the population in Al-Baha region about influenza.

Definition of Terms:

This section presents definitions of the key terms used in the present research.

- ***Influenza:***

Influenza is defined as an acute disease accompanied by fever as well as other symptoms such as cough, sore throat, headache, and myalgia (Minov et al., 2021, 38).

The Centers for Disease Control and Prevention defines it as a contagious respiratory disease caused by one of influenza viruses and that infects the lungs, throat, and nose, with symptoms ranging from mild to severe, and in many cases leading to death (Jadhav et al., 2021, 400).

Another definition of influenza is that it is an infectious disease that attacks the respiratory system, can be transmitted by inhaling micro-droplets, and can cause pandemics and epidemics (Kulkarni et al., 2020, 2486).

- ***Awareness:***

Awareness refers to the possession of the ability to know or realize that something exists (Nwankwo et al., 2019, 190).

It is also defined as having consciousness and sensitivity towards the environment (Çimşir & Uzunboylu, 2019, 1).

In the contexts of responding to infectious diseases, awareness refers to responding to the presence of an infection in the surrounding environment (Linardos, 2021).

- ***Vaccination:***

Vaccination is a process of administering a substance that helps the body maintain or establish immunity against a type of infectious agents (Nalongo Bina, 2024, 43).

It can also be defined as the development and stimulation of the adaptive immune system by way of administering specific antigens (Kazemifard et al., 2022, 1).

Another definition of vaccination is that it is the introduction of a vaccine into the human body for the purpose of developing immunity against a specific illness (Ketsela et al., 2021, 2).

Overview of Influenza:

- ***Basic Nature of Influenza:***

Influenza is a contagious respiratory disease. It is caused by several types of influenza viruses, which mainly include the H3N2 virus, H1N1 virus, and corona viruses. The severity of symptoms of the disease varies from one patient to another, ranging from mild upper symptoms, such as coughing and sneezing, to more severe cases, such as pneumonia.

Certain groups are particularly vulnerable to the disease, such as children aged five or younger, elderly, pregnant women, healthcare professionals, and people with chronic health conditions (Abu-Rish et al., 2016).

- ***Types of Influenza Viruses:***

Table 1 below briefly explains the main types of influenza and their characteristics, including symptoms, impacted living beings, subgroups, and epidemiology.

Table 1. Types of influenza (Javanian et al., 2021).

Type of Influenza	Symptoms	Impacted Living Beings	Subgroups	Epidemiology
A	Mild to severe	Humans and animals	Classification is by antigenic properties (9 neuraminidase and 16 hemagglutinin)	Widespread
B	Mild	Humans only	No classification into subtypes	Does not cause pandemics
C	Mild	Humans a few animal species	No classification into subtypes	Does not cause epidemics
D	Mild	Animals; unknown to affect humans	No classification into subtypes	Not widespread

- ***Severity of Influenza:***

Cases of influenza vary in terms of severity, as they can be either non-severe or severe (World Health Organization, 2024):

1. Non-severe influenza: This type of influenza is non-severe and uncomplicated, characterized by sudden onset of certain symptoms, such as headache, cough,

joint and muscle pain, sore throat, severe malaise, and rhinorrhea; these symptoms could manifest either with or without fever. Most people who are infected with this type of influenza recover within a week, without the need for special medical care. In general, non-severe influenza is a type of influenza that does not meet the criteria of severe illness.

2. Severe influenza: This type of influenza can result in severe illness, such as severe pneumonia, septic shock, sepsis, multi-organ failure, acute respiratory distress syndrome, exacerbation of chronic medical conditions, or even death. Severe influenza often requires hospitalization and, in some highly severe cases, the provision of mechanical ventilation (invasive or non-invasive), oxygen, and/or vasopressor therapy.

Differences between Influenza and Other Similar Medical Conditions:

Influenza shares several similarities with a number of other medical conditions, mainly COVID-19, common cold, and seasonal allergies. Table 2 below outlines upper respiratory illness symptoms in which influenza is similar to the aforementioned medical conditions.

Table 2. Similarities between influenza and COVID-19, common cold, and seasonal allergies, in terms of upper respiratory illness symptoms (Nypaver et al., 2021).

Upper Respiratory Illness Symptoms	Influenza	COVID-19	Common Cold	Seasonal Allergies
Cough	Present	Present, dry	Present (mild to moderate)	Present (mild)
Fever with or without chills	Present	Present	Rare	Absent
Fatigue	Present	Present	Some	Absent
General malaise	Present	Present	Present	Absent
Shortness of breath or difficulty breathing	Present	Present	Absent	Absent
Sore throat	Present	Uncommon	Present	Some
Congestion or runny nose	Present	Present	Present	Present
Headache	Present	Present	Rare	Present
Joint pain	Present	Not reported	Absent	Absent
Myalgia	Present	Present	Absent	Absent
Ocular symptoms (itchy, red, swollen, eyes)	Absent	Absent	Present	Present
Rhinorrhea	Absent	Not reported	Present	Present
Sneezing	Absent	Not reported	Present	Present
Earaches	Absent	Not reported	Some	Present
New loss of taste or smell	Absent	Present	Absent	Absent
Nausea and/or vomiting	Rare	Some	Absent	Absent
Diarrhea	Rare	Some	Absent	Absent
Confusion	Absent	Some	Absent	Absent

Risk Factors for Hospitalization in Cases of Influenza:

Health problems associated with influenza could exacerbate, to varying degrees, among those with other existing medical conditions. It is important to note that medical evidence varies in terms of certainty about the extent to which such medical conditions elevate the risk of worsening health status among influenza patients.

Table 3 presents a list of the most notable risk factors for hospitalization among influenza patients, in addition to outlining the certainty of medical evidence on the risk, and summary of the impact of the risk factors.

