



## Original Research Article

# An Investigation into the Understanding, Perceptions, and Behavioural Patterns Surrounding Seasonal Influenza Prevention Among Students of Jazan University: A cross-sectional study

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**Abstract:** This study explores the knowledge, attitudes, and practices (KAP) of students at Jazan University regarding seasonal influenza prevention. The global impact of influenza on public health necessitates an understanding of the perspectives and behaviors of students, who, due to their mobility, play a crucial role in prevention and control. A cross-sectional correlational design was employed, utilizing a web-based survey tool. The sample comprised 483 participants from various colleges, with a focus on healthcare-related disciplines. The study assesses knowledge through 16 questions, attitudes through 8 Likert-scale items, and practices related to influenza vaccination. Results highlight that while knowledge and attitudes are relatively positive, a significant gap exists between awareness and vaccination practices. The study identifies age-related differences in knowledge and emphasizes the need for targeted educational interventions. Recommendations include integrating influenza education into the curriculum and enhancing awareness campaigns to bridge the gap between knowledge and action. The findings contribute valuable insights for public health strategies and educational initiatives to enhance seasonal influenza prevention in university settings.

**Keywords:** Influenza, vaccination, Knowledge, attitude, practices, Jazan university

## INTRODUCTION

Communicable diseases are always prioritized as a public health issue globally. While these are recognized as leading cause of loss in health globally (dpicampaigns, n.d.; Vos et al., 2020). Influenza infections account for most of the mortality (Troeger et al., 2019). Globally increasing incidence of lower respiratory infections (LRTI) is attributed mostly to seasonal influenza (Troeger et al., 2019) and LRTI's are the 5<sup>th</sup> leading cause of illness (Pak et al., 2021; Vos et al., 2015).

Influenza is a viral infection that affects the upper and lower respiratory tracts, caused by a variety of viruses. Some of these viruses can infect humans, while others are restricted to specific animal species. (Peteranderl et al., 2016). These viruses spread from person to person through droplets released into the air when an infected individual

coughs, speaks, or sneezes (Richard & Fouchier, 2016). Contact transmission is also possible by touching surfaces contaminated with the virus and subsequently touching the nose or eyes. Importantly, influenza can be transmitted before the onset of symptoms and up to 5 to 7 days post-infection (CDC, 2023).

Healthy individuals recover early within 3-7 days however vulnerable groups like young children, the elderly, immunocompromised individuals, and pregnant women show higher chances of complications such as pneumonia and in some cases even mortality. Runny nose, elevated fever, cough, and sore throat are the most common symptoms in influenza, and it shows seasonal periodicity exhibiting rapid spread, mostly during autumn and winter in temperate regions. These epidemics affect a substantial proportion of both adults and children,

with varying impacts across age groups and in terms of severity (Alguacil-Ramos et al., 2019) (Tennant et al., 2019) (Marshall et al., 2019) (Odun-Ayo et al., 2018) There are 4 types of influenza viruses, types A, B, C and D. Influenza A and B viruses circulate and cause seasonal epidemics of disease. (Dunning et al., 2020) Seasonal influenza affects 1 billion cases every year and about 3-5 million severity cases reported every year. Globally, an estimated 290,000 – 650,000 deaths occur due to flu each year. (*Influenza (Seasonal)*, n.d.).