Table 3. Risk factors associated with hospitalization in cases of influenza (World Health Organization, 2024).

Risk Factor	Certainty of Medical Evidence	Summary of the Impact
Age	Moderate (because of serious imprecision)	It is probable that age is associated with elevated risk of hospitalization among those with non-severe influenza.
HIV	High	HIV is strongly associated with elevated risk of hospitalization among those with non-severe influenza.
Anaemia	Moderate (because of serious imprecision)	It is probable that anaemia is associated with little to no elevated risk of hospitalization among those with non-severe influenza.
Asthma	Moderate (because of serious	It is probable that asthma is associated with little to no elevated risk of hospitalization among those with non-severe influenza.

	imprecision)	
Cardiovascular diseases	Moderate (because of serious imprecision)	It is probable that asthma is associated w elevated risk of hospitalization among th with non-severe influenza.
Diabetes	Moderate (because of serious imprecision)	It is probable that diabetes is associated w elevated risk of hospitalization among th with non-severe influenza.
Hypertension	Moderate (because of serious imprecision)	It is probable that hypertension is associa with little to no elevated risk hospitalization among those with non-sev influenza.
Liver diseases	Very low (because of serious inconsistency or imprecision)	There is uncertainty on whether liver dise is linked to elevated risk of hospitalizat among those with non-severe influenza.
Malignancy	High	Malignancy is strongly associated w elevated risk of hospitalization among th with non-severe influenza.
Neurological diseases	High	Neurological diseases are strongly associa with elevated risk of hospitalization amo those with non-severe influenza.
Obesity	Moderate (because of serious imprecision)	It is probable that obesity is associated w little to no elevated risk of hospitalizat among those with non-severe influenza.
Pregnancy	High	Pregnancy is strongly associated w elevated risk of hospitalization amo those with non-severe influenza.
Renal diseases	High	Renal diseases are strongly associat with elevated risk of hospitalizati among those with non-severe influenza
Respiratory diseases (unspecified)	Very low (because of serious inconsistency or imprecision)	There is uncertainty surrounding whetl unspecified respiratory diseases linked to elevated risk of hospitalizati among those with non-severe influenza
Chronic respiratory diseases (unspecified)	High	Chronic respiratory diseas (unspecified) are strongly associated w elevated risk of hospitalization amo those with non-severe influenza.
Sex	Very low (because of serious inconsistency or imprecision)	It is believed that men may have little no increased likelihood of hospitalizati among those with non-severe influenza

Importance of Awareness on Influenza:

Awareness of influenza vaccination is a significant factor influencing the likelihood of receiving vaccination against influenza. According to Goss et al. (2020), perceived effectiveness of vaccination, personal experience, and concern regarding the safety and side effects of vaccination are significant factors that influence parents' decisions to receive influenza vaccination for themselves and their children. Forming an adequate understanding of such factors is important in providing inputs for designing awareness campaigns for promoting vaccination among the general population.

An important reason for the importance of awareness on influenza in the Saudi context is that the country is the destination of the Hajj season, which is characterized by high crowdedness, especially in locations such as the Mecca region. Therefore, the Mecca region is highly susceptible to the spread of seasonal influenza; in fact, the majority of hospital admissions in the region are caused by seasonal influenza infections. This results in burdening families and healthcare systems in the region. Therefore, it is important to identify and address the factors that influence awareness of influenza and of the importance of vaccination in the protection against the disease. Addressing these factors can increase families' willingness to seek or receive influenza vaccinations (Alharbi et al., 2023).

Based on the above, it can be stated that raising awareness on influenza is a necessity for promoting public health in the Saudi society. This is because not only the fact that influenza is a public health problem in itself, but also because there are certain factors elevating the risk of infections with the disease in the Saudi society. Therefore, raising awareness on dangerous diseases, especially infectious one, such as influenza, should be a priority for the Saudi Ministry of Health.

Efforts by the Saudi Government for Promoting Awareness on Influenza:

Saudi Arabia, as well as the rest of the Gulf Cooperation Council (GCC) countries, has adopted recommendations and guidelines devised by international health organization for promoting awareness and providing vaccination against seasonal and epidemic diseases, including influenza, to all healthcare workers. The Council is keen on developing the healthcare sectors in member states by launching targeted initiatives, supporting healthcare policies and decision making, and responding to global and regional health challenges and issues (Alfouzan et al., 2022).

The Saudi government has made major efforts to promote awareness of influenza and increase rates of receiving vaccination across the country. For example, the government provides influenza vaccinations free of change to any person aged over six months, as long as there are no contraindications. In 2014, the Ministry of Health launched a five-year project for raising rates of influenza vaccination among groups with high vulnerability to the disease. The Ministry was also aware of the need to intensify vaccination activities in the wake of the COVID-19 pandemic, especially in the light of recommendations by the WHO to provide influenza vaccinations to high-risk groups as a way to reduce the risk of infection not only with influenza but also with the COVID-19 disease (Mohamad et al., 2023).

This discussion highlights the efforts that the Saudi Ministry of Health has allocated to raising awareness on influenza in the Saudi. These efforts reflect the Ministry's attention to awareness as an important factor for preventing the spread of influenza because awareness is associated with behaviors that reduce the risk of infection (e.g., seeking vaccination). The efforts also manifest the Saudi government's commitment to promoting public health in the Saudi society, in line with the aspirations of Vision 2030.

Status Quo of Awareness on Influenza in Saudi Arabia:

A notable manifestation of relatively low levels of awareness on influenza in Saudi Arabia is the low take-up of vaccination among healthcare workers across the country. There are certain factors that are potentially behind this issue, such as uncertainty regarding the safety, efficacy, and importance of vaccination, lack of access to vaccination, and low perceived risk of infection with influenza (Rabaan et al., 2020).

Several challenges impede promoting awareness on influenza among the general population, regardless of context, including in Saudi Arabia. For example, there are common misconceptions on the benefits and efficacy of influenza vaccination, resulting in low rates of receiving vaccination. A widely believed misconception is that influenza vaccination is not effective in preventing the disease. Other challenges with similar impacts on awareness on influenza include fear of the costs and side effects of vaccination (Zaraket et al., 2019).

From this discussion, it can be stated that the levels of awareness on influenza among the general population in Saudi Arabia is relatively low. This issue is likely to influence behaviors related to seeking vaccination, thereby potentially negatively affecting public health in the country. Therefore, policymakers and competent institutions should take into account the significance of launching awareness and education campaigns in order to promote awareness of the dangers associated with influenza and on how to respond to it through treatment and vaccination.

Studies on Awareness on Influenza in International Contexts:

Recent research has directed increased attention to the investigation of awareness on influenza in a variety of contexts. Below is a brief presentation of a number studies on awareness on influenza that focus on diverse international contexts, with each study representing a different region of the world.

- ***Americas:***

The study by King et al. (2020) examined attitudes and knowledge about influenza vaccination in the United States during the 2016-17 influenza season. The population of the study consisted of pregnant women who visited four healthcare organizations located in four cities across the United States: Denver, CO; Oakland, CA; Portland, OR; and Marshfield, WI. The final sample included in the analysis consisted of (500) women. The study adopted a descriptive research approach, and data were collected through a questionnaire.

Findings of the study include the following: a total of (330) sample members were vaccinated; of these sample members, (233) sought vaccination for protection of themselves and their babies from influenza and (46) were encouraged by professional recommendation; the most commonly reported reason for non-vaccination is the concern about the potential side effects of vaccination; vaccinated women had significantly higher levels of perceptions of vaccination as being effective and safe; and almost all sample members received at least one recommendation from a healthcare professional regarding having influenza vaccination.

- ***Europe：***

The study of Petricek et al. (2019) examined laypeople's perceptions of prevention of influenza and common cold. The context of the study encompassed three European countries, which are Croatia, Belgium, and Austria. The sample of the study included (85) individuals. The study adopted a descriptive design, and data were collected through interviews. Findings of the study include the following: most sample members across the three countries viewed influenza and common cold as similar, even in terms of measures needed for preventing them; sample members had unfavorable attitudes towards influenza vaccination and viewed it as intended mainly for high-risk groups, such as healthcare workers, individuals with chronic health conditions; finally, perceptions did not differ significantly across countries.

- ***Africa：***

The study by Otieno et al. (2020) assessed attitudes and knowledge about influenza and related vaccination among Kenyan pregnant women. The population of the study encompassed pregnant women residing in four counties in Kenya, which are Siaya, Marsabit, Mombasa, and Nairobi; the final sample included 507 women. The study was descriptive in nature, and data were collected through interviews. Findings of the study include the following: (3690) sample members had basic knowledge of influenza; (288) of these women believed that pregnant women would be protected if vaccinated; (252) of them believed that vaccination is safe for pregnant women; (223) thought that vaccination makes a baby better protected; (309) of them were willing to receive vaccination; and factors influencing willingness to received influenza vaccination included belief in the safety and effect of the vaccine.

- **Asia**

The study by Ren et al. (2020) explored the knowledge, behaviors, and attitudes related to influenza vaccination in China during the 2017/2018 influenza season. The population of the study consisted of people who had influenza-like symptoms from across China during the 2017-2018 influenza season; the final sample included (2,834) individuals. This cross-sectional study involved administering a questionnaire on the sample. Findings of the study include the following: about 45% of sample members expressed willingness to receive influenza vaccination; willingness to receive vaccination was found to be associated with level of education, medical recommendation, vaccination campaigns, employers' support, and availability of cost-free vaccination; and people over 60 and those under 15 were more likely to seek medical help.

Studies on Awareness on Influenza in the Saudi Context, Including Al-Baha Region：

Awareness on influenza has become a research topic of growing interest in Saudi Arabia in recent years. This is reflected in the growing number of studies on the topic. These studies have measured awareness on influenza by a variety of metrics, but mainly proportions of those who received vaccination from among sample members. Below is a discussion of a number of

studies that discussed awareness on influenza in the Saudi context.

- ***Studies Targeting Selected Local Contexts:***

A recent study that assessed the awareness on influenza among the general population in Saudi Arabia is that by Alshehri et al. (2023), which targeted the context of Mecca city, located in western Saudi Arabia. This study assessed knowledge and attitudes among elderly influenza patients on influenza vaccination. The sample of the study included (300) elderly patients. The study adopted a cross-sectional design, and data were collected using questionnaires. The findings of the study show that a majority (47%) of sample members has moderate knowledge of the influenza vaccination, while (35%) of them have high knowledge of the vaccination. Findings also show that (51%) of sample members have high attitudes towards the vaccination, while (37%) have moderate attitudes. The findings of this study highlight a problematic pattern of low awareness on the importance of influenza vaccination, even in such a vulnerable groups as the elderly.