Students residing on campus face an elevated susceptibility to infectious diseases, particularly influenza, owing to the compact study and living conditions. Majority of the research regarding influenza infections in students indicate that over 90% of influenza outbreaks are concentrated within campus settings (Ping et al., 2015; Tuohetamu et al., 2017). The high mobility of college students between campus and the broader community underscores the significance of their actions in influenza prevention and control, not only for their individual health but also for the overall well-being of the community. It is crucial to recognize that students, as future of the community, wield influence over the health outcomes of their respective societies. Utilizing Knowledge, Attitude, and Practices (KAP) surveys becomes imperative as they can unveil misconceptions and identify potential obstacles to adopting preventive behaviors, paving the way for informed interventions and behavior change strategies. As the vaccination demands every season to be given a shot of influenza, students are not tuned for the vaccination. Pinpointing the specific reservations of individuals who are hesitant about receiving the seasonal influenza vaccine enables health educators to tailor their interventions to address these particular educational gaps. This targeted approach not only helps counteract misinformation but also contributes to enhancing overall understanding and awareness regarding vaccination (n.d.). Influenza is a significant public health concern due to its high morbidity and mortality rates. People do not take the influenza vaccine, moreover, most of the people around us have not taken the influenza vaccine. Furthermore, there was no studies on seasonal influenza prevention has been conducted in the previous five years. Seasonal influenza is an ever-evolving virus that requires ongoing research and development of new treatments and prevention strategies. Vaccination remains the primary strategy for decreasing health impact caused by seasonal influenza.

#### **Rationale for study**

Students always play a pivotal role in spreading health awareness messages in the community. Prevention of influenza in the community is possible only by annual flu

vaccination. In the previous studies done involving Saudi undergraduate students explored knowledge and attitudes of the community toward seasonal influenza vaccination, revealed that respondents considered healthcare professionals (HCPs) as the most reliable sources of information for seasonal influenza vaccination (Al Nufaiei et al., 2023; Houser & Subbarao, 2015). A study conducted in students in Saudi Arabia captured 80% of awareness regarding influenza vaccine. (Alqahtani et al., 2017). Consequently, this study seeks to assess and compare the knowledge and opinions of undergraduate healthcare students regarding influenza vaccinations across multiple educational institutions to provide a more comprehensive understanding of the subject.

#### **Objective:**

To assess the knowledge, attitudes, and practices of Jazan University students regarding the transmission, prevention, and control of seasonal influenza

## **MATERIAL AND METHODS**

### **Study design and setting**

A cross-sectional, questionnaire-based study was conducted among male students of Jazan University, Saudi Arabia.

### **Study tool and data collection**

Data were collected using a web-based Google Form comprising five sections: (1) sociodemographic characteristics, (2) knowledge regarding seasonal influenza vaccine, (3) attitudes toward seasonal influenza vaccination, (4) vaccination practices, and (5) additional comments.

### **Study variables**

Sociodemographic variables included age, place of residence, college of study, and academic year.

### **Knowledge assessment**

Knowledge was assessed using 16 items addressing: reasons for influenza vaccine rejection, route/method of administration, recommended frequency, perceived cost, symptoms of influenza, modes of transmission, treatment modalities, and severe complications.

### **Attitude assessment**

Attitudes were evaluated using 8 items, including perceptions about influenza vaccination, concerns related to adverse events following immunization (AEFI), and willingness to promote influenza vaccination among others.

### **Practice assessment**

Practices were assessed using 5 items covering prior vaccination status, place of vaccination (if vaccinated), and willingness to receive vaccination in the upcoming influenza season.

### **Pilot study and consent**

A pilot (experimental) survey was conducted among 60 students from different colleges of Jazan University. Willingness to complete the online form

was considered as implied consent to participate.

### Sample size estimation

Sample size was calculated using a previously reported influenza vaccine uptake of 44.5% (Alqahtani et al., 2017). With 95% confidence level ( $Z = 1.96$ ) and 5% precision ( $m = 0.05$ ), the sample size was estimated using:

$$n = (Z^2 \times p \times (1 - p)) / m^2$$

$$n = (1.96^2 \times 0.45 \times 0.55) / 0.05^2 = 381$$

Although the minimum required sample was 381, a total of 483 responses were obtained during the study period.

### Statistical analysis

Data were tabulated in Microsoft Excel and analyzed using SPSS version 16.0. Continuous variables were summarized as mean  $\pm$  standard deviation (SD), while categorical variables were presented as frequencies and percentages. Chi-square tests were applied where appropriate, and correlations were assessed for selected variables. A p-value  $<0.05$  was considered statistically significant.