Another study that investigated a similar topic is that by Alotaibi et al. (2019), which investigated the levels of awareness, beliefs, and sources of knowledge on influenza vaccination among elderly (65 years of age or older) patients in Riyadh city, located in central Saudi Arabia. This cross-sectional study involved administering a questionnaire to a sample of (496) patients in three healthcare centers located in Riyadh. Of this sample, 47.8% received influenza vaccination at least once. Of the vaccinated sample members, 46% believed that vaccination is not needed. Findings also show that a majority (70.2%) of sample members prefer to receive adequate information on influenza vaccination. Moreover, there were statistically significant differences among sample members in the rate of receiving vaccination, as regards the level of education variable; those with higher levels of education had higher rates of receiving information. It was also found that unvaccinated sample members had lower levels of awareness of campaigns launched by the Saudi Ministry of Health, were less convinced that vaccination is safe for the immune system, less likely to know that elderly patients with other chronic health problems should receive vaccination regularly, and less likely to believe that vaccination is the most effective way for prevention against influenza. About 40% of sample members believed that influenza vaccination is safe and effective. Findings of this study also support the conclusion that levels of awareness among the elderly of the importance of influenza vaccination in Saudi Arabia is low.

The study by Alaa et al. (2024) investigated the attitudes towards vaccination against influenza during the COVID-19 crisis. The target context of the study was the city of Jeddah, located in western Saudi Arabia.

The sample of the study included (311) people recruited, using the convenience sampling technique, from two large shopping malls in Jeddah. This cross-sectional study involved administering a questionnaire to sample members. The findings indicate that sample member's perceptions toward vaccination were not significantly impacted by the conditions of the COVID-19 pandemic, as only 9.3% of those who received influenza vaccination expressed fear from the COVID-19 disease or a desire for having protection against it.

Alasmari et al. (2024) examined public perceptions of vaccination against seasonal influenza and how these perceptions are associated with rates of receiving vaccination. The target context of the study was the city of Tabuk, located in northern Saudi Arabia. The sample of the study included (1,200) community members selected randomly. The study adopted a descriptive analytical cross-sectional research design and used questionnaires for data collection. The main findings of the study include the following: 63.3% of sample members received vaccination and 53.3% believed that the vaccine is effective. The study concluded that prevalence of influenza vaccination in Tabuk city is at a moderate degree and recommended launching awareness campaigns for promoting people's attention to the role of vaccination in protection against seasonal influenza.

The aforementioned studies in this discussion highlight a consistent pattern ranging from low to moderate awareness on influenza across different regions of Saudi Arabia. Recent research has largely overlooked the specific local context of Al-Baha region. However, due to the consistency of findings obtained by the aforementioned studies, it would plausible to conclude that low to moderate awareness on influenza reflects a general pattern across the country. However, this conclusion needs support from relevant studies that target the Saudi context as a whole. Some of these studies are discussed in the following sub-section of this research.

- ***Studies that Target the Saudi Context as a Whole:***

Some studies investigated public awareness on influenza across different regions of Saudi Arabia. One of such studies is that by Sales et al. (2021). This study investigated public perceptions of seasonal influenza and how these perceptions are linked to rates of vaccinations. The target population of the study consisted of individuals aged 15 years or older from different regions across Saudi Arabia; the final sample included (790) individuals. This study adopted a cross-sectional design, and questionnaire was the data collection method. Findings of the study reveal that 12.5% of sample members reported receiving vaccination regularly; of those sample members, 57% were aged younger than 24 years. Most of sample members (more than 90%) with a chronic medical condition reported having an irregular history of vaccination against seasonal influenza. Higher likelihood of having received vaccination was found among sample members who believed that vaccination is efficacious, safe, and should be provided at certain times in the year, and believed that they needed vaccination.

The study of Al Masoud et al. (2020) obtained similar findings. It examined the public awareness on the significance of influenza vaccination and the complications of the disease. The study was conducted in different regions across Saudi Arabia.

This cross-sectional community-based study involved administering a questionnaire to a sample of (1,018) individuals, including community members and healthcare workers. The findings of the study reveal that only 35.6% of sample members received influenza vaccination. From those who received vaccination, 42.2% received it annually, 62.1% did not

experience any side effects, and 32.1% received it during the season of pilgrimage. Findings also show that only 41.9% of healthcare workers included in the sample received influenza vaccination, despite that 50% expressed their belief that vaccination is important, while 59.2% viewed awareness campaigns as the main solution for encouraging people to receive vaccination. Moreover, only 30.9% of children received vaccination (22.1% did annually); only 6.2% of these children experienced side effects as a result of vaccination.

The preceding discussion supports the conclusion arrived at in the previous sub-section of this research. Studies that target the Saudi context as a whole also show that levels of awareness on influenza are low to moderate. These findings also support the conclusion that this reflects a general pattern among the Saudi population as a whole. Thus, it is plausible to assume that levels of awareness on influenza among the general population in Al-Baha region are also low to moderate. This consistency of findings highlights the importance of investigating the factors that influence awareness on influenza in the Saudi society.

Research Methodology:

The study adopts the analytical descriptive methodology. This methodology is concerned with collecting classifying data and facts, with the purpose of drawing significant conclusions then arriving at generalizations on the phenomenon under study.

- ***Research Population and Sample:***

The population of the present study consisted of all Saudi citizens residing in Al-Baha city; the sample included (120) individuals representing the population.

- ***Characteristics of the Sample:***

Frequencies and percentages of characteristics of the sample were calculated as regards the variables of gender and educational qualification.

1- Distribution of the Sample Members Based on Gender:

Table 3. Distribution of sample members based on gender.

	Gender	Frequencies	Percentages
1	Male	81	67.5%
2	Female	39	32.5%
Total		120	100.0%

Table 3 shows that (67.5%) of sample members are male, while (32.5%) are female.

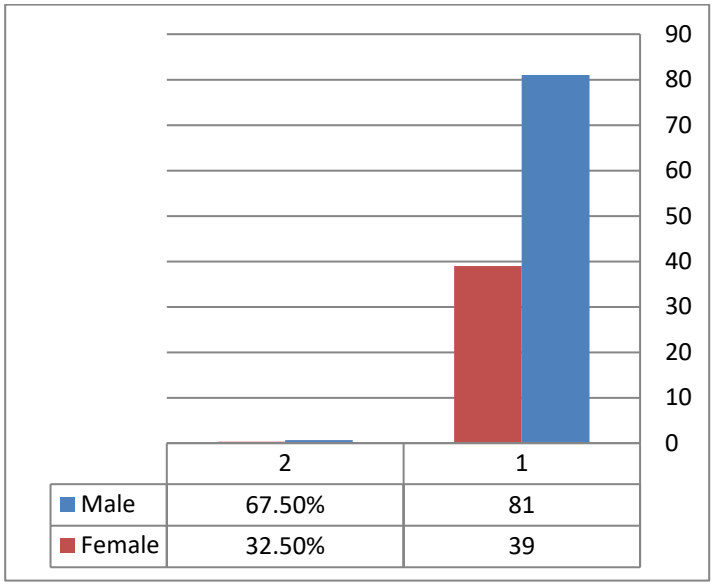

Figure 1. Distribution of sample members based on gender.

2- Distribution of the Sample Members Based on Educational Qualification

Table 4. Distribution of the sample members based on educational qualification.

	Educational Qualification	Frequencies	Percentages
1	Middle School	16	13.3%
2	Secondary School	25	20.8%
3	Bachelor's Degree	75	62.5%
4	Postgraduate	4	3.3%
Total		120	100.0%

Table 4 shows that (13.3%) of sample members have a middle school degree, (20.8%) have a secondary school degree, (62.5%) have a bachelor's degree, and (3.3%) have a postgraduate degree.

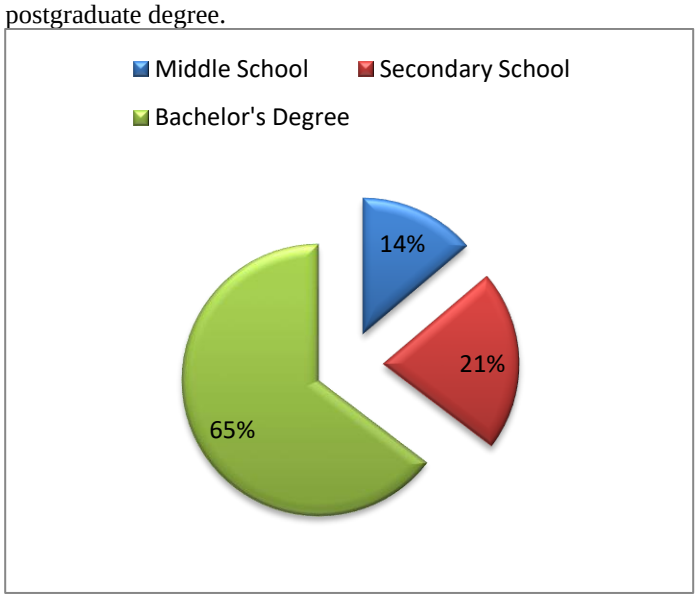

Figure 2. Distribution of the sample members based on educational qualification.

- **Research Instrument**

In the light of findings by relevant previous studies, the researcher developed a questionnaire form designed for investigating levels of awareness on influenza in Saudi Arabia, particularly Al-Baha city.

- **Description of the Research Instrument**

The questionnaire consisted of two main parts

- Part one: basic data (gender – educational qualification).
- Part two: the questionnaire included 10 items.

A five-point likert scale (very high degree – high degree – moderate degree – low degree – very low degree) was used for investigating levels of awareness on influenza in Saudi Arabia, particularly Al-Baha city.

- **Validity of the Research Instrument**

1) Internal Consistency

a. Internal Consistency of the Study's Axes

Internal consistency was calculated based on sample members' responses, using Pearson correlation coefficient between each item and the total score for the axis to which the item belongs, as outlined in Table 5 below.

Table 5. Pearson correlation coefficients between the scores of each item and the total score for the axis to which the item belongs.

Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient
1	.736**	5	.782**	9	.775**
2	.743**	6	.827**	10	.761**
3	.818**	7	.821**		
4	.766**	8	.741**		

****Statistically significant at (0.01)**

***Statistically significant at (0.05)**

Table 5 shows that items are statistically significantly correlated at the significance level of (0.01) with the total score for the axis to which the item belongs. Values of correlation coefficients were in the range (736**-.827**). This indicates that the questionnaire's items are highly internally consistent.

Table 6. Cronbach reliability coefficients of the questionnaire's axes.

Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient
1	.937	5	.935	9	.935
2	.937	6	.933	10	.936
3	.933	7	.933		
4	.935	8	.937		
Total Reliability Coefficient	.927				

Table 6 shows that the values of reliability coefficients for the questionnaire's axes were high, with values being in range (.933-.937). The total reliability coefficient for questionnaire's axes was valued at (.927). These values of the reliability coefficients indicate the validity of the questionnaire for application and reliability of its results.

Discussion of the study's main question: What is the level of awareness on influenza in Saudi Arabia, particularly in Al-Baha city:

In order to answer this question, means and standard deviations were calculated for each item of the questionnaire. Items were listed in a descending order by mean, as outlined in Table 7 below.

Table 7. Frequencies, percentages, means, and standard deviations for sample members' responses on awareness on influenza in Saudi Arabia, particularly in Al-Baha.