### Ethical considerations

The study was conducted in accordance with ethical principles for human research. Participation was voluntary, and implied consent was obtained through completion and submission of the online questionnaire. Responses were collected anonymously, confidentiality was ensured, and data were used solely for research purposes. Participants were informed about the study objectives and assured that non-participation would not result in any academic or personal consequences. Ethical approval was obtained from the Local Committee for Research Ethics, Jazan University (HAPO-10-Z-001), Approval No. **REC-47/04/1606**.

## RESULTS

Data collected by online questionnaire deployed to all students by scan codes and data filled was processed and analyzed in SPSS. 49.1% of the students were in the age group 21-23 years. Only 5% of the students were more than 26 years. Mean age of the students found to be  $24.6 \pm 0.757$  years. Almost similar number were found to staying in rural and urban areas.

**Table:-1 Sociodemographic variables of the study subjects**

| Sociodemographic variables |                                        | No(%)       |
|----------------------------|----------------------------------------|-------------|
| Age of the study subjects  | 18-20 years                            | 63(13.0%)   |
|                            | 21-23 years                            | 237(49.1%)  |
|                            | 24-26 years                            | 159(32.9%)  |
|                            | >26 years                              | 24(5.0%)    |
| Place of residence         | Urban                                  | 240(49.7%)  |
|                            | Rural                                  | 243(50.30%) |
| College of study           | CPHTM                                  | 63(13.0%)   |
|                            | Pharmacy College                       | 39(8.1%)    |
|                            | Nursing College                        | 36(7.5%)    |
|                            | College of Medicine                    | 117(24.2%)  |
|                            | Engineering College                    | 57(11.8%)   |
|                            | College of Business and Administration | 60(12.4%)   |
|                            | Arts College                           | 33(6.8%)    |
|                            | Other colleges                         | 78(16.1%)   |
| Academic year              | First Year                             | 30(6.2%)    |
|                            | Second Year                            | 45(9.3%)    |
|                            | Third Year                             | 132(27.3%)  |
|                            | Fourth Year                            | 276(57.1%)  |
| Marital status             | Single                                 | 435(90.1%)  |
|                            | Married                                | 39(8.1%)    |
|                            | Widowed                                | 9(1.9%)     |
|                            | Divorced                               | 0(0.0%)     |

While the data was collected giving importance to all colleges, it was found that medical students participated enthusiastically in the survey when compared with other colleges. However, the data was made linear in correspondence with the students' interviews. 24.2% of medical students dominated participating in the survey, next in place is by public health college students (13%) followed by business administration students (12.4%) then engineering students (11.8%). In the students participated for the survey it was found that 57% were belonging to 4<sup>th</sup> year followed by 27% of 3<sup>rd</sup> year students. First year students (6.2%) were at the least in participating for the survey. Marital status showed that 90% are unmarried in study subjects and 8% were married. Unfortunately, 3 students (1.9%) were widowed.

**Table 2: knowledge of the students regarding the Seasonal Influenza Vaccine**

| Knowledge regarding flu vaccination of the participants                        |             | Age of the study subjects |             |             |           |
|--------------------------------------------------------------------------------|-------------|---------------------------|-------------|-------------|-----------|
|                                                                                |             | 18-20 years               | 21-23 years | 24-26 years | >26 years |
|                                                                                |             | No(%)                     | No(%)       | No(%)       | No(%)     |
| Did you know that flu vaccine is given every season?                           | Yes (n=402) | 45 (11.2%)                | 180(44.8%)  | 156(38.8%)  | 21(5.2%)  |
|                                                                                | No (n=81)   | 18(22.2%)                 | 57(70.4%)   | 3(3.7%)     | 3(3.7%)   |
| Did you know that the flu vaccine is provided free of charge?                  | Yes (n=396) | 54(13.6%)                 | 174(43.9%)  | 150(37.9%)  | 18(4.5%)  |
|                                                                                | No(n=87)    | 9(10.3%)                  | 63(72.4%)   | 9(10.3%)    | 6(6.9%)   |
| Do u have any idea about seasonal influenza vaccination?                       | Yes (n=405) | 51(12.6%)                 | 183(45.2%)  | 153(37.8%)  | 18(4.4%)  |
|                                                                                | No(n=78)    | 12(15.4%)                 | 54(69.2%)   | 6(7.7%)     | 6(7.7%)   |
| Do you think seasonal flu vaccination can help reduce the spread of influenza? | Yes(n=408)  | 51(12.6%)                 | 192(47.1%)  | 147(36%)    | 18(4.4%)  |
|                                                                                | No(n=75)    | 12(15.4%)                 | 45(60%)     | 12(16%)     | 6(8%)     |