	Item		Responsiveness						Mean	Standard Deviation	Item Ranking	Degree of Responsiveness
			Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree					
1	I am aware that influenza is different from common flu in terms of symptoms and severity	f	10	19	32	37	22		3.35	1.19	2	Moderate
		%	8.3	15.8	26.7	30.8	18.3					
2	I know that influenza leads to serious complications, such as pneumonia	f	9	18	35	32	26		3.40	1.19	1	High
		%	7.5	15.0	29.2	26.7	21.7					
3	I am aware that annual vaccination against influenza is the most effect prevention against the disease	f	15	28	42	21	14		2.93	1.17	5	Moderate
		%	12.5	23.3	35.0	17.5	11.7					
4	I know that coughing and body pain are possible indicators of infection with influenza	f	9	12	44	42	13		3.32	1.04	3	Moderate
		%	7.5	10.0	36.7	35.0	10.8					
5	I know that antibiotics are not effective for treating influenza because it is a viral disease	f	39	32	22	17	10		2.39	1.29	10	Low
		%	32.5	26.7	18.3	14.2	8.3					
6	I believe that covering the mouth while coughing or sneezing helps in prevention against influenza infection	f	23	20	41	19	17		2.89	1.28	6	Moderate
		%	19.2	16.7	34.2	15.8	14.2					
7	Consulting a doctor is important for having appropriate advice when symptoms present	f	21	19	40	25	15		2.95	1.25	4	Moderate
		%	17.5	15.8	33.3	20.8	12.5					
8	I believe that nasal congestion is one of the clearer symptoms of influenza	f	30	19	41	20	10		2.68	1.25	7	Moderate
		%	25.0	15.8	34.2	16.7	8.3					
9	It is important to stay at home when feeling symptoms similar to those of influenza	f	28	29	34	20	9		2.61	1.22	8	Moderate
		%	23.3	24.2	28.3	16.7	7.5					
10	I know that it is necessary to avoid socialization with people who have influenza symptoms	f	27	38	29	19	7		2.51	1.17	9	Low
		%	22.5	31.7	24.2	15.8	5.8					
Total Mean Score for the Questionnaire									2.90	.941	---	Moderate

Table 7 above shows that the level of awareness about influenza in the Kingdom of Saudi Arabia, particularly in Al-Baha city, was (moderate), from the perspectives of sample members, as the total mean of the questionnaire was (2.90) with a standard deviation of (.941). The values of the standard deviations of the questionnaire's items were within the range of (1.04-1.29), which are moderate and low values. This shows the homogeneity of the opinions of sample members on these items.

Ranked first was Item No. 2 (I know that influenza leads to serious complications, such as pneumonia), with a mean of (3.40) and a standard deviation (1.19). Ranked second was Item No. 1 (I am aware that influenza is different from common flu in terms of symptoms and severity), with a mean of (3.35) and a standard deviation of (1.19). Ranked last was Item No. 5 (I know that antibiotics are not effective for treating influenza because it is a viral disease), with a mean of (2.39) and a standard deviation (1.29). The rest of the questionnaire's items had a moderate degree of responsiveness.

The researcher believes that the moderate level of awareness on influenza in Saudi Arabia, particularly Al-Baha city may be attributed to poor education at hospitals on influenza and how to prevent it. This finding is line with those obtained by Sales et al. (2021) and Al Masoud et al. (2020), which indicate that levels of awareness on influenza across different regions of Saudi Arabia, including Al-Baha, are low to moderate.

Conclusion:

The discussions in this research highlight the significant importance of awareness in responding to influenza. Awareness influences knowledge, attitudes, and behaviors related to prevention the disease, such as seeking or willingness to receive vaccination. Thus, awareness is not a mere intellectual element, but also a behavioral factor. The main finding of the study is that levels of awareness on influenza among the general public in Al-Baha city is low to moderate, which is consistent with findings obtained by other studied targeting the Saudi context.

In the light of the presented discussions, this research presents a number of research suggestions and practical recommendations:

- ***Research suggestions:***
  - Conducting further research on public awareness on influenza across different regions of Saudi Arabia.
  - Conducting studies that investigates levels of knowledge among the general public on other common medical conditions, such diabetes and cancer.
- ***Practical recommendations:***
  - Healthcare institutions in Al-Baha should launch educational campaigns on the nature, risk factors, and impacts of influenza.
  - The Saudi Ministry of Health should intensity vaccination campaigns across Saudi Arabia.

References:

Abu-Rish, E. Y., Elayeh, E. R., Mousa, L. A., Butanji, Y. K., & Albsoul-Younes, A. M. (2016). Knowledge, awareness and practices towards seasonal influenza and its vaccine: implications for future vaccination campaigns in Jordan. *Family Practice*, *33*(6), 690-697. https://doi.org/10.1093/fampra/cmw086

Al Masoud, F. S., AlQahtani, S. S., Alshaqaqiq, A. M., Al Ghwainem, N. I., Alkadhem, K. T. A., Alsultan, M. M., AlEid, N. F., Altaweel, G. R., Bu Saad, N. O., & Thkerallah, F. (2020). Awareness and attitude regarding influenza vaccine among public and health care providers in the Eastern region of Saudi Arabia. *International Journal of Medicine in Developing Countries*, *4*, 793-799. https://doi.org/10.24911/IJMDC.2.1.7

Alaa, M., Yasin, H. M., Alharbi, H. A., Barry, M., & Qashqary, M. (2024). The Attitude Regarding the Uptake of Influenza Vaccine in the COVID-19 Era in Jeddah City, Saudi Arabia. *Journal of Pure & Applied Microbiology*, *18*(1), 703-710. https://doi.org/10.22207/JPAM.18.1.60

Alasmari, M. A., Sheikh, M., Alrasheed, T., & Alanazi, M. A. (2024). Awareness of the General population about Influenza Vaccine in Tabuk, Saudi Arabia. *South Eastern European Journal of Public Health*, *25*(S1), 1364-1374.

Alfouzan, N., Almujil, A., Demyati, E., & AlOtaiby, S. (2022). Motivators and barriers for seasonal influenza vaccination among healthcare workers in Gulf Cooperation Council countries: a systematic review. *International Journal of Medicine in Developing Countries*, *6*(6), 882-890. https://doi.org/10.24911/IJMDC.51-1630353886

Alharbi, I., Alharthi, R., Aljabri, S., Alzhrani, R., Alzahrani, L., & Albagami, S. (2023). Seasonal Influenza Vaccination Among Saudi Children: Parental Barriers and Willingness to Vaccinate Their Children in the Makkah Region. *Cureus*, *15*(5), 1-8. https://doi.org/10.7759/cureus.38878

Aljamili, A. A. (2020). Knowledge and practice toward seasonal influenza vaccine and its barriers at the community level in Riyadh, Saudi Arabia. *Journal of Family Medicine and Primary Care*, *9*(3), 1331-1339. https://doi.org/10.4103/jfmpc.jfmpc_1011_19

Alotaibi, F. Y., Alhetheel, A. F., Alluhaymid, Y. M., Alshibani, M. G., Almuhaydili, A. O., Alhuqayl, T. A., Alfayez, F. M., & Almasabi, A. A. (2019). Influenza vaccine coverage, awareness, and beliefs regarding seasonal influenza vaccination among people aged 65 years and older in Central Saudi Arabia. *Saudi Medical Journal*, *40*(10), 1013-1018.

Alqahtani, A. S., Althobaity, H. M., Al Aboud, D., & Abdel-Moneim, A. S. (2017). Knowledge and attitudes of Saudi populations regarding seasonal influenza vaccination. *Journal of Infection and Public Health*, *10*(6), 897-900. http://dx.doi.org/10.1016/j.jiph.2017.03.011

Alshehri, A. H., Hafez, M. Y., Alamri, A. M. M., Alluqmani, A. D. M., Allehybey, A. G., Althiyabi, M. M., Alghamdi, F. R., Alshehri, A. M. D., Alharthy, R. M., Alsukhairi, S. H., Altowairqi, M. H., & Alsubaie, M. S. (2023). Assessment the Awareness of the Elderly Patient's Knowledge and Attitudes among Influenza Vaccination in Kingdom of Saudi Arabia 2023. *Migration Letters*, *20*(S9), 1795-1807.

Arghittu, A., Dettori, M., Azara, A., Gentili, D., Serra, A., Contu, B., & Castiglia, P. (2020). Flu vaccination attitudes, behaviours, and knowledge among health workers. *International Journal of Environmental Research and Public Health*, *17*(9), 1-16. http://dx.doi.org/10.3390/ijerph17093185

Barry, M. A., Aljammaz, K. I., & Alrashed, A. A. (2020). Knowledge, attitude, and barriers influencing seasonal influenza vaccination uptake. *Canadian Journal of Infectious Diseases and Medical Microbiology*, *2020*(1), 1-6. https://doi.org/10.1155/2020/7653745

Bertoldo, G., Pesce, A., Pepe, A., Pelullo, C. P., Di Giuseppe, G., & Collaborative Working Group. (2019). Seasonal influenza: Knowledge, attitude and vaccine uptake among adults with chronic conditions in Italy. *PLoS One*, *14*(5), 1-14. https://doi.org/10.1371/journal.pone.0215978

Chen, C., Liu, X., Yan, D., Zhou, Y., Ding, C., Chen, L., Lan, L., Huang, C., Jiang, D., Zhang, X., Guan, Z., Fu, X., Du, Y., Lin, Y., Zhu, C., Wu, J., Li, L., & Yang, S. (2022). Global influenza vaccination rates and factors associated with influenza vaccination. *International Journal of Infectious Diseases*, *125*, 153-163. https://doi.org/10.1016/j.ijid.2022.10.038

Cherif, I., Kharroubi, G., Bouabid, L., Gharbi, A., Boukthir, A., Ben Alaya, N., Ben Salah, A., & Bettaieb, J. (2021). Knowledge, attitudes and uptake related to influenza vaccine among healthcare workers during the 2018–2019 influenza season in Tunisia. *BMC Public Health*, *21*, 1-9. https://doi.org/10.1186/s12889-021-10970-y

Çimşir, B. T., & Uzunboylu, H. (2019). Awareness training for sustainable development: Development, implementation and evaluation of a mobile application. *Sustainability*, *11*(3), 1-17. http://dx.doi.org/10.3390/su11030611

Goss, M. D., Temte, J. L., Barlow, S., Temte, E., Bell, C., Birstler, J., & Chen, G. (2020). An assessment of parental knowledge, attitudes, and beliefs regarding influenza vaccination. *Vaccine*, 1-7. https://doi.org/10.1016/j.vaccine.2019.11.040

Jadhav, S. P., Singh, H., Gilhotra, R. M., Mishra, A., Singh, Y., Krishnan, A., Dua, K., & Gupta, G. (2021). Medicinal Plants Used in the Treatment of Influenza A Virus Infections. In K. Dua, S. Nammi, D. Chang, D. K. Chellappan, G. Gupta, & T. Collet(Eds.), *Medicinal Plants for Lung Diseases: A Pharmacological and Immunological Perspective* (pp. 399-416). Springer Nature Singapore Pte Ltd. https://doi.org/10.1007/978-981-33-6850-7_18

Javanian, M., Barary, M., Ghebrehewet, S., Koppolu, V., Vasigala, V., & Ebrahimpour, S. (2021). A brief review of influenza virus infection. *Journal of Medical Virology*, *93*(8), 4638-4646. https://doi.org/10.1002/jmv.26990

Kazemifard, N., Dehkohneh, A., & Baradaran Ghavami, S. (2022). Probiotics and probiotic-based vaccines: A novel approach for improving vaccine efficacy. *Frontiers in Medicine*, *9*, 1-15. https://doi.org/10.3389/fmed.2022.940454