This data provides insights into the knowledge and opinions of participants regarding flu vaccination, and it shows how these responses vary across different age groups. It's worth noting that the 21-23 years age group seems to have the highest percentage of respondents for most questions, suggesting potential age-related differences in knowledge and opinions about flu vaccination. *Among participants who answered 'Yes' to the question regarding the timing of the flu vaccination (n=134), the majority are in the 21-23 years age group (44.8%), followed by the 24-26 years age group (38.8%). Majority (82%) know that influenza vaccine is given for free at health centers, 83% have said that they have idea about flu vaccine and 84% opined that flu vaccine prevents seasonal flu.*

**Table 3 : Correlations between knowledge variables and age of the study subjects**

| Spearman's correlations                                                        | Age of the study subjects | Did you know that flu vaccine is given every season? | Did you know that the flu vaccine is provided free of charge? | Do u have any idea about seasonal influenza vaccination? | Do you think seasonal flu vaccination can help reduce the spread of influenza? |
|--------------------------------------------------------------------------------|---------------------------|------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------|
| Age of the study subjects                                                      |                           | -.264**                                              | -.128                                                         | -.156*                                                   | -.098                                                                          |
|                                                                                |                           | .001                                                 | .105                                                          | .048                                                     | .218                                                                           |
| Did you know that flu vaccine is given every season?                           | -.264**                   |                                                      | .395**                                                        | .345**                                                   | .312**                                                                         |
|                                                                                | .001                      |                                                      | .000                                                          | .000                                                     | .000                                                                           |
| Did you know that the flu vaccine is provided free of charge?                  | -.128                     | .395**                                               |                                                               | .321**                                                   | .558**                                                                         |
|                                                                                | .105                      | .000                                                 |                                                               | .000                                                     | .000                                                                           |
| Do u have any idea about seasonal influenza vaccination?                       | -.156*                    | .345**                                               | .321**                                                        |                                                          | .231**                                                                         |
|                                                                                | .048                      | .000                                                 | .000                                                          |                                                          | .003                                                                           |
| Do you think seasonal flu vaccination can help reduce the spread of influenza? | -.098                     | .312**                                               | .558**                                                        | .231**                                                   |                                                                                |
|                                                                                | .218                      | .000                                                 | .000                                                          | .003                                                     |                                                                                |

*The correlations show relationships between these variables, suggesting that knowledge and beliefs about flu vaccination and its related aspects are interconnected and can be influenced by age.*

The variable did u know that flu vaccine is given every season positively correlates with "Did you know that the flu vaccine is provided free of charge?" (.395), indicating that those who know about the annual flu vaccine are more likely to also know it's free and it also positively correlates with "Do u have any idea about seasonal influenza vaccination?" (.345), suggesting that awareness of the annual flu vaccine also includes knowledge about seasonal influenza vaccination. It positively correlates with "Do you think seasonal flu vaccination can help reduce the

spread of influenza?" (.312), indicating that those aware of annual flu vaccines are more likely to believe in their effectiveness in reducing influenza spread.

Knowledge about the free provision of the flu vaccine positively correlates with age (the older the age, the more likely individuals are to know it's free). It positively correlates with awareness of the annual flu vaccine (.395), seasonal influenza vaccination (.321), and belief in the effectiveness of flu vaccination (.558). This suggests that those who know the flu vaccine is free are more likely to be informed about and supportive of flu vaccination. Knowledge about seasonal influenza vaccination positively correlates with awareness of the annual flu vaccine (.345) and knowledge about the free provision of the flu vaccine (.321). This indicates that those who are aware of one aspect are more likely to be aware of the others. It also correlates positively with the belief that seasonal flu vaccination can help reduce the spread of influenza (.231). Belief in the effectiveness of seasonal flu vaccination positively correlates with awareness of the annual flu vaccine (.312), knowledge about the free provision of the flu vaccine (.558), and awareness of seasonal influenza vaccination (.231). This suggests that those who believe in the effectiveness of flu vaccination are more likely to be informed about related topics.

**Table 4 Assessing knowledge of the participants Vs age of the subjects**

| Age of the subjects Vs Knowledge |                             | Knowledge of Participants regarding influenza vaccine |                    |                | Chi square df p                  |
|----------------------------------|-----------------------------|-------------------------------------------------------|--------------------|----------------|----------------------------------|
|                                  |                             | Poor Knowledge                                        | Moderate Knowledge | Good Knowledge |                                  |
|                                  |                             | No:(%)                                                | No:(%)             | No:(%)         |                                  |
| Age of the study subjects        | 18-20 years<br>n=51(10.5%)  | 6(11.8%)                                              | 30(58.8%)          | 15(29.4%)      | Chi square=34.06<br>df=6 p=0.000 |
|                                  | 21-23 years<br>N=249(51.5%) | 33(13.2%)                                             | 126(50.6%)         | 90(36.1%)      |                                  |
|                                  | 24-26 years<br>N=159(32.9%) | 6(3.8%)                                               | 21(13.2%)          | 132(83%)       |                                  |
|                                  | >26 years<br>N=24(4.9%)     | 0                                                     | 18(75%)            | 6(25%)         |                                  |

The knowledge of the participants captured with 13 questions and each question was given 1 point for correct response and 0 for incorrect response. Total score (minimum =0 maximum=13) is analyzed and graded under 3 categories. Poor knowledge for those scored less than 5, moderate knowledge being 6-9 and good knowledge with scores 10-13 (Salman et al., 2020) As the age advances the knowledge of the participants increased. 83% of students in age group 24- 26 years were having good knowledge whereas moderate knowledge is found in other age groups. There is a significant association between age and knowledge levels regarding the influenza vaccine among the study subjects. The Chi-square value of 34.06 and p of 0.000 indicating that the association between age and knowledge levels is highly unlikely to be due to random chance.

It's positive to see that a majority of participants answered the questions related to the contagiousness of influenza, its symptoms, and the potential prevention of flu by the vaccine correctly. However, it's worth noting that there is a common misconception regarding the flu vaccine causing the flu, with a significant percentage of participants providing an incorrect response in this regard. Educating the public about the safety and benefits of the flu vaccine is essential to dispel such misconceptions.

Majority of individuals who responded "Yes" recognize that the vaccine should be taken every influenza season, which is the recommended practice. On the other hand, a significant proportion of those who responded "No" were unsure about the recommended frequency or provided answers suggesting less frequent vaccination. This analysis underscores the importance of public education and awareness campaigns to ensure that individuals have accurate information about the recommended timing of seasonal influenza vaccination, which is typically annually.

Above table shows mean scores of responses noted on likert scale ranging from 1-5 and 5 being strongly correct answer and 1 being wrong answer. Excepting the question regarding adverse effects reporting, mean scores are near to 4 showing positive attitude of the students towards flu vaccine, however they lack knowledge regarding adverse effects are under reported.