Ketsela, A., Gebreyesus, S. H., & Deressa, W. (2021). Spatial distribution of under immunization among children 12–23 months old in Butajira HDSS, southern Ethiopia. *BMC Pediatrics*, *21*(1), 1-10. https://doi.org/10.1186/s12887-021-02690-4

King, J. P., Hanson, K. E., Donahue, J. G., Glanz, J. M., Klein, N. P., Naleway, A. L., DeStefano, F., Weintraub, E., & Belongia, E. A. (2020). Survey of influenza vaccine knowledge, attitudes, and beliefs among pregnant women in the 2016–17 season. *Vaccine*, *38*(9), 1-17. https://doi.org/10.1016/j.vaccine.2020.01.039

Kulkarni, A. S., Jadhav, A. N., Babar, C. V., Patil, S. R., Mirajkar, N. D., & Jadhav, S. D. (2020). Design and characterization of zanamivir loaded niosomes. *World Journal of Pharmaceutical Research*, *9*, 2485-515. https://doi.org/10.20959/wjpr20208-18343

Linardos, I. (2021). *Effects of Behaviour Adaptation on the Spread of Infectious Disease on Networks with Community Structures* [Unpublished master's thesis]. University of Twente.

Minov, J., Stoleski, S., Petrova, T., Vasilevska, K., Mijakoski, D., & Bislimovska, D. (2021). Cefpodoxime in the outpatient treatment of lower respiratory tract infections. *Academic Medical Journal*, *1*(1), 37-48.

Mohamad, R. M. A., Abu Jamileh, K. I., Ali, M. R. A., Makki, K. H. A., Alshehri, W. A., Fadul, S. S. A., Buraei, S. S. E. M., Al-lahim, W. A. S., Abosalamh, H. A. A., Althobaiti, A. S. H., & Khubrani, M. A. A. (2023). Acceptability of The Flu Vaccine among The General Population in Tabuk, Saudi Arabia, 2021-2022. *The Egyptian Journal of Hospital Medicine*, *90*(1), 610-620.

Nalongo Bina, K. (2024). The Role of Public Health in Promoting Vaccination. *Eurasian Experiment Journal of Public Health*, *5*(3), 43-47.

Nwankwo, N. G., Chukwu, I. L., Igbokwe, O. P., & Agbanu, N. A. (2019). Awareness and use of library information resources: a conceptual approach. *International Journal of Social Sciences and Humanities Review*, *9*(2), 188-197.

Nypaver, C., Dehlinger, C., & Carter, C. (2021). Influenza and influenza vaccine: a review. *Journal of Midwifery & Women's Health*, *66*(1), 45-53. https://doi.org/10.1111/jmwh.13203

Otieno, N. A., Nyawanda, B., Otiato, F., Adero, M., Wairimu, W. N., Atito, R., Wilson, A. D., Gonzalez-Casanova. I., Malik, F. A., Verani, J. R., Widdowson, M.-A., Omer, S. B., & Chaves, S. S. (2020). Knowledge and attitudes towards influenza and influenza vaccination among pregnant women in Kenya. *Vaccine*, *38*(43), 6832-6838. https://doi.org/10.1016/j.vaccine.2020.08.015

Petricek, G., Hoffmann, K., Vandenbroucke, A., Divjak, A. C., Mayrhuber, E. A. S., & Peersman, W. (2019). Laypersons' perception of common cold and influenza prevention—a qualitative study in Austria, Belgium and Croatia. *European Journal of General Practice*, *25*(4), 220-228. https://doi.org/10.1080/13814788.2019.1645831

Rabaan, A. A., Wyse, R., Al-Tawfiq, J. A., Alahmed, S. H., Aljeldah, M. M., Bazzi, A. M., Asseri, A. M., Binjomah, A. Z., & Haque, S. (2020). Influenza vaccine acceptance by healthcare workers in Saudi Arabia: A questionnaire-based analysis. *Le Infezioni in Medicina*, *28*(1), 70-77.

Ren, X., Geoffroy, E., Tian, K., Wang, L., Feng, L., Feng, J., Qin, Y., Wu, P., Zhang, S., Geng, M., Zeng, L., Yu, J., Cowling, B. J., & Li, Z. (2019). Knowledge, attitudes, and behaviors (KAB) of influenza vaccination in China: A cross-sectional study in 2017/2018. *Vaccines*, *8*(1), 1-13. http://dx.doi.org/10.3390/vaccines8010007

Sales, I. A., Syed, W., Almutairi, M. F., & Al Ruthia, Y. (2021). Public knowledge, attitudes, and practices toward seasonal influenza vaccine in Saudi Arabia: a cross-sectional study. *International Journal of Environmental Research and Public Health*, *18*(2), 1-13. https://doi.org/10.3390/ijerph18020479

World Health Organization. (2024). *Clinical Practice Guidelines for Influenza*. Author.

Yan, S., Wang, Y., Zhu, W., Zhang, L., Gu, H., Liu, D., Zhu, A., Xu, H., Hao, L., & Ye, C. (2021). Barriers to influenza vaccination among different populations in Shanghai. *Human Vaccines & Immunotherapeutics*, *17*(5), 1403-1411. https://doi.org/10.1080/21645515.2020.1826250

Zaraket, H., Melhem, N., Malik, M., Khan, W. M., Dbaibo, G., & Abubakar, A. (2019). Review of seasonal influenza vaccination in the Eastern Mediterranean Region: Policies, use and barriers. *Journal of Infection and Public Health*, *12*(4), 472-478. https://doi.org/10.1016/j.jiph.2018.10.009