**Table 5: Attitude of the students towards flu vaccination**

| Attitudes of the participants towards flu vaccination                | Mean   | Std. Deviation |
|----------------------------------------------------------------------|--------|----------------|
| [Being a student, I have high chances of influenza infection]        | 3.901  | 1.0013         |
| [Influenza is not a contagious disease]                              | 3.099  | 1.4629         |
| [Influenza is not a serious disease]                                 | 3.006  | 1.4076         |
| [The seasonal influenza vaccine is effective in preventing the flu.] | 4.329  | .9068          |
| [I believe the seasonal influenza vaccine is safe]                   | 4.366  | .9597          |
| [Vaccine weakens immune system]                                      | 3.379  | 1.5770         |
| [Adverse vaccine effects are under reported]                         | 1.876  | 1.0354         |
| [I would recommend the seasonal influenza vaccine to others]         | 4.373  | .9207          |
| Total                                                                | 28.329 | 4.74           |

**Table 6: students' attitude towards seasonal influenza vaccination through inter item correlation matrix**

|                                                                      | [Being a student, I have high chances of influenza infection] | [Influenza is not a contagious disease] | [Influenza is not a serious disease] | [The seasonal influenza vaccine is effective in preventing the flu.] | [I believe the seasonal influenza vaccine is safe] | [Vaccine weakens immune system] | [Adverse vaccine effects are under reported] | [I would recommend the seasonal influenza vaccine to others] |
|----------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------|--------------------------------------|----------------------------------------------------------------------|----------------------------------------------------|---------------------------------|----------------------------------------------|--------------------------------------------------------------|
| [Being a student, I have high chances of influenza infection]        |                                                               |                                         |                                      |                                                                      |                                                    |                                 |                                              |                                                              |
| [Influenza is not a contagious disease]                              | -.428                                                         |                                         |                                      |                                                                      |                                                    |                                 |                                              |                                                              |
| [Influenza is not a serious disease]                                 | -.452                                                         | .813                                    |                                      |                                                                      |                                                    |                                 |                                              |                                                              |
| [The seasonal influenza vaccine is effective in preventing the flu.] | .195                                                          | .117                                    | .150                                 |                                                                      |                                                    |                                 |                                              |                                                              |
| [I believe the seasonal influenza vaccine is safe]                   | .149                                                          | .232                                    | .054                                 | .686                                                                 |                                                    |                                 |                                              |                                                              |
| [Vaccine weakens immune system]                                      | -.332                                                         | .723                                    | .782                                 | .148                                                                 | .176                                               |                                 |                                              |                                                              |
| [Adverse vaccine effects are under reported]                         | -.096                                                         | .041                                    | -.051                                | -.642                                                                | -.621                                              |                                 |                                              |                                                              |
| [I would recommend the seasonal influenza vaccine to others]         | .244                                                          | .200                                    | .095                                 | .713                                                                 | .722                                               |                                 |                                              |                                                              |

|                                                              |       |      |       |       |       |       |       |       |
|--------------------------------------------------------------|-------|------|-------|-------|-------|-------|-------|-------|
| influenza vaccine is safe]                                   |       |      |       |       |       |       |       |       |
| [Vaccine weakens immune system]                              | -.332 | .723 | .782  | .148  | .176  |       | -.028 | .195  |
| [Adverse vaccine effects are under reported]                 | -.096 | .041 | -.051 | -.642 | -.621 | -.028 |       | -.567 |
| [I would recommend the seasonal influenza vaccine to others] | .244  | .200 | .095  | .713  | .722  | .195  | -.567 |       |

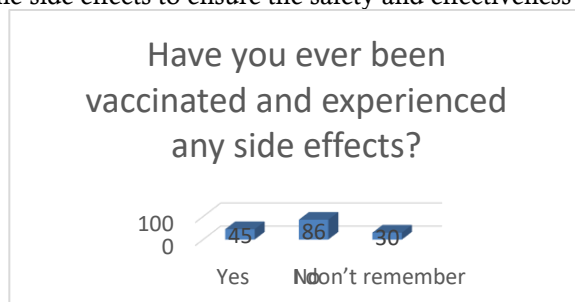
The values in the inter-item correlation matrix represent the Pearson correlation coefficients between pairs of items or questions in a questionnaire or survey. These coefficients quantify the strength and direction of the linear relationship between the items.

Moderate positive correlation was found when asked about chances of influenza is more being a student and while questioned about effectiveness of seasonal influenza vaccine in prevention of flu. This shows the students attitude towards thinking of high chances of infection so they wanted to get vaccinated. While correlation assessed between knowledge regarding influenza being a contagious disease and its severity, strong positive correlation was found. Even when asked about vaccine weakening immune system and underreporting of adverse vaccine effects similar positive correlation was found. Inversely negative correlation found when asked for higher risk of getting infection being a student. This indicates if the student is not having knowledge regarding influenza, then his attitude towards being protected from influenza is reduced.

When asked about safety of vaccine, strong positive correlation found with knowledge regarding effectiveness of the seasonal influenza vaccine in preventing the flu and the student recommending vaccine to others. Strong negative correlation with all the questions for the variable -Adverse vaccine effects are underreported, indicates the gap in the knowledge regarding adverse events reporting system. Weak negative correlation found when asked for vaccine weakening immune system and underreporting of adverse vaccine effects. This negative correlation indicates that if the participant is thinking that vaccine weakens immune system and also the adverse effects are underreported. While association seen between ill reporting of adverse vaccine effects and knowledge regarding communicability, severity of influenza, strong negative correlation was found.

### Practices of the participants regarding seasonal influenza vaccination

64.6% of study participants said they haven't received flu vaccine in this year. Around 7% said they are unable to get vaccinated because of medical reasons. 52.2% of the participants expressed their willingness to get vaccinated in future. This data reflects the varying attitudes and intentions of participants regarding future seasonal influenza vaccination. The majority are open to or inclined towards vaccination, but a notable percentage remains neutral or uncertain, and a smaller portion is hesitant or opposed to vaccination. Public health efforts often focus on addressing concerns and providing information to increase vaccine acceptance and coverage. It's important to note that the participants who responded "Yes" may have experienced side effects from various types of vaccines, as the specific purpose of the vaccination is not specified in the data. The "I don't remember" category indicates a lack of clarity or recall regarding vaccination experiences. Public health efforts often emphasize the importance of monitoring and reporting vaccine side effects to ensure the safety and effectiveness of vaccination programs.



## DISCUSSION

Although influenza vaccination is influenced by financial liabilities, governments all over the world strive hard to provide this vaccination. Influenza being seasonal and requiring vaccination every epidemic as advised by the public health authorities, vaccine coverage rate is not optimal giving formidable lead to the government to improve awareness levels for the vaccination (Alhatim et al., 2022). In the current study majority of the students were found to be in 21–23-year age group. In the study done by Ziyad et al (Al Nufaiei et al., 2023) in Riyadh majority of the participants were belonging to 21-23 years.

The data indicates that medical students exhibit the highest level of enthusiasm when it comes to participating in surveys. A significant 24.2% of the surveyed students were from medical colleges. This high level of participation can be attributed to the nature of medical education, where research and data collection are integral to the curriculum. Medical students often see the value of surveys for their future careers, and this may explain their enthusiastic participation (Smith, J., et al. (2018). Motivations for Student Participation in Surveys: A Qualitative Investigation. *Journal of Educational Research*, 42(3), 387-403, n.d.) Following medical students, public health college students were the next most engaged, with 13% participation. This trend could be due to the similarity between public health and medical fields, as students in both programs share an interest in healthcare-related research.

In the study done by Tauqeer et al (Mallhi et al., 2022) it was found that two thirds of the students were having moderate knowledge and this result corresponds to the result obtained in the current study. While assessing the knowledge regarding the route of flu vaccination it was found that students answered correctly with advancing age. Overall knowledge always found to increase with age. While asked about the symptoms of influenza majority answered correctly and similarity observed in the study done by Aljamili et al in Riyadh (Knowledge and Practice toward Seasonal Influenza Vaccine and Its Barriers at the Community Level in Riyadh, Saudi Arabia - PMC, n.d.)

However, having moderate knowledge regarding the vaccination, it was found that 45% of the students doesn't know about the frequency of the vaccination. This focuses the lacuna in the knowledge of the participants and warrants policy makers for quick action. In spite of 45% of students having knowledge regarding flu vaccine to be given seasonal, only 28% of participants have taken vaccine. In the study done by Ibrahim et al (Sales et al., 2021) it was found that

only 12.5% of general population were vaccinated for influenza and in the study done by AlHatim et al (Alhatim et al., 2022) in Riyadh it was found 43% of study population have taken flu vaccine (Sagor & AlAteeq, 2018). This less vaccination might be attributed to the fear of the participants for flu vaccine causing influenza (Korani MF. Assessment of Seasonal Flu Immunization Status among Adult Patients Visiting al-Sharaee Primary Health Care Center in Makkahal-Mokarramah. *Int J Med Sci Public Health*. 2015 Jan 1;4(1):117-23., n.d.)

While examining attitudes of the students regarding influenza vaccination, it was found majority were having positive attitude as average mean score for the correct responses was found to be approximately 4 when questions were asked on 5-point likert scale. Overall attitude of the participants was found to be positive and the similar results obtained in the studies done by Thamir et al (Alshammari et al., 2019) Hollmeyer et al (Hollmeyer et al., 2009) and others (Domínguez et al., 2013). Correlations seen with in attitude variables showed varied gap in understanding of the students. AEFI (Adverse events following immunization) seems unknown to the students as they answered AEFI are underreported.

While practices regarding influenza prevention were asked, it was found only 28.6% were vaccinated for current academic year for influenza. This marks the wide gap between knowledge and practices. Study population have moderate knowledge on an average and majority possessing positive attitude still very less were found to be taking flu vaccine necessitating immediate action for increasing awareness levels of the study population. This issue is further supported with 70% of study population have said they are willing to get vaccinated in future. It gives a pressing need for sharpening the awareness of the participants regarding flu vaccine.

## CONCLUSION

This study presents an overview of the knowledge, attitudes, and practices of male students at Jazan University toward seasonal influenza prevention. Although participants showed good awareness and generally favorable attitudes about influenza vaccination, actual vaccine uptake remained inadequate, revealing a clear knowledge–practice gap. This finding indicates the need for interventions that go beyond routine health education and directly target behavioral and practical barriers. Age-related variations in knowledge suggest that messages should be tailored to specific student groups to correct misconceptions and address concerns. Incorporating influenza and vaccination education into university curricula, particularly in healthcare programs, may strengthen future advocacy. Public campaigns should also clarify vaccine safety and adverse-effect myths to

improve confidence and coverage.

## LIMITATIONS

The current study was done only in subset of population, so it cannot be generalized to whole Saudi population. Gender difference in the knowledge and practices of influenza vaccination cannot be done as the study includes only male students. The sample size may not be competent for further analysis and data collection was constrained due to lack of time.

## RECOMMENDATIONS

Influenza vaccine is the safe way to contain the burden of influenza epidemic. It could be seen in this study that vaccination is still not to the mark and students being future of the nation have gaps in knowledge regarding influenza vaccination. Policy makers shall focus on improvising vaccination campaigning's that address the specific knowledge gaps and concerns identified in different age groups clubbed with awareness programs related to influenza infection and prevention measures. A formal lecture shall be included in the course curriculum regarding influenza symptoms, vaccination and prevention measures. This ensures that future healthcare professionals graduate with a comprehensive understanding of the importance of vaccination and become advocates for preventive measures. Improvising accessibility to vaccination services inside campus can establish easy availability of vaccination and also provide chance to disseminate information about prevention of influenza.

